



## JRC TECHNICAL REPORT

# Analysis of the Reports on 2020 Targets under Article 27 of the Governance Regulation – Energy Efficiency

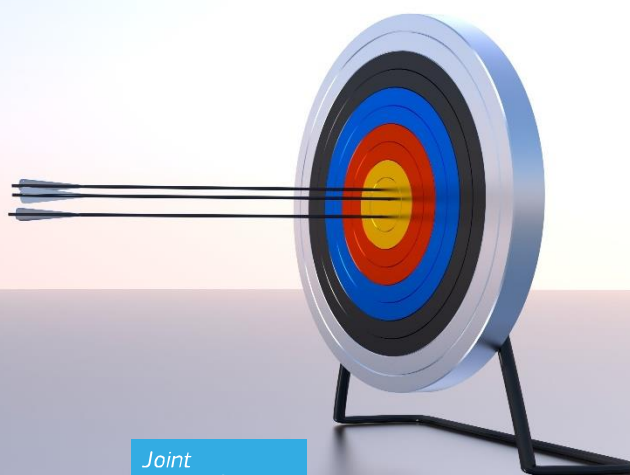
Tsemekidi-Tzeiranaki, S.

Paci, D.

Clementi, E.

Gonzalez Torres, M.

2022



This publication is a Technical report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The contents of this publication do not necessarily reflect the position or opinion of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

#### Contact information

Name: Daniele Paci  
Address: JRC via E. Fermi n. 2749, 21027, Ispra (VA)  
Email: [Daniele.paci@ec.europa.eu](mailto:Daniele.paci@ec.europa.eu)  
Tel.: +39 0332 78 3557

#### EU Science Hub

<https://joint-research-centre.ec.europa.eu>

JRC131606

EUR 31361 EN

PDF ISBN 978-92-76-60605-5 ISSN 1831-9424 [doi:10.2760/27622](https://doi.org/10.2760/27622) KJ-NA-31-361-EN-N

Luxembourg: Publications Office of the European Union, 2022

© European Union, 2022



The reuse policy of the European Commission documents is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of photos or other material that is not owned by the European Union, permission must be sought directly from the copyright holders.

How to cite this report: Tsemekidi-Tzeinaraki, S., Paci, D., Clementi, E. and Gonzalez Torres, M., *Analysis of the Reports on 2020 Targets under Article 27 of the Governance Regulation – Energy Efficiency*, Publications Office of the European Union, Luxembourg, 2022, doi:10.2760/27622, JRC131606.

## Contents

Abstract.....	1
Executive summary.....	2
Acknowledgements.....	5
1 Introduction and background.....	6
2 Overview.....	7
3 Progress towards the 2020 Energy Efficiency targets.....	8
3.1 Primary energy consumption.....	13
3.2 Final Energy consumption.....	14
3.2.1 Industry.....	15
3.2.2 Residential.....	16
3.2.3 Services.....	16
3.2.4 Transport.....	17
4 Achievement of the 2020 Energy Efficiency targets.....	18
5 Evolution in the short-term.....	21
6 Progress towards implementation of EED provisions.....	25
6.1 Overview of policy updates in 2020.....	25
6.2 Progress towards Article 7 in 2020.....	27
6.3 Measures under Article 7 aimed at alleviation of energy poverty.....	32
6.4 Progress towards Article 5 in 2020.....	33
6.5 New measures under Article 5 and Article 7.....	36
7 NZEBs and energy audits.....	38
8 Summary and Conclusions.....	42
References.....	43
List of abbreviations and definitions.....	44
List of figures.....	45
List of tables.....	46
Annex 1: EUROSTAT indicators.....	47
Annex 2: Comparison between Eurostat and MS reporting on Article 3 Targets 2020.....	55
Annex 3: Explanations provided by Member States.....	56
Annex 4: New measures under Articles 7 and 5.....	61

## **Abstract**

This report assesses and discusses the progress and the achievement of the 2020 Energy Efficiency targets and the implementation of the provisions of the Energy Efficiency Directive 2012/27/EU (EED), providing an overview of the main energy trends in the European Union. It builds on the assessment of the National 2020 Target Reports submitted by Member States under Art. 27 of the Governance Regulation. It is also based on the latest available EUROSTAT data and on the information provided by Member States in their Annual Reports 2020 submitted under the EED. The information contained in this Report constitutes one key source for the 2022 Report from the Commission to the European Parliament and Council on the assessment of the progress made by Member States towards the implementation of the Energy Union – Commission's State of the Energy Union Report and it has been extensively published as a Report from the Commission to the European Parliament and the Council - 2022 Report on the achievement of the 2020 energy efficiency targets (COM(2022) 641 final).

## Executive summary

### Policy context

The aim of this report is to assess the progress of EU Member States towards the 2020 targets set under the Energy Efficiency Directive (EED), adopted in 2012 and revised in 2018. More specifically, Member States had to report on their progress under the following Articles of Directive:

- Progress on national targets set under Article 3 for primary and final energy consumption in 2020
- Progress on new annual savings targets and on cumulative savings 2014-2020 targets under Article 7
- Progress on renovated floor area or energy savings under Article 5 for Member States chosen the default or alternative approach respectively

Member States have also to provide a list with their implemented energy efficiency measures, a list with measures under Article 7 as well as the savings achieved by each measure, which of them are newly introduced and which of them aiming also at alleviating energy poverty. They also report on implemented energy audits and on Nearly Zero Energy Buildings (NZEBs).

Finally, they are obliged to provide the reasons for increasing or remaining stable energy consumption in each one of the main economic sectors (residential, services, industry, and transport) as well as the reasons/factors for achieving or not achieving their 2020 national targets.

This assessment gives insights on how the EED had been implemented and if it achieved to affect the energy efficiency trends in the EU Member States. Indeed, the information contained in this Report constitutes one key source for the 2022 Report from the Commission to the European Parliament and Council on the assessment of the progress made by Member States towards the implementation of the Energy Union – Commission's State of the Energy Union Report and it has been extensively published as a Report from the Commission to the European Parliament and the Council - 2022 Report on the achievement of the 2020 energy efficiency targets (COM(2022) 641 final).

### Data and Methodology

The data used for this analysis are mainly extracted from 2020 Targets Reports – section of energy efficiency. These data could be provided either in a form of compiled common template or in a form of a report. The required data for the assessment are gathered in excel tables, elaborated and compared with the initially set targets. Information from previous reports (i.e. Annual Reports submitted on the period 2014-2020) or information found on additional clarifications provided by the Member States is also used for this assessment.

When discrepancies or gaps are observed, the official statistics from Eurostat Energy balances are used. The latest available Eurostat data (April 2022 in this study) are also extracted to monitor the trends of the main energy efficiency indicators. Some data from Odyssee database have been also used for the more elaborated indicators while data from Statistical Pocketbook of DG MOVE 2021 have been used for some transport sector indicators.

For assessing the progress under Article 3 of Directive, the reported figures (by Member States and by Eurostat) are compared with 2020 Primary Energy Consumption (PEC) and Final Energy Consumption (FEC) national targets, and the level of achievement or non-achievement has been calculated.

For assessing the progress under Article 7, a table has been produced providing the overview on the approach used by each Member State and the level of target achievement in terms of savings achieved from new actions implemented in 2020, savings achieved in 2020, from new actions implemented in 2020 and from actions implemented in the period 2014-2018, and of cumulative savings achieved over the period 2014-2020. A colour-code system has been implemented to highlight the level of the achievement: green for countries which fully reached or exceeded their targets, yellow for countries which fell short of their expected savings by up to 50% and red for countries which fell short by more than half. Tax measures savings have been adjusted to have lifetime equal to 1 year.

For assessing the progress under Article 5, the ratio of renovated floor area in 2020 to the respective annual renovation obligation for countries opting for the default approach and the ratio of achieved annual energy savings in 2020 compared to the annual energy saving obligation for countries opting for the alternative approach are calculated. In addition, when the required data are available, the ratio of the total renovated floor area over the period 2014-2020 and the total renovation requirements over the same period is calculated for Member States opting for the default approach and the ratio of total savings generated in 2014-2020 and the total savings requirement over the same period is calculated for Member States opting for the alternative approach.

Finally, decomposition analysis has been applied in the main productive sectors (industry, services and agriculture) to examine whether the reasons provided for increased or stable consumption by the Member States are compatible with the official data.

## Key conclusions

- Both EU primary and final energy consumption targets have been achieved in 2020 but this was to a great extent the result of COVID-19 pandemic and the related restrictions
- When looking at FEC per sector, the trend is decreasing compared to 2019 in most of the Member States. When this is not the case, the increase of teleworking due to COVID-19 is the most significant factor for residential sector while the economic growth and the increase of value added were the main factors for industry and services, according to the reporting of the Member States.
- The 2020 Target Reports submitted by Member States in 2022 have confirmed good progress with regards to the achievement of Article 3, Article 5 and Article 7 targets. However, the information gaps or discrepancies do not allow the overall assessment of achievement levels.
- An important number of new measures and policies have been included in the 2020 Target Reports (not included in previous submitted Annual Reports) in an attempt from Member States to accelerate the efforts to achieve the 2020 targets.
- The common template format contributed positively to the overall assessment procedure.

## Main findings

All the Member States have submitted their Reports by August 2022, however two of these reports did not include any of the required information on energy efficiency section. All the Member States except from 3 submitted their reports in the form of the standardized reporting template. Some of the Member States provided additional clarifications after the initial submission.

From 2005 to 2020, EU energy consumption has followed a decreasing trend and in the 2020, the EU final and primary energy consumption targets have been achieved. However, the COVID-19 crisis and the lockdown measures had a significant impact on the final values. The 2019 values instead (before COVID-19 pandemic) are slightly above the targets. In addition, EU FEC at sectoral level, registered decreasing trends over the 2005-2020 period. In all the EU Member States except Poland, PEC has declined since 2005 while in all MS but 3, FEC declined during the same period.

When looking at main economic sectors, industry and residential FEC at EU level have registered fluctuating trends throughout the studied period, while transport and services FEC has changed more gradually. The largest share of final energy consumption in 2020 was covered by transport sector, followed by residential and industry sectors. Industry, transport and services sector consumptions registered negative rates in 2020 while residential FEC remained almost stable possibly due to increase of teleworking activities which lead to increase energy demand in households.

When comparing 2020 MS FEC and PEC values provided by Eurostat, with national targets set under Article 3 of EED, it seems that 24 MS have achieved them in terms of PEC while 21 MS have achieved them in terms of FEC. According to MS reporting, among the factors led to the achievement of the targets are the effect of COVID-19 pandemic, implementation of energy efficiency measures and improvements, favourable climatic conditions, increased electricity production from renewable sources while the factors that impacted the missing targets are the increase of population, increase of economic activities or economic growth, increase of the transport volume, overestimated projection or increased ambition. To note that in some cases there are discrepancies between MS reporting for PEC and FEC values and the corresponding Eurostat values.

FEC per sector in MS level decreased in most of the Member States from 2019 to 2020. When this is not the case, Member States reported the driving reasons. These are: the increase of teleworking due to COVID-19 is for residential sector and the economic growth and the increase of value added for industry and services sectors. Additive decomposition results confirmed that COVID-19 pandemic crisis impacted residential FEC in 2020. In addition, the impact of weather and wealth effects offset both the overall positive population and intensity effects. For industry, services and agriculture, the activity affect (labour productivity and employment effects) led to a decrease in FEC while the intensity effect led to an increase. Finally for transport, activity effect due to the mobility restrictions resulted in decreasing FEC.

Regarding the progress towards the implementation of EED, in 2020, 526 energy efficiency policies and measures reported by the Member States. Most of them were alternative measures under Article 7, classified as 'Economic' measures. Looking more in detail on Article 7 of EED, it seems that 14 of the 27 Member states have achieved their cumulated target over the period 2014-2020. In addition, if the sum of available cumulative savings in the overall target (including also targets from member States with no available savings data) is calculated, it results that it has been missed for around 2%. Article 7 has been implemented either by EEOs or by alternative measures. The largest share of new annual savings in 2020 has been generated by alternative measures fell under the category 'Taxation'. Ten Member States reported measures and savings under Article 7, aiming at the alleviation of energy poverty. Focusing on Progress towards Article 5, EED, it could be concluded that more than half of the Member States choosing the default approach have achieved either their annual or the total 2014-2020 targets in terms of renovated floor area while all but 3 of the Member States choosing the alternative approach provided data showing that they have achieved either their annual or the total 2014-2020 targets in terms of energy savings. In an attempt to

reinforce efforts towards the achievement of the 2020 targets, some EU Member States have included new policies and measures under Article 7 and article 5. In total, 45<sup>1</sup> new measures have been listed under Article 7 while 37 new measures have been listed under Article 5. Finally, figures on NZEBs and energy audits were also included in many of the 2020 Target Reports.

---

<sup>1</sup> In the new Article 7 measures list, only measure officially reported by Member States are 'new' are included

## **Acknowledgements**

The authors wish to thank the colleagues in DG ENER who supported and collaborated to the realization of this Report, in particular Constanca Martins Leite de Almeida, who followed and supported the entire project, Edyta Nowak, Rados Horacek, Kontinakis Nikolaos, and Claudia Canevari. Their valuable input improved the quality and the policy relevance of the final output.



# 1 Introduction and background

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

In accordance with Article 3 of the EED, Member States have set indicative energy efficiency targets – based on either primary or final energy savings, primary or final energy consumption or energy intensity – in view of the overall target of 20% reduction in EU primary energy consumption by 2020.

Article 27 of the Regulation 2018/1999 on the Governance of the Energy Union and Climate Action, required that by 30 April 2022, each Member State reported to the Commission on the achievement of its 2020 energy efficiency national target established under Article 3(1) of Directive 2012/27/EU by providing the information set out in Part 2 of Annex IX of the same Regulation. In addition, Article 28 of the Regulation 2018/1999 on the Governance of the Energy Union and Climate Action describes the establishment of an online platform to facilitate the communication between the Member States and the Commission. The information that should be provided to the Commission includes:

- a) major legislative and non-legislative policies, measures, financing measures and programmes implemented in year X-2 and X-1 (with X as the year when the report is due) to achieve their objectives referred to in point (b) of Article 4 which promote energy service markets, improve the energy performance of buildings, measures to utilise energy efficiency potentials of gas and electricity infrastructure and heating and cooling, improve information and qualification, other measures to promote energy efficiency;
- b) the cumulative amount of energy savings achieved through Article 7 of Directive 2012/27/EU in years X-3 and X-2;
- c) the amount of savings achieved by policy measures aimed at alleviation of energy poverty in line with Article 7(11) of Directive 2012/27/EU;
- d) where applicable, the amount of savings achieved in accordance with point (c) of Article 7(4) of Directive 2012/27/EU;
- e) progress in each sector and reasons why energy consumption remained stable or was growing in year X-3 and X-2 in final energy consumption sectors;
- f) total building floor area of the buildings with a total useful floor area over 250 m<sup>2</sup> owned and occupied by the Member States' central government that, on 1 January in year X-2 and X-1, which did not meet the energy performance requirements referred to in Article 5(1) of Directive 2012/27/EU;
- g) total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in year X-3 and X-2 referred to in Article 5(1) of the Directive 2012/27/EU or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6) of Directive 2012/27/EU;
- h) number of energy audits carried out in year X-3 and X-2. In addition, the total estimated number of large companies in their territory to which Article 8(4) of Directive 2012/27/EU is applicable and the number of energy audits carried out in those enterprises in the year X-3 and X-2; L 328/72 EN Official Journal of the European Union 21.12.2018

Art 27 also required MSs to report on the achievement of Renewable Energy 2020 targets, which are outside of the scope of this Report.

This report is built on past JRC experience in the assessment of Member States Annual Reports under the Energy Efficiency Directives (Tsemekidi-Tzeiranaki, S., et al., 2020).

## 2 Overview

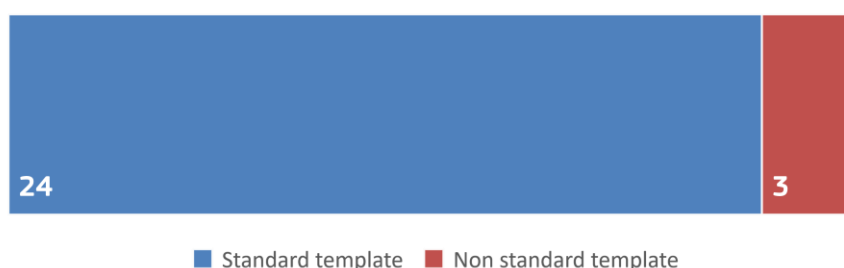
By 28 October 2022, all 27 out MSs submitted their Reports. It has to be noted, however, that in one case (Hungary), the report did not contain any information on energy efficiency in two cases (Romania<sup>2</sup> and Croatia<sup>3</sup>) the reports were considered incomplete.

The European Commission, with the support of the JRC, has developed a standardized reporting template in order to facilitate a harmonised reporting approach and thereby enhance data analysis and comparability. In line with the trend noticed in last years' reporting (Annual Reports, NECPs), the acceptance and use of a harmonised common tool further increased: almost all MSs (24 out of the 27 submitted) adopted the suggested reporting template. On the contrary, Croatia, Lithuania and France provided reports while Slovakia provided both template and report.

Some Member States<sup>4</sup> integrated their reports with additional information and clarification upon specific request of DG ENER.

Figure 1 provides an overview of the submission status at 28 October 2022.

**Figure 1** Submission Overview



Source: 2020 Targets Reporting, JRC, 2022

<sup>2</sup> Romania did not provide the information required under Annex IX Part 2 paragraphs (c), (d), (e), (f), (h), (i), (j) and (k) of the Governance regulation. In addition, the information submitted under Annex IX Part 2 paragraph (b) and (g) to that Regulation is incomplete.

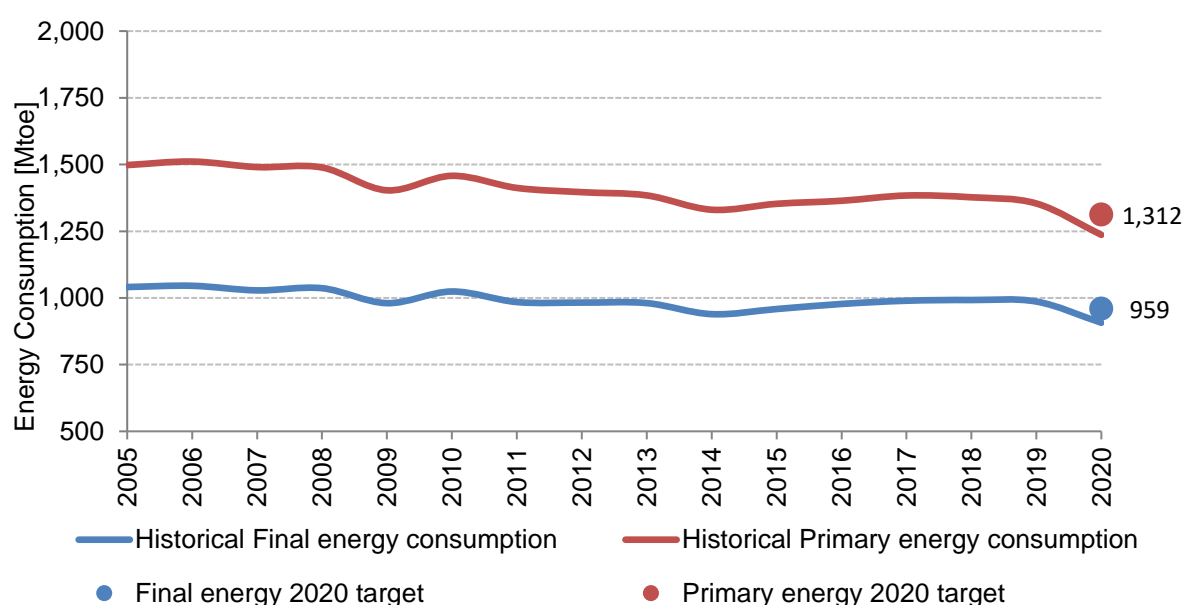
<sup>3</sup> Croatia has not provided the information required under Annex IX Part 2 paragraphs (c) and (d) of the Governance Regulation. In addition, the information submitted under Annex IX, Part 2, paragraph (b) to that Regulation is incomplete.

<sup>4</sup> As of 1 December 2022, not all MSs have replied to ENER requests. We received additional information/clarifications from: AT, BE, BG, CZ, EE, DE, DK, IE, IT, LV, LT, NL, PL, PT, RO, SK, SI, ES, SE, which are included in this report.

### 3 Progress towards the 2020 Energy Efficiency targets

In the period from 2005 to 2020, the EU energy consumption has followed a general downward trend, as depicted in Figure 2. The decrease in energy consumption was accompanied with an overall drop in energy intensity and energy consumption per capita, reflecting a possible increase in competitiveness in the same period. In 2020<sup>5</sup>, the EU met the target values set in the EED for 2020 in terms of primary energy consumption (1236 Mtoe in 2020 vs 1312 Mtoe of the target) and final energy consumption (907 Mtoe in 2020 vs 959 Mtoe of the target). However, the values registered for primary and final energy consumption in the year 2020, are significantly influenced by COVID-19 crisis and the lockdown measures imposed by national authorities to confront the crisis, which restricted importantly the overall activities and consequently reduced the energy demand<sup>6</sup>. If we look at 2019 values (before COVID-19 pandemic), we can still see the decreasing trends in energy consumption, but the values are slightly above the targets (1354 Mtoe for primary energy consumption and 986 Mtoe for final energy consumption)<sup>7</sup>.

**Figure 2.** Final and Primary Energy Consumption trends of the EU27\_2020 (the dotted line represent a linear trajectory between the 2005 actual consumption and the 2020 target consumption).



Source: JRC elaboration on Eurostat data, 2022.

In terms of individual end-use sectors, all of them have decreased their final energy consumption over the 2005-2020 period.

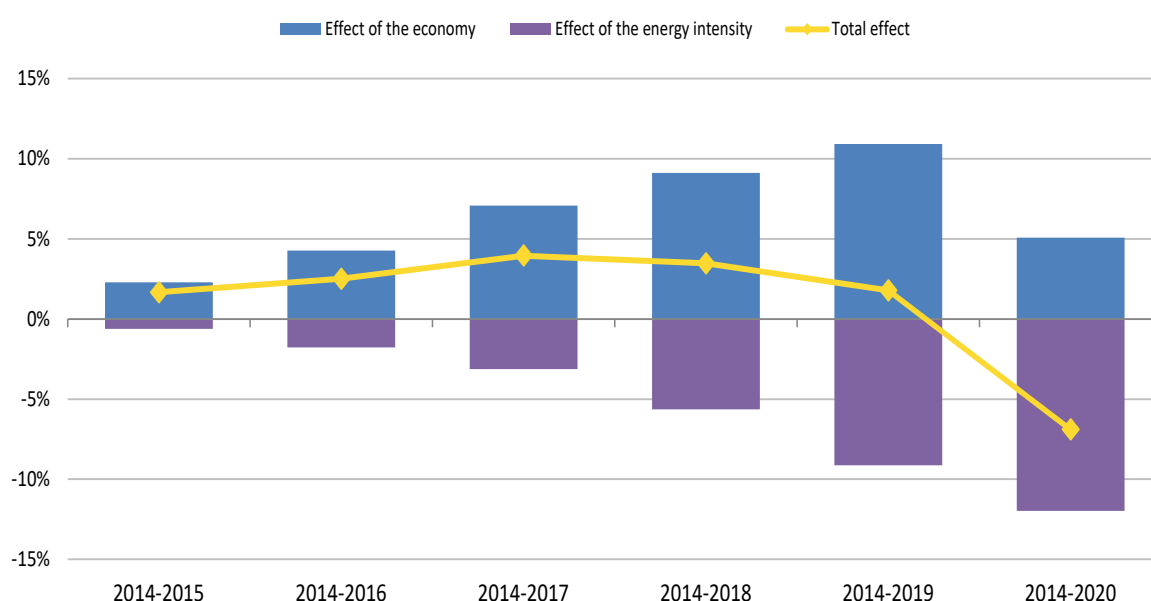
In order to look closer at the drivers that allowed the compliance with the 2020 targets, Figure 3 shows the results of an additive decomposition of the changes in primary energy consumption in the EU27. After a period of slight rebound of the energy consumption (2014-2017), the primary energy intensity started again to compensate the economic growth already in 2018. However, consumption only decreased below 2013 figures in 2020, due to the combined effect of the economy drop (6%) caused by the pandemic crisis and the continuous improvement of the primary energy intensity (3%).

<sup>5</sup> The Eurostat energy data used in this analysis correspond to the update of April 2022

<sup>6</sup> Ten Member States explicitly mentioned the COVID-19 crisis among the factors influencing the achievement of the 2020 targets in their Art 3 notifications.

<sup>7</sup> Eurostat data are not yet available for 2021. Nonetheless, some analysts indicate the rebound of energy consumption a concrete possibility, following economic recovery, in 2021. See, for instance IEA Global Energy Trends Report 2022, where based on ENERDATA, estimates indicate a global increase of 5% in energy consumption in 2021 (<https://yearbook.enerdata.net/total-energy/world-consumption-statistics.html>). It should be noted however that their projections for Europe in 2021 are lower than 2019 pre-pandemic levels.

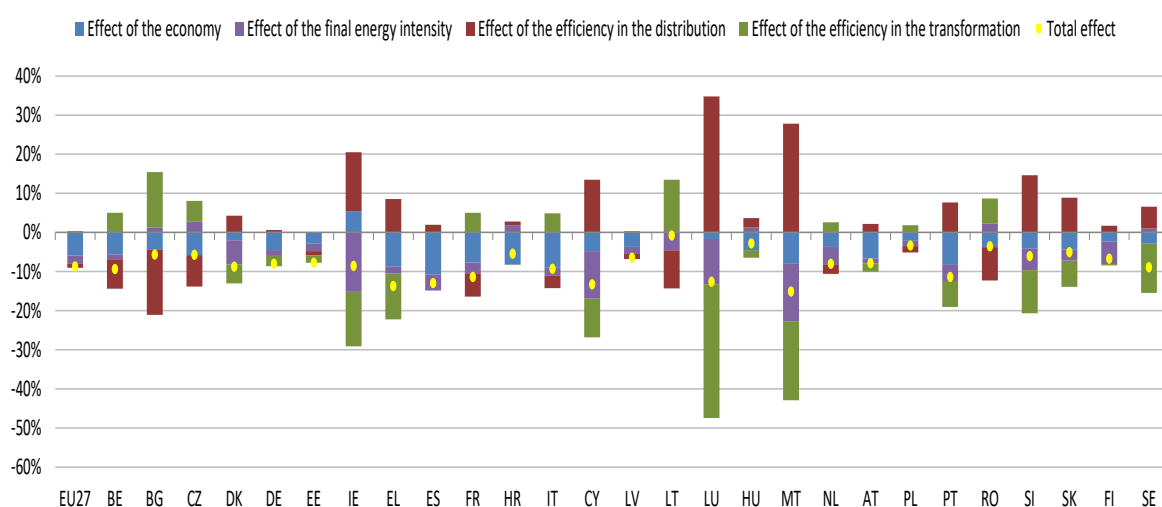
**Figure 3.** Contribution of different effects on the variation of the PEC in EU27 over the period 2014-2020.



Source: JRC elaboration on Eurostat data, 2022.

Influenced by the pandemic crisis, the primary energy consumption decreased also in every Member State in 2020, with drops ranging from 15% (Malta) to 1% (Lithuania). Figure 4 shows a breakdown of the additive decomposition results in the period 2019-2020, showing the economic effect and further disaggregating the primary energy intensity into the effects of the final energy intensity and the efficiencies of the distribution and transformation. The exceptional drop of the economy was a determinant factor for the energy consumption reductions, except in Ireland where it still increased by 5% and in Lithuania where the effect was negligible. Improvements in the final energy intensity<sup>8</sup> also contributed to lessen energy consumption in the EU27 (by 2%) and in most Member States (up to by 15% in Ireland and Malta). However, some exceptions are found in Bulgaria, Czechia, Croatia, Romania, Hungary and Sweden where it increased only up to 3%. A warmer winter in 2020 than in 2019 slightly drove demand drop again. Finally, the results of the efficiency in the distribution and transformation of energy are negligible at EU level, and they differ among Member States. The distribution worsened in Denmark, Germany, Ireland, Greece, Spain, Croatia, Cyprus, Luxemburg, Hungary, Malta, Austria, Portugal, Slovenia, Slovakia, Finland and Sweden, while the transformation efficiency decreased in Belgium, Bulgaria, Czechia, France, Italy, Lithuania, Netherlands, Poland and Romania.

**Figure 4.** Contribution of different effects on the variation of the PEC in EU27 and Members States over the period 2019-2020.



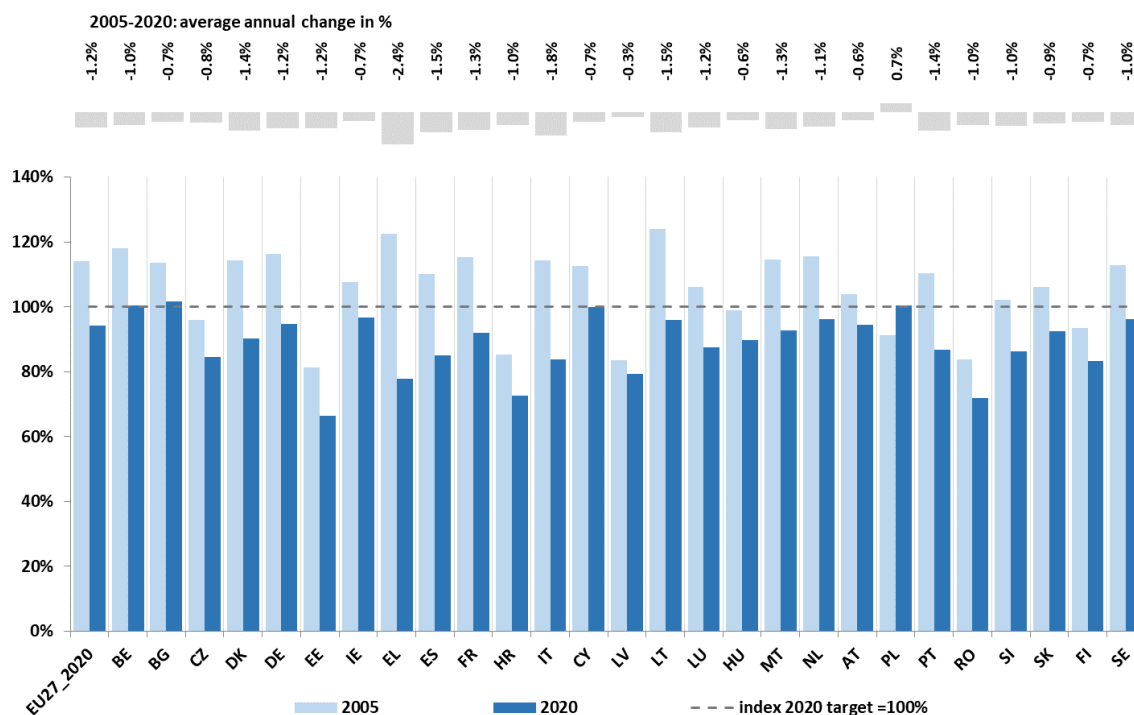
Source: JRC elaboration on Eurostat data, 2022.

<sup>8</sup> Intensity indicators are often used as energy efficiency indicator for a country. They are presented as a ratio between energy consumption and activity data. In this case, final energy intensity is built as the ratio between final energy consumption and gross domestic product (GDP) of EU27.

At national level, the absolute primary energy consumption of all Member States, except Poland, has declined since 2005 (Figure 5). Greece experienced the largest average annual primary energy consumption decrease, (equivalent to 2.4%). The average annual reduction during 2005-2020 was more pronounced compared to EU27 in 4 Member States (Denmark, Greece, Spain, France, Italy, Lithuania, Malta and Portugal).

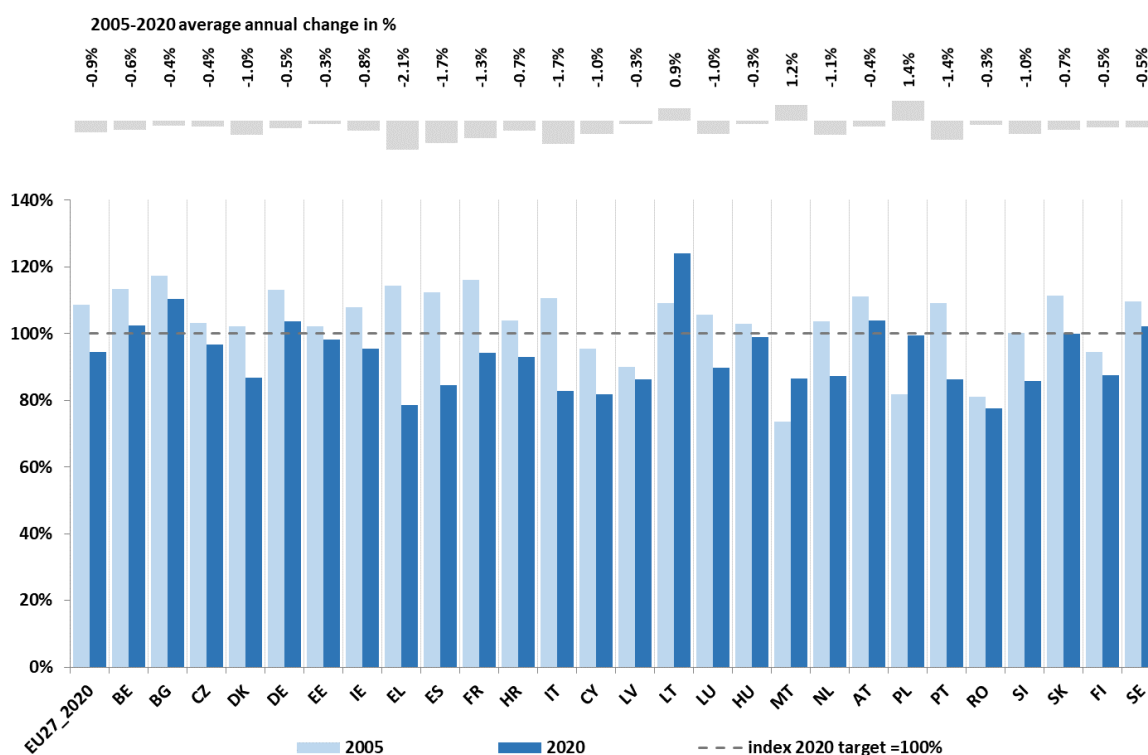
The absolute final energy consumption of all Member States has declined since 2005 except in Lithuania, Malta and Poland (Figure 6)

**Figure 5.** Primary energy consumption trends (2005-2020) and average annual change in 2005-2020



Source: Eurostat, JRC, 2022.

**Figure 6.** Final energy consumption trends (2005-2020) and average annual change in 2005-2020



Source: Eurostat, JRC, 2022.

An overview of main energy trends is shown in Table 1 and Table2, where the green colour is used to indicate a decrease in energy consumption

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

MS	Trend to reach the 2020 target		Short-term trend		Energy Intensity whole economy	Industry	Residential	
	PEC 2005-2020 trend compared to PEC 2005-2020 trend to reach the 2020 target	FEC 2005-2020 trend compared to FEC 2005-2020 trend to reach the 2020 target	Change of PEC 2020 compared to PEC 2019 [%]	Change of FEC 2020 compared to FEC 2019 [%]	2005-2020 average annual change of PEC energy intensity [%]	2005-2020 average change of FEC energy intensity in industry [%]	2005-2020 average annual change of FEC in residential per capita with climatic corrections [%]	2005-2019 average annual change of FEC in residential per m2 with climatic corrections [%]
EU27_2020	+	+	● -8.7%	● -8.0%	● -2.0%	● -1.5%	● 0.4%	● -1.4%
BE	+	+	● -9.3%	● -6.9%	● -2.1%	● -0.8%	● -0.6%	NA
BG	+	+	● -5.6%	● -3.1%	● -2.6%	● -2.9%	● 2.8%	● -0.2%
CZ	+	+	● -5.7%	● -3.1%	● -3.0%	● -3.6%	● 1.2%	● -0.5%
DK	+	+	● -8.7%	● -8.2%	● -2.7%	● -2.0%	● 0.2%	● -1.3%
DE	+	+	● -8.0%	● -6.1%	● -2.3%	● -1.1%	● 0.4%	● -1.0%
EE	+	+	● -7.7%	● -4.9%	● -2.6%	● -5.3%	● 2.1%	● -0.2%
IE	+	+	● -8.6%	● -9.7%	● -4.7%	● -5.6%	● -1.7%	● -3.3%
EL	+	+	● -13.7%	● -10.7%	● -0.9%	● 0.3%	● -0.5%	● -1.3%
ES	+	+	● -12.9%	● -14.7%	● -1.9%	● -1.2%	● 1.3%	● -1.5%
FR	+	+	● -11.4%	● -10.5%	● -1.9%	● -0.7%	● 0.4%	● -0.9%
HR	+	+	● -5.5%	● -6.4%	● -1.5%	● -1.5%	● 0.6%	● -1.9%
IT	+	+	● -9.3%	● -10.9%	● -1.2%	● -1.4%	● 0.6%	● -0.5%
CY	+	+	● -13.3%	● -16.7%	● -2.3%	● -0.3%	● 3.3%	● -1.5%
LV	+	+	● -6.4%	● -5.5%	● -2.1%	● 1.7%	● 0.7%	● -1.9%
LT	+	+	● -0.8%	● -4.5%	● -4.5%	● -2.5%	● 2.4%	● -1.5%
LU	+	+	● -12.7%	● -13.2%	● -3.2%	● -2.4%	● -1.0%	● -2.6%
HU	+	+	● -2.8%	● -3.2%	● -1.8%	● 2.1%	● 0.4%	● -0.9%
MT	+	+	● -15.1%	● -21.8%	● -4.9%	● -0.4%	● 10.4%	NA
NL	+	+	● -8.0%	● -8.3%	● -2.3%	● -1.7%	● -0.6%	● -2.5%
AT	+	+	● -7.9%	● -8.0%	● -1.2%	● -0.5%	● 0.6%	● -0.4%
PL	+	+	● -3.3%	● -3.5%	● -2.8%	● -3.3%	● 1.8%	● -1.4%
PT	+	+	● -11.4%	● -12.3%	● -1.4%	● -1.0%	● 2.6%	● -1.1%
RO	+	+	● -3.6%	● -1.4%	● -4.1%	● -3.8%	● 2.1%	● -1.6%
SI	+	+	● -6.1%	● -9.5%	● -2.4%	● -3.2%	● -1.0%	● -2.4%
SK	+	+	● -5.1%	● -7.1%	● -3.6%	● -3.8%	● 1.8%	● 0.9%
FI	+	+	● -6.7%	● -8.1%	● -2.0%	● -0.5%	● 0.6%	● -1.1%
SE	+	+	● -8.9%	● -1.9%	● -2.8%	● -0.4%	● -0.5%	● -1.5%
Source and extraction data	Eurostat 04/2022	Eurostat 04/2022	Eurostat 04/2022	Eurostat 04/2022	Eurostat 05/2022	Eurostat 04/2022	Eurostat 04/2022	Odyssee 10/2021

Source: Eurostat, Odyssee, JRC, 2022.

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

MS	Services		Transport			Generation	
	2005-2018 average change of FEC energy intensity in the service sector [%]	2005-2020 average change of FEC in the transport sector [%]	2019 vs. 2005 change of share of trains, motor coaches, buses and trolley buses for passenger transport [%]	2019 vs. 2005 change of share of railway and inland waterways for freight transport [%]	2005-2020 average annual change of heat generation from CHP [%]	2005-2020 average annual change of ratio Transformation output/Fuel input of thermal power generation [%]	
EU27_2020	<div><div></div></div> -1.3%	<div><div></div></div> -0.7%	<div><div></div></div> 0.3%	<div><div></div></div> -1.1%	<div><div></div></div> -1.1%	<div><div></div></div> 2.0%	
BE	<div><div></div></div> -1.2%	<div><div></div></div> -0.7%	<div><div></div></div> -1.5%	<div><div></div></div> -3.8%	<div><div></div></div> -0.8%	<div><div></div></div> 2.6%	
BG	<div><div></div></div> -0.9%	<div><div></div></div> 1.3%	<div><div></div></div> -13.9%	<div><div></div></div> 16.6%	<div><div></div></div> -1.5%	<div><div></div></div> 0.7%	
CZ	<div><div></div></div> -2.2%	<div><div></div></div> 0.8%	<div><div></div></div> 1.3%	<div><div></div></div> -4.8%	<div><div></div></div> -1.2%	<div><div></div></div> 0.6%	
DK	<div><div></div></div> -1.7%	<div><div></div></div> -0.7%	<div><div></div></div> -3.5%	NA	<div><div></div></div> -1.3%	<div><div></div></div> 3.9%	
DE	<div><div></div></div> -2.3%	<div><div></div></div> -0.4%	<div><div></div></div> 0.8%	<div><div></div></div> -3.2%	<div><div></div></div> -0.6%	<div><div></div></div> 3.0%	
EE	<div><div></div></div> -0.3%	<div><div></div></div> 0.8%	<div><div></div></div> -3.2%	NA	<div><div></div></div> 2.8%	<div><div></div></div> 2.2%	
IE	<div><div></div></div> -1.5%	<div><div></div></div> -1.2%	<div><div></div></div> 0.2%	NA	NA	<div><div></div></div> 4.3%	
EL	<div><div></div></div> 1.6%	<div><div></div></div> -2.1%	<div><div></div></div> -4.6%	NA	<div><div></div></div> 1.2%	<div><div></div></div> 3.6%	
ES	<div><div></div></div> 0.0%	<div><div></div></div> -2.1%	<div><div></div></div> -2.8%	NA	NA	<div><div></div></div> 2.8%	
FR	<div><div></div></div> -0.9%	<div><div></div></div> -0.9%	<div><div></div></div> 1.3%	<div><div></div></div> -1.9%	<div><div></div></div> -3.3%	<div><div></div></div> 1.1%	
HR	<div><div></div></div> -0.3%	<div><div></div></div> 0.6%	<div><div></div></div> -0.4%	<div><div></div></div> 6.7%	<div><div></div></div> 1.7%	<div><div></div></div> 2.8%	
IT	<div><div></div></div> 1.1%	<div><div></div></div> -2.3%	<div><div></div></div> -0.4%	<div><div></div></div> 1.7%	<div><div></div></div> 0.8%	<div><div></div></div> 2.6%	
CY	<div><div></div></div> 0.8%	<div><div></div></div> -0.5%	NA	NA	<div><div></div></div> 52.2%	<div><div></div></div> 1.7%	
LV	<div><div></div></div> -1.9%	<div><div></div></div> 0.5%	<div><div></div></div> -8.0%	NA	<div><div></div></div> -0.4%	<div><div></div></div> 0.3%	
LT	<div><div></div></div> -1.8%	<div><div></div></div> 3.2%	NA	<div><div></div></div> 7.8%	<div><div></div></div> -3.0%	<div><div></div></div> 7.7%	
LU	<div><div></div></div> -0.1%	<div><div></div></div> -2.0%	<div><div></div></div> 2.8%	NA	<div><div></div></div> 5.3%	<div><div></div></div> 5.0%	
HU	<div><div></div></div> -5.1%	<div><div></div></div> 0.9%	<div><div></div></div> -7.3%	<div><div></div></div> -1.3%	<div><div></div></div> -4.3%	<div><div></div></div> 0.6%	
MT	<div><div></div></div> -0.3%	<div><div></div></div> 1.7%	NA	NA	NA	<div><div></div></div> 3.9%	
NL	<div><div></div></div> -1.6%	<div><div></div></div> -1.2%	<div><div></div></div> 2.5%	<div><div></div></div> 0.0%	<div><div></div></div> -3.3%	<div><div></div></div> 1.2%	
AT	<div><div></div></div> -1.8%	<div><div></div></div> -0.5%	<div><div></div></div> 2.3%	<div><div></div></div> -4.4%	<div><div></div></div> 1.8%	<div><div></div></div> 3.5%	
PL	<div><div></div></div> -2.3%	<div><div></div></div> 4.1%	<div><div></div></div> -11.1%	<div><div></div></div> -8.8%	<div><div></div></div> -1.0%	<div><div></div></div> 1.0%	
PT	<div><div></div></div> -0.3%	<div><div></div></div> -1.5%	<div><div></div></div> 1.0%	NA	<div><div></div></div> 3.4%	<div><div></div></div> 6.2%	
RO	<div><div></div></div> -2.0%	<div><div></div></div> 3.1%	<div><div></div></div> -0.6%	<div><div></div></div> 11.9%	<div><div></div></div> -5.2%	<div><div></div></div> 0.8%	
SI	<div><div></div></div> -2.0%	<div><div></div></div> 0.9%	NA	NA	<div><div></div></div> 0.5%	<div><div></div></div> 1.7%	
SK	<div><div></div></div> -5.0%	<div><div></div></div> 0.8%	<div><div></div></div> -3.0%	<div><div></div></div> -9.8%	<div><div></div></div> -0.8%	<div><div></div></div> 0.3%	
FI	<div><div></div></div> -0.2%	<div><div></div></div> -0.5%	NA	NA	<div><div></div></div> -2.1%	<div><div></div></div> 1.6%	
SE	<div><div></div></div> -2.1%	<div><div></div></div> -0.8%	<div><div></div></div> 3.2%	NA	<div><div></div></div> 1.7%	<div><div></div></div> 2.5%	
Source and extraction data	Eurostat 04/2022	Eurostat 04/2022	DG MOVE Pocketbook 2021	DG MOVE Pocketbook 2021	Eurostat 04/2022	Eurostat 04/2022	

### 3.1 Primary energy consumption

Primary energy consumption (PEC) <sup>10</sup> in the EU27 in 2020 was 1236 Mtoe, i.e. around 9% lower than in 2019, most probably as a result of COVID-19 crisis. During the period 1990-2005 it increased by 9.5% and it decreased 17.5% over the period 2005-2020. There was however consumption increase in 2010, when primary energy consumption increased by nearly 4% in one year. That was followed by another relevant and constant decrease in the period 2011-2014. After several years of decline, PEC started to increase again in 2015 and continued increasing in 2016 and 2017. A new decreasing trend started in 2018 and continued until 2020, year with the latest available data from Eurostat.

<sup>9</sup> Symbol "+" indicates that Member States decreased their primary and final energy consumption between 2005 to 2018 at a rate which is higher than the rate of decrease which would be needed in the period 2005 to 2020 to meet the 2020 primary and final energy consumption targets. Symbol "-" was used for the other cases.

<sup>10</sup> PEC 2020-2030 indicator of Eurostat.



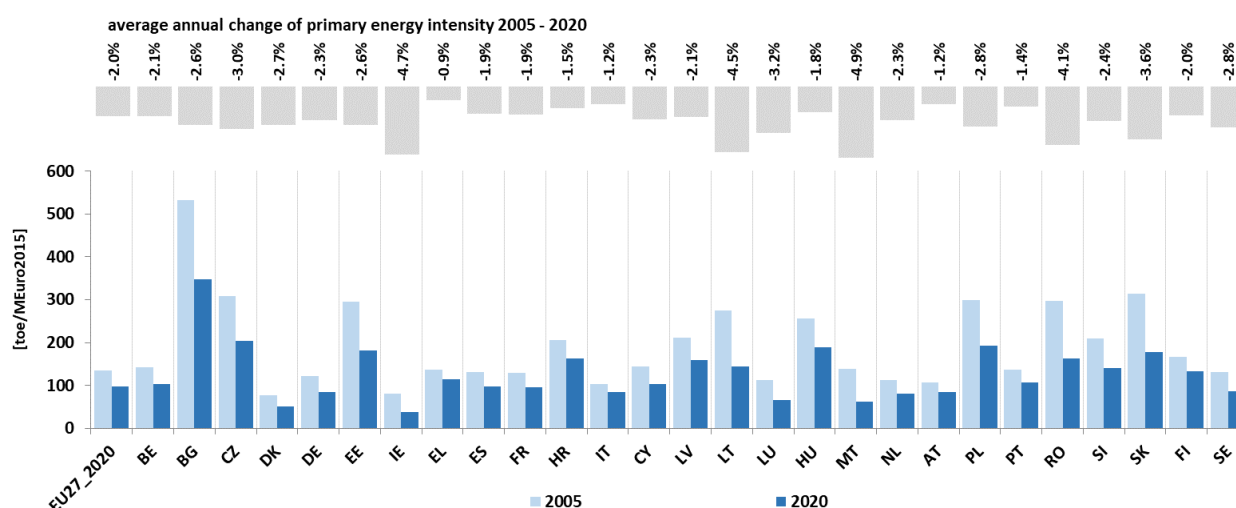
In 2020, only 3 Member States (Luxembourg, Finland and Sweden) were associated with primary energy consumption of over 4 toe per capita. In Croatia, Malta, Greece, Portugal and Romania consumptions was under 2 toe per capita, while the EU average stood at 2.8 toe per capita.

The only Member States with increases in primary energy consumption per capita between 2005 and 2020 were Latvia (+12%) and Poland (+11%). The biggest decreases (under -30%) were observed in Luxembourg, Malta and Greece.

In many countries, primary energy consumption per capita increased between 1990 and 2005 and then decreased between 2005 and 2020. The biggest difference was seen in Croatia, Spain, Hungary, Romania and France, where the consumption per capita increased over 25% between 1990 and 2005, then decreased by more than 10% in the period up until 2020. In other countries (Lithuania, Portugal), the picture was reversed: there was indeed a decrease in consumption per capita from 1990 to 2005, however this was followed by a further increase in the period up to 2020. The biggest difference in absolute terms was seen in Lithuania, where the consumption per capita decreased by 37% between 1990 and 2005 and then rose by 14% in the period up to 2020.

As shown in Figure 7, the EU primary energy intensity (PEC divided by GDP) has dropped by an average rate of 2.0% per year in the period 2005-2020. On average, all Member States significantly reduced their primary energy intensity in this period. Ireland, Lithuania, Malta and Romania reduced their intensity on average by more than 3% per year. In 2020 the largest drops compared to the previous year were observed in Ireland (-13.6%) and Luxemburg and Cyprus (-11.1% and -8.8% respectively).

**Figure 7.** Primary energy intensity trends and average annual change in 2005-2020



Source: Eurostat, JRC, 2022

### 3.2 Final Energy consumption

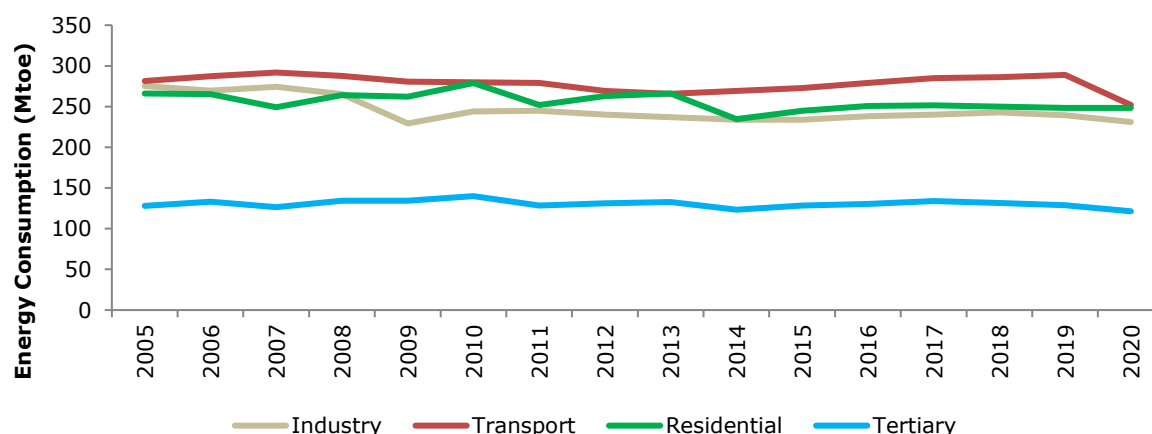
Final energy consumption (FEC)<sup>11</sup> in EU27 was 907 Mtoe in 2020, decreased by 8.0% compared to 2019, as a result of COVID-19 pandemics, which restricted the end-use activities and consequently the energy demand. Final energy consumption has increased slowly since 1995, reaching its highest value, 1046 Mtoe, in 2006. After that, the level remained relatively steady, until the first strong decrease, by 5.4% (with respect to the previous year), in 2009. In 2010, final energy consumption increased again, though in 2011, there was a decrease of 3.4%, whilst final energy consumption remained almost at the same level in the period 2012-2013. In 2014, final energy consumption decreased by 4.2% compared to the previous year. In the period 2015-2018, final energy consumption registered positive annual growth rates under 2.5%. In 2019, it remained almost stable. The final energy consumption in 2020 registered its lowest value during the studied period.

Figure 8 shows final energy consumption values per sector from 2005 to 2020. It can be observed how final energy consumption values in industry and residential sector have oscillated more markedly throughout the different years, while energy consumption of the transport and services sector has changed more gradually. The decreasing trends observed in tertiary and transport sector from 2019 to 2020 were – to a great extent – the result of the lockdown measures imposed to face COVID-19 pandemic, which restricted transport activities and encouraged teleworking.

<sup>11</sup> FEC 2020-2030 indicator of Eurostat

The breakdown of final energy consumption in 2020 by sector shows that transport accounted for the largest share (27.8%), followed by residential and industry (27.4% and 25.5% respectively). The service sector accounted for 13.4% whilst the other sectors were responsible for the remaining 2.7%.

**Figure 8.** Final energy consumption dynamics through main sectors in the EU27, 2005-2020.



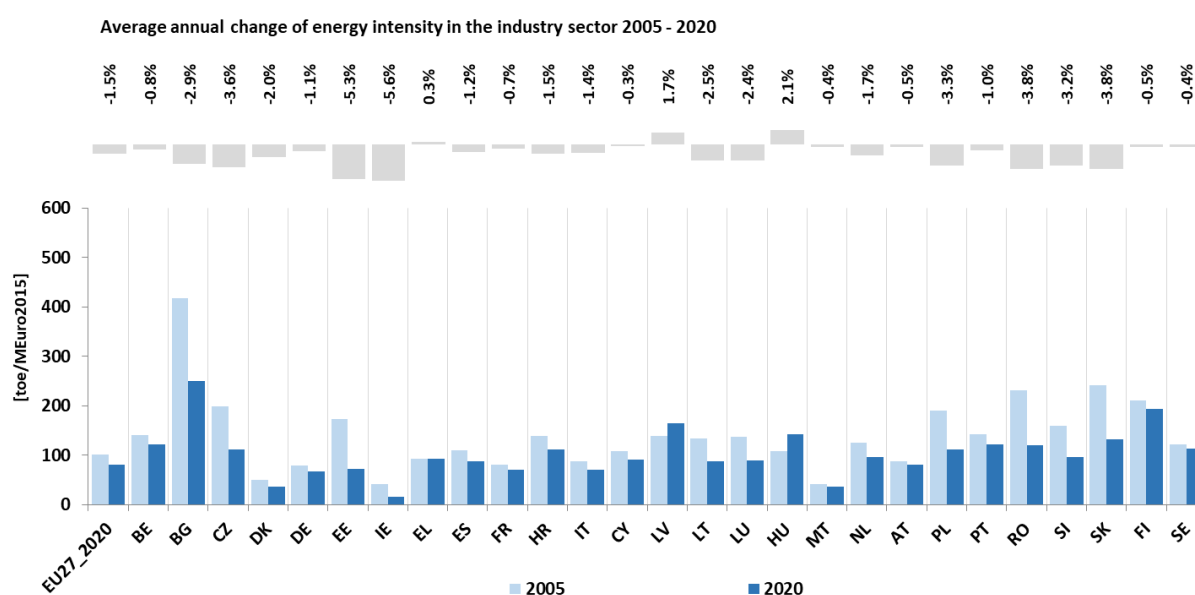
Source: Eurostat, JRC, 2022

### 3.2.1 Industry

The previously mentioned final energy consumption decrease of 2009 was sharpest in industry (-13.6%), which was partially compensated in 2010 (+6.4%). After the decrease in the period 2011-2015 (-0.9% on average), the final energy consumption slightly increased in the years 2016 (+1.8%), 2017 and 2018 (+1.0% in both years) compared to the previous years. On the contrary, in 2019 and 2020 presented negative rates (-1.3% and -3.4% respectively).

In terms of industry final energy intensity of industry sector (FEC divided by GVA<sup>12</sup>) in 2020 there is still a significant difference between the most energy intensive Member State, Bulgaria (249.9 toe/M€), and the least energy intensive one: Ireland (15.3 toe/M€). Most Member States however decreased energy intensity in industry in 2020 compared to 2005, the exceptions being Hungary, and Latvia.

**Figure 9.** Final energy intensity trends in industry and average annual change in 2005-2020.



Source: Eurostat, JRC, 2022.

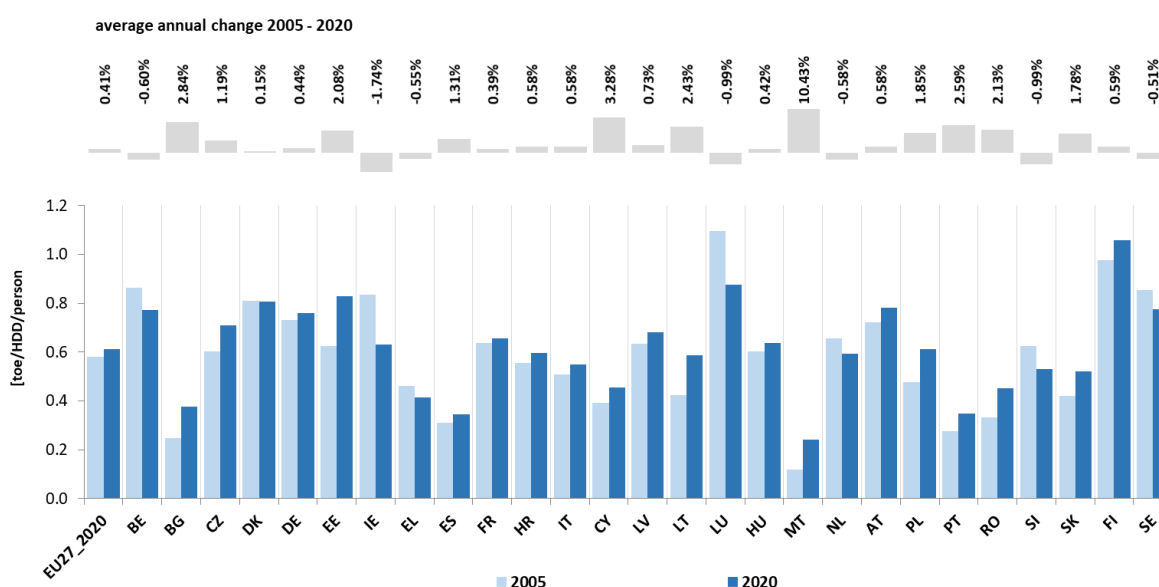
<sup>12</sup> Gross Value Added

### 3.2.2 Residential

The final energy consumption of the EU27 residential sector decreased slightly in 2009, increased by nearly 7% in 2010, and decreased substantially in 2011 (-9.7%). In the period 2011-2013 a small recovery was registered (around +6%), while in 2014 another significant decrease was recorded (-11.8%). 2015 data show an increase of 4.5%, the data for 2016 show an increase of 2.4% compared to the previous year, the last data for 2017 show a slight increase by 0.3% while the data for 2018 and 2019 show reductions by 0.8% and 0.6% respectively. In 2020, residential energy consumption remained stable compared to 2019, contrary to other main economic sectors which have presented decreases. This is probably the result of increased teleworking activities due to COVID-19 pandemic. Residential final energy consumption remains abundantly below the figure of 2005 (248.2 Mtoe vs 266.3 Mtoe, representing a decrease of -6.8%). This might reflect the efficiency improvements occurred in the last decade, but also the influence of the annual climatic variations on this indicator. The reduction in the HDD normalised final energy consumption<sup>13</sup> over the period 2005-2020 is -8.5%.

Taking also population into account, it can be seen that EU27 increased its final energy consumption per capita on annual average by 0.4% (see Figure 10). The biggest average annual improvements (under -0.9%) are in Ireland, Slovenia and Luxembourg.

**Figure 10.** Climate-normalised residential final energy consumption per capita and average annual change in 2005-2020.



Source: Eurostat, JRC, 2022.

### 3.2.3 Services

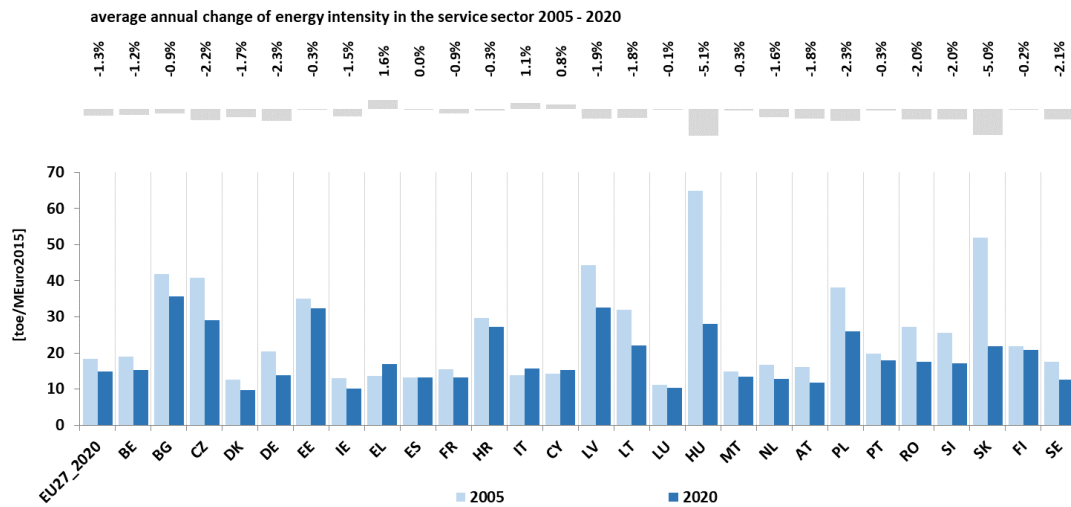
Similarly to residential, the FEC of the EU27 service sector increased by 4.2% in 2010, and then decreased by 8.4%. In the period 2011-2013 a small increase was registered (almost +3.95%), while in 2014 another decrease was recorded (-7%). Data of 2015, 2016 and 2017 show increases of 4.2%, 1.3% and 2.9% respectively, while last data for 2018 show a decrease by -1.7%. More profound decreases recorded in 2020 (by -2.3% and -5.6% respectively). The decrease in 2020 was the result of reduced use of tertiary sector buildings due to lockdown measures and increase of teleworking.

As shown in Figure 11 EU27 has improved the energy intensity of its service sector (FEC divided by GVA<sup>14</sup>) annually on average by 1.3 % over the period 2005-2020. The highest improvements (under 4.5%) happened in Hungary, and Slovakia, in this period.

<sup>13</sup> For this calculation the average heating degree days of the reference period 2005-2020 are taken into account.

<sup>14</sup> Gross Value Added

**Figure 11.** Final energy intensity in the services sector and average annual change in 2005-2020.



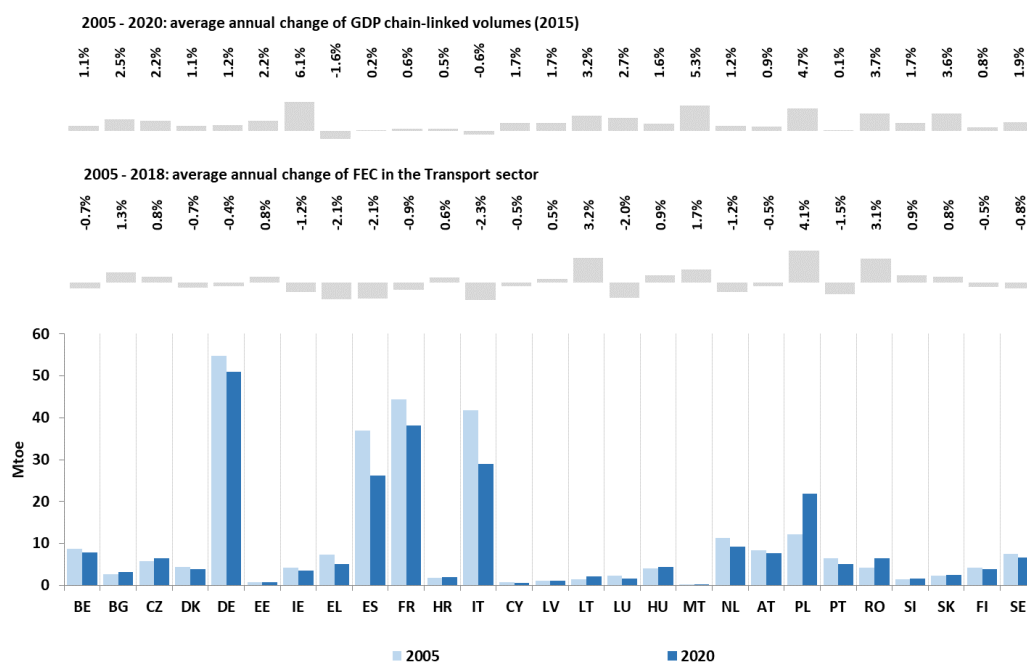
Source: Eurostat, JRC, 2022.

### 3.2.4 Transport

In the last year a sharp decrease in the FEC of the transport sector has been registered (by -12.8%) as a result of COVID-19 crisis and lockdown measures which restricted the transport activities. Transport FEC decreased from 282 Mtoe in 2005 to 252 Mtoe in 2020 (on average the annual decrease was 0.6% in the period 2005-2020).

Comparison between Member States should be undertaken with caution because final energy consumption is based on the fuels sold rather than on the fuel used on the territory of a country. Therefore, factors other than energy efficiency come into play (e.g. the degree to which a given Member State is a 'transit country' for road transport or a hub for aviation). As shown in Figure 12, 11 Member States increased their consumption in this sector on average in 2005-2020. The rest of the countries managed to slightly decrease their consumption. With a parallel increase in GDP a decrease in energy consumption could be a sign of increased energy efficiency. This is the case of 13 countries (Bulgaria, Denmark, Germany, Ireland, Spain, France, Cyprus, Luxemburg, the Netherlands, Austria, Portugal, Finland, Sweden).

**Figure 12.** Final energy consumption in the transport sector and average annual change in 2005-2020.



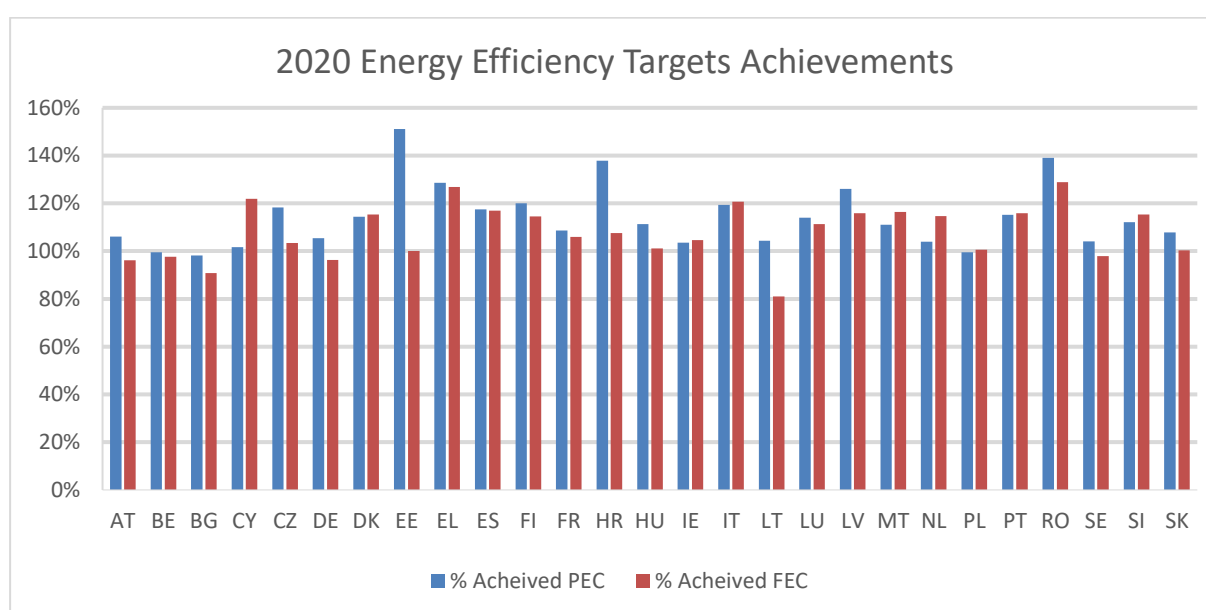
Source: Eurostat, JRC, 2022.

## 4 Achievement of the 2020 Energy Efficiency targets

Figure 13 shows that from the MSs with available reported data, 24 have achieved their primary energy target under Art.3 while 21 have achieved their final energy consumption target. Ireland reported primary energy consumption figures. The Member States that did not achieved their primary energy targets are: Belgium, Bulgaria and Poland. The Member States that did not achieved their final energy targets are: Belgium, Bulgaria, Germany, Lithuania, Austria, and Sweden.

Among the reasons reported from Member States for non-achievement of the targets, there are: increase of population, increase of economic activities or economic growth, increase of the transport volume, overestimated projection or increased ambition. On the other hand, among the factors influenced the achievement of the targets we can find: effect of COVID-19 pandemic, implementation of energy efficiency measures and improvements, favourable climatic conditions, increased electricity production from renewable sources.

**Figure 13.** FEC and PEC Targets achieved in percentage.



Source: 2020 Targets Reporting, DG Energy Website, National and Energy Climate Plans 2020 and Eurostat, JRC, 2022

To allow for better comparability, Figure 13 and Table 3 have been completed based on Eurostat data. Table 3 highlights the discrepancies in reported values between Member State Reporting and Eurostat data. More analytically, when a Member States does not provide figures for PEC and FEC, information is highlighted in light blue. When a Member States provides a lower figure than the one of Eurostat, respective information is highlighted in red. Finally, When a Member States provides a higher figure than the one of Eurostat, respective information is highlighted in yellow. More information for Member State reporting on PEC and FEC 2020 figures can be found on Annex 2 of this report.

When targets are missing from MS report or when the reporting was not clear<sup>15</sup>, they have been completed with information extracted from Member States National Energy and Climate Plans or from DG Energy Website<sup>16</sup>. The figures are all expressed -converted, when necessary - in Mtoe. The results of this exercise are shown in table 3.

<sup>15</sup> Reported target for France does not include international aviation. For consistency reasons, international aviation has been estimated and included in the targets of the following table. EE targets have been extracted from the EE National Energy and Climate Plan, as they report that target has not been changed.

<sup>16</sup> See the full table at DG ENER website: [https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-targets\\_en#the-2020-targets](https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-targets_en#the-2020-targets)

**Table 3** FEC and PEC Targets achievement – full table (Mtoe)

MS	PEC	PEC Target	% Acheived PEC	FEC	FEC Target	% Acheived FEC
BE	43.9	43.7	99.54%	33.3	32.5	97.60%
BG	17.2	16.9	98.13%	9.5	8.6	90.82%
CZ	37.5	44.3	118.25%	24.5	25.3	103.42%
DK	15.3	17.5	114.35%	13.1	15.2	115.36%
DE	262.3	276.6	105.45%	201.7	194.3	96.35%
EE	4.3	6.5	151.16%	2.8	2.8	100.00%
IE	13.4	13.9	103.51%	11.2	11.7	104.66%
EL	19.2	24.7	128.65%	14.5	18.4	126.90%
ES	105.0	123.4	117.52%	73.8	86.3	116.91%
FR	208.4	226.4	108.64%	130.1	137.9	106.00%
HR	7.8	10.7	137.89%	6.5	7.0	107.55%
IT	132.3	158.0	119.41%	102.7	124.0	120.70%
CY	2.2	2.2	101.60%	1.6	1.9	121.84%
LV	4.3	5.4	126.04%	3.9	4.5	115.85%
LT	6.2	6.5	104.39%	5.3	4.3	81.01%
LU	3.9	4.5	113.97%	3.8	4.2	111.29%
HU	23.9	26.6	111.36%	18.0	18.2	101.06%
MT	0.7	0.8	111.05%	0.5	0.6	116.39%
NL	58.4	60.7	103.89%	45.5	52.2	114.66%
AT	29.7	31.5	106.06%	26.1	25.1	96.18%
PL	96.9	96.4	99.53%	71.1	71.6	100.64%
PT	19.5	22.5	115.15%	15.0	17.4	115.85%
RO	30.9	43.0	139.09%	23.5	30.3	128.86%
SI	6.3	7.1	112.09%	4.4	5.1	115.32%
SK	15.2	16.4	107.86%	10.4	10.4	100.28%
FI	29.9	35.9	119.96%	23.3	26.7	114.59%
SE	41.7	43.4	104.06%	30.9	30.3	97.84%

Source: JRC elaboration on MS reporting 2022; Eurostat, 2022

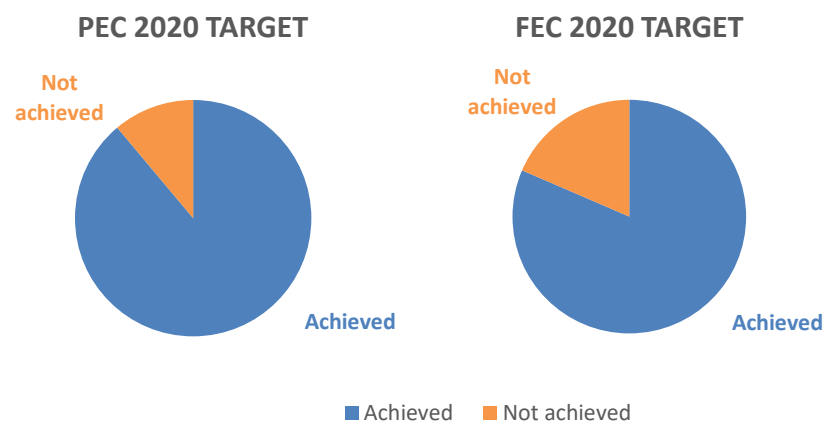
It is possible to see that 24 of the 27 Member States achieved their 2020 PEC target, while 21 achieved their 2020 FEC target (see Figure 14).

Only in two cases<sup>17</sup>, the Member States missed both PEC and FEC targets and the magnitude of the mismatches is in general limited. The difference is on average of 0.9% for missed PEC target and 6.7% for missing FEC target.

The overachievements exceeded the missed targets, as shown in figure 15 for PEC as well as for FEC.

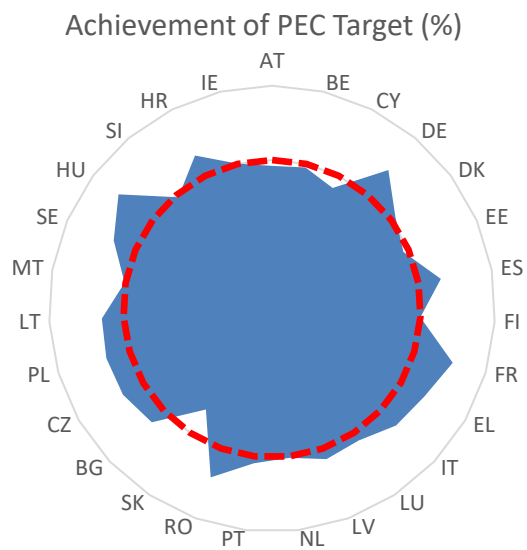
<sup>17</sup> Bulgaria and Belgium

**Figure 14.** Achievement of PEC and FEC 2020 Targets



Source: JRC elaboration on MS reporting, 2022; Eurostat, 2022

**Figure 15.** Difference from 2020 targets in PEC (%)



Source: JRC elaboration on MS reporting, 2022; Eurostat, 2022

## 5 Evolution in the short-term

Despite the positive trend over the period 2005-2020, and the general decrease of energy consumption in 2018 compared to the previous year due to COVID-19 pandemic, some increases have also been recorded. Table 4 shows the short-term trend of the energy consumption in 2020 with respect to 2019. A colour-code system was used to define these trends: red for an increase of at least 1% with respect to 2019, green for a decrease of at least 1% and light pink for stable trend (a change within the range of  $\pm 1\%$ ). For comparability reasons, the data used to assess these trends are derived from EUROSTAT.

All Member States have experienced decreases in total final energy consumption. Only Lithuania's primary consumption remained almost stable (decreased by 0.8%). The largest decreases in primary energy consumption recorded in Malta (-15.1%), Greece (13.7%) and Cyprus (13.3%) while the largest decreases in final energy consumption happened in Malta (-21.8%), Cyprus (-16.7%) and Spain (-14.7%).

**Table 4** Trends in consumption in key sectors at national level in the period 2019-2020.

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

Source: Eurostat, JRC, 2022.



The sector with the most significant final energy consumption decreasing trend from 2019 to 2020 is noted as the transport sector with a 12.8% decrease at the EU level. To note that data for 2020 are not indicative for the whole period, as they are significantly influenced by COVID-19 crisis. That's why, all the Member States reported drops in the final energy consumption of the transport sector from 2019 to 2020. Largest drops were noted in Luxembourg (-22.5%), Spain (-20.6%), Italy (-19.2%).

Energy consumption in the services sector experienced the second largest drop after the transport sector, with the EU annual decrease of 5.6% in 2020 compared to 2019. All countries experienced a drop or maintain stable levels of services energy consumption. The most significant reduction rates are observed in Bulgaria and Cyprus (-14.8% both of them), followed by Greece (-10.9%).

Industry sector has registered also decrease in final energy consumption levels (by -3.4%) while final energy consumption in residential sector remained stable at EU level (+0.01%). At Member State level, 7 countries reporting a decrease of the final consumption of residential sector while 17 countries reporting a decrease of final consumption of industry sector. The largest decreases were observed in Latvia and Finland (-6.1% both), and France (-2.3%) for households while Estonia (-11.2%), Slovakia (-9.4%) and Lithuania (-8%) for industry.

When residential and service energy consumptions are corrected for climate variations, a worsening is observed for all the Member States except Austria, Bulgaria, Croatia, Czechia, Greece, Hungary, Ireland, Poland, Romania, Slovakia and Slovenia. This means that the variation over the 2019-2020 periods goes from negative (without climatic correction) to positive or stable or that the decrease rate becomes lower or that the growth rate become higher.

As requested, Member States must analyse sectors where energy consumption remains stable or is growing year by year, and provide possible explanations for that. This has been done by almost all countries, but often without the support of in-depth analyses. The reasons mainly indicated for growing or stable consumptions are summarised in **Table 5** Main reasons provided by Member States (sorted from high to low recurrences) to justify growing or stable final energy consumptions over the period 2019-2020 and **Annex 3** shows all the explanations provided in the Annual Reports 2020.

**Table 5** Main reasons provided by Member States (sorted from high to low recurrences) to justify growing or stable final energy consumptions over the period 2019-2020

Sector	Reasons
Industry	Economic growth. Increase of value added.
Residential	Increase of the population or the number of households. Exceptional event. Increase of teleworking. Increase of disposable income of households.
Services	Economic growth. Increase of value added. Increase of employment.

Source: 2020 reporting, JRC, 2022.

To contextualise the explanations provided by Member States, the JRC carried out index decomposition analysis, with the aim to identify and quantify possible driving factors of and their contributions to the latest energy consumption trends in the EU.

Figure 16 provides a breakdown of the additive decomposition results in the residential sector in the selected Member States in the period 2019-2020, expressed as share of 2020 consumption levels. The 2020 results are undoubtedly influenced by the covid-19 pandemic crisis. This exceptional situation has led to an increase in the energy consumption in the residential sector due to the increased time spent by people at home (lockdown and teleworking). At the EU level, the combined impact of weather and wealth<sup>18</sup> effects offset both the overall positive population and intensity effects. While trends vary from country to country, the MS results also suggest that weather and wealth effects were two important factors restricting energy consumption growth in many countries. Intensity<sup>19</sup> gains drove up consumption in all Member States Latvia, Austria, Poland, Lithuania, Slovenia, Slovakia and Czechia. Warmer winter conditions in 2020 with respect to 2019 exerted a limiting force on consumption in most of the Member States considered (with the exception of Bulgaria, Czechia, Ireland, Croatia, Hungary, Slovenia, Slovakia, Poland, Greece, Austria, and Romania). While the population effect had a milder impact compared to the weather effect, it also had a limiting role in 7 countries (Bulgaria, Croatia, Greece, Italy, Latvia, Poland, and Romania). The wealth effects linked to growth of per capita floor area and disposable income exerted an opposite force in 14 of the countries considered (Belgium, Czechia, France, Ireland, Lithuania, Latvia, Luxembourg, The Netherlands, Austria, Poland, Slovenia, Slovakia, Finland, and Sweden); that is, it drove up consumption.

**Figure 16.** Contribution of different effects on the variation of the residential FEC over the period 2019-2020.

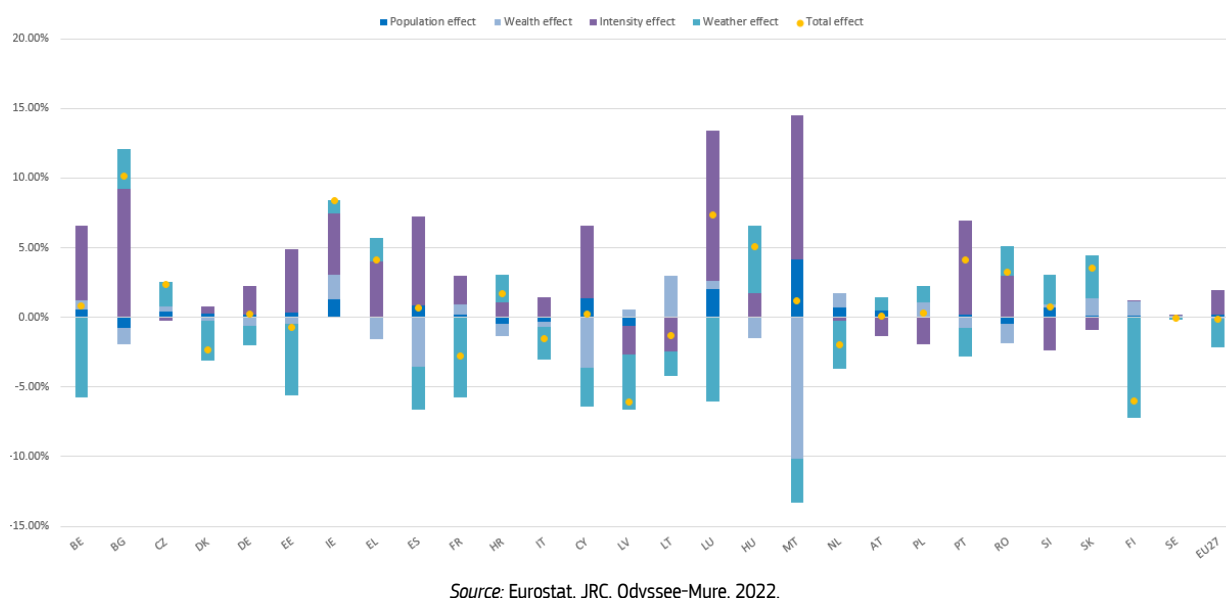


Figure 17 provides a breakdown of the additive decomposition results in the productive sectors (industry, services and agriculture) in the selected Member States in the period 2019-2020. At the EU level, the activity effect is driving the decrease of final energy consumption; however, breaking down this effect into labour productivity (GVA/hours worked) and employment effect (hours worked) we observe that only the latter effect is responsible for the energy consumption decrease in 2020. On the contrary, the intensity effect highlights an increase in the final energy consumption, whereas the structural effect is negligible at the EU level.

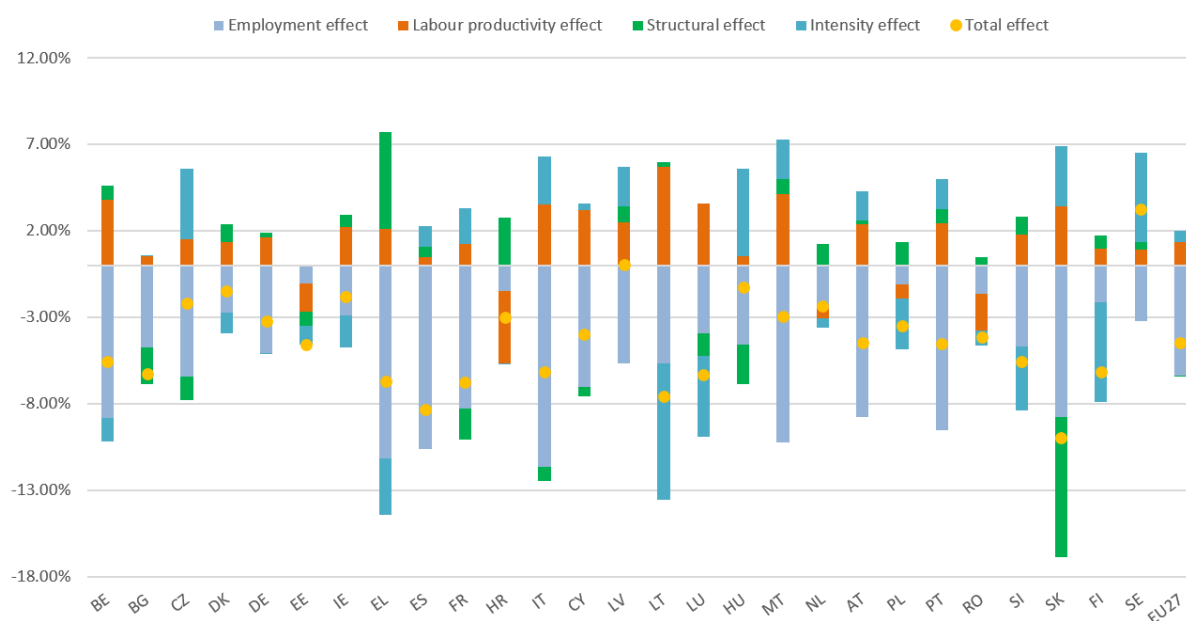
As already observed at EU level, the employment effect represents the most important driving factor in decreasing the Member States energy consumption. These results can be explained bearing in mind the exceptional circumstances that each Member State faced in managing the Covid-19 pandemic crisis. Even if each State handled the Covid-19 crisis in different ways, it cannot be ruled out that more or less rigid lockdowns led to a drastic reduction in working hours as well as an increase in unemployment (even if temporary). On the contrary, the labour productivity effect is positive for most of the Member States, with the exception of Estonia, the Netherlands, Poland, and Romania. The structural effect results highlight a shift from sub-sectors of higher energy intensity towards those of lower intensity in 8 countries (Bulgaria, Czechia, Estonia, France, Italy, Cyprus, Luxembourg, and Slovakia), with a remarkable result for Slovakia. Finally, the intensity effect played an inhibiting role on the energy consumption for 9 countries (Belgium, Denmark, Estonia, Greece, Luxembourg, the Netherlands,

<sup>18</sup> Total floor area (TFA)/population or gross domestic income (GDI)/population. It reflects changes in energy consumption due to changes in the wealth represented by the total floor area of dwellings (TFA) per capita for the heating end use and gross disposable income in purchasing power standard (GDI) per capita for all other end uses.

<sup>19</sup> The intensity effect is calculated as the ratio between final energy consumption and total floor area (TFA)/gross disposable income (GDI) of the residential sector.

Poland, Romania, and Finland). In contrast, the others have experienced an increase in the final energy consumption per value added in monetary terms.

**Figure 17.** Contribution of different effects on the variation of the productive sectors FEC over the period 2019-2020.

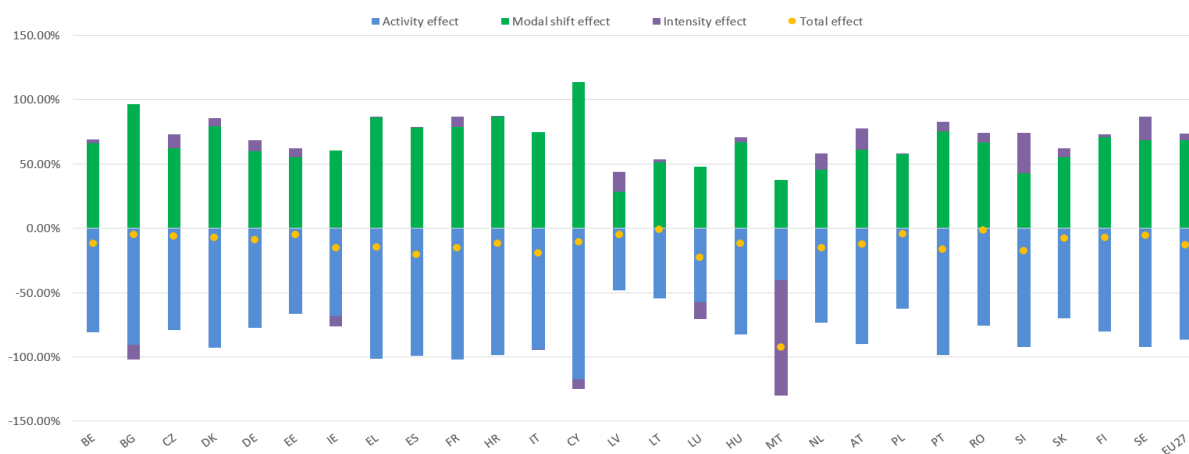


Source: Eurostat, JRC, 2022.

Figure 18 provides a breakdown of the additive decomposition results in the transport sectors in the 27 Member States in the period 2019-2020.

At the EU level, as well as for each Member State, the decrease in the energy consumption was driven by the activity effect, mainly as a result of the mobility restrictions due to the pandemic crisis that almost zeroed passenger transport volumes. The fall of activity effect has been observed in all the sectors (passenger, freight and air transport) and in all the 27 Member States, whereas intensity effect has inhibited the consumption only in freight transport. At the EU level and for 17 Member States, the intensity effect increased in 2020. Finally, modal shift effect<sup>20</sup> contributed in driving up the consumption in all member states.

**Figure 18.** Contribution of different effects on the variation of the transport sectors FEC over the period 2019-2020.



Source: Eurostat, JRC, Odyssee-Mure, OECD, 2022.

<sup>20</sup> A modal shift occurs when the shares in activity among different modes change, for example when more passengers decide to use trains instead of cars, or freight is moved through rail instead of trucks. A modal shift can also be considered as efficiency, as the transport system might be used more efficiently even though the specific vehicle efficiency may not have improved (IEA, 2014).

## 6 Progress towards implementation of EED provisions

### 6.1 Overview of policy updates in 2020

Member States were required to report updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020.

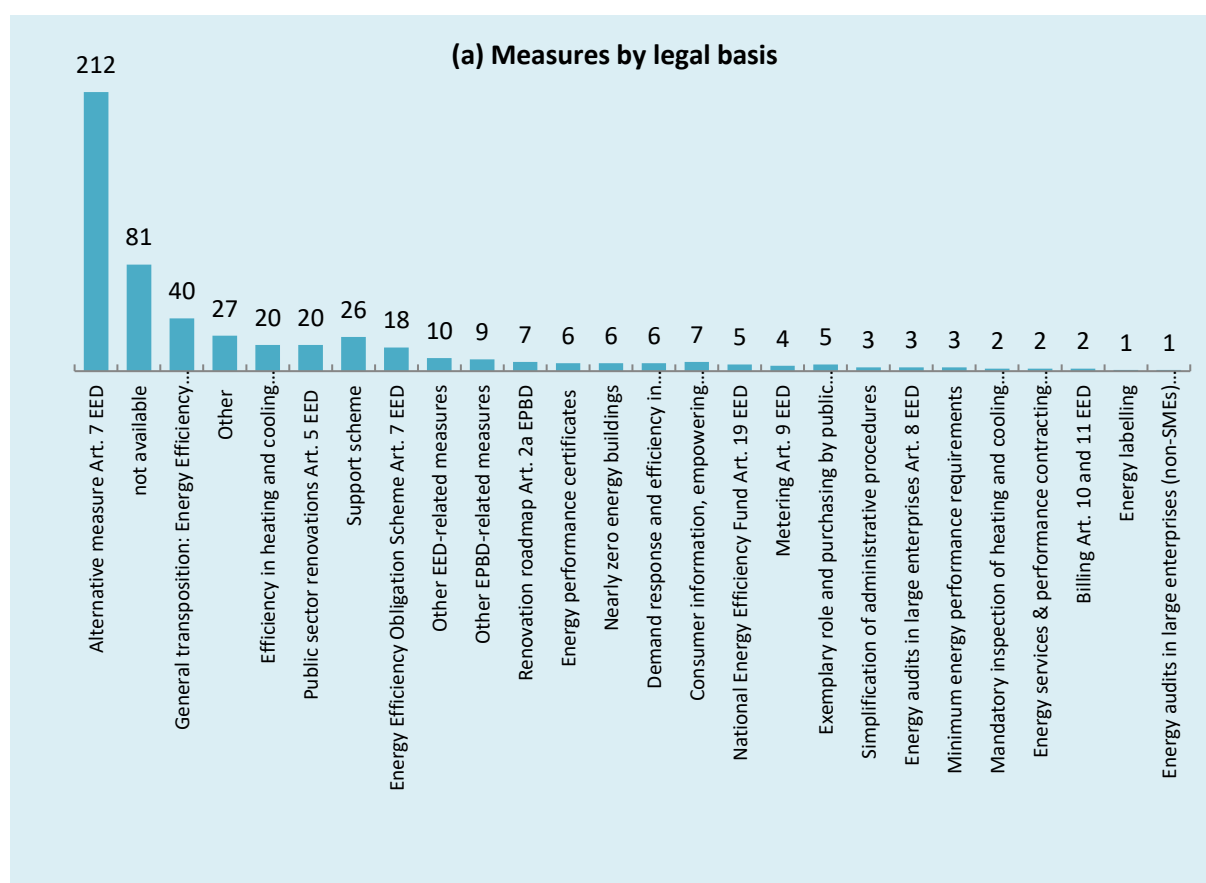
In 2020 Targets Reporting, all the Member States except Lithuania<sup>21</sup> and Finland<sup>22</sup> communicated their measures.

In total 526 measures were reported by Member States. As shown in Figure 19, the majority of the updates concerned alternative measures under Article 7 (40.3%), measures under not-specified legal basis (15.4%), and General Transposition EED (7.6%).

In terms of policy types, the vast majority of policies were "Economic" (24.1%), and "Regulatory" (21.3%) (see Figure 20). These were followed by "not available" (19.4%), "Fiscal" (18.8%), "Information" (4.9%), "Voluntary/negotiation agreements" (3.4%), "Planning" and "Research" (3.0% and 2.3% respectively). Finally, "Other", "Support Schemes" and "Education" covered the remaining 2.7% of total measures.

As shown in Figure 21, the largest part of the measure updates (36.7%) concerned continuation of existing measures. Measures with not-specified update covered the 22.6% of total measures, while the 17.5% of the measure updates regarded adoption of new measures, conclusion of agreements, publications of legislation, commencement/enforcement of measures/programmes.

**Figure 19.** Summary of measures reported by type of legal basis.

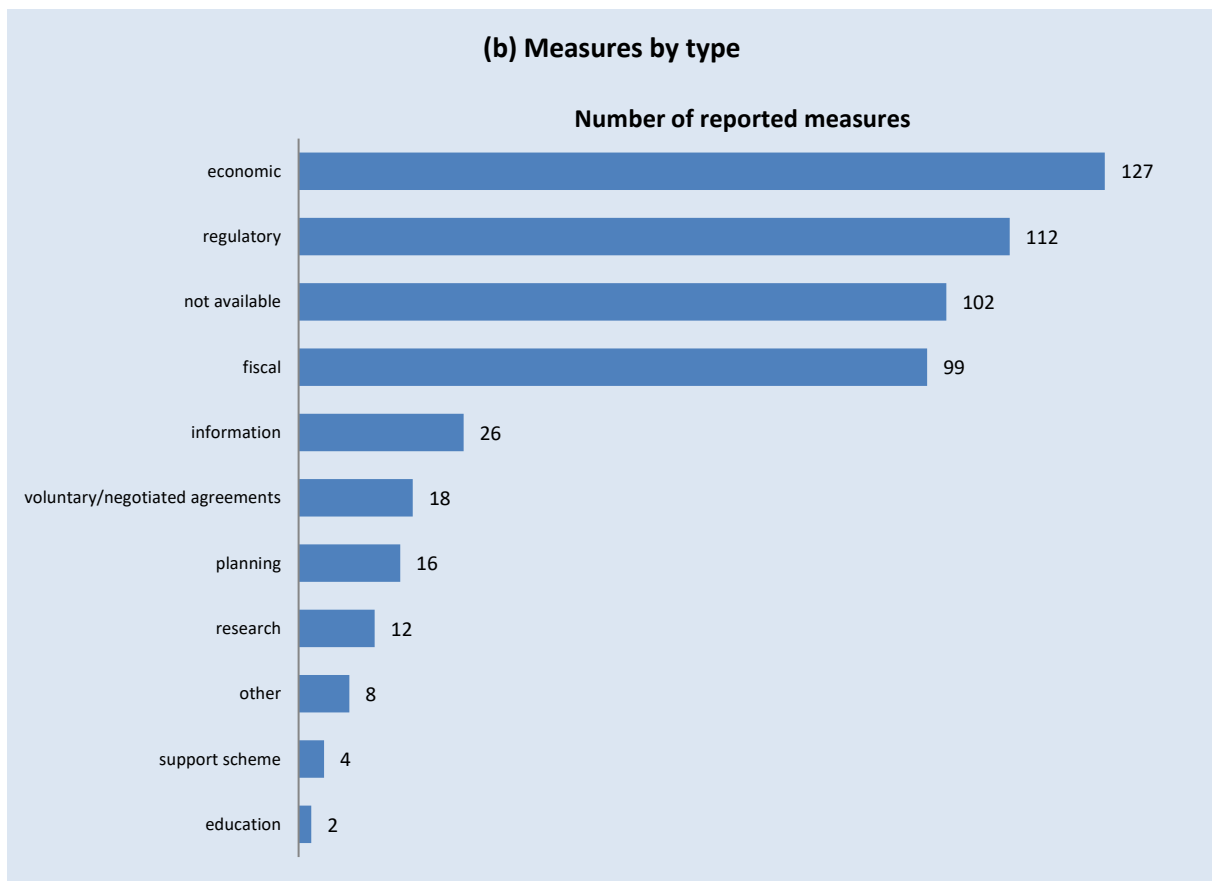


Source: 2020 Reporting, JRC, 2022

<sup>21</sup>Lithuania reported measures for 2021

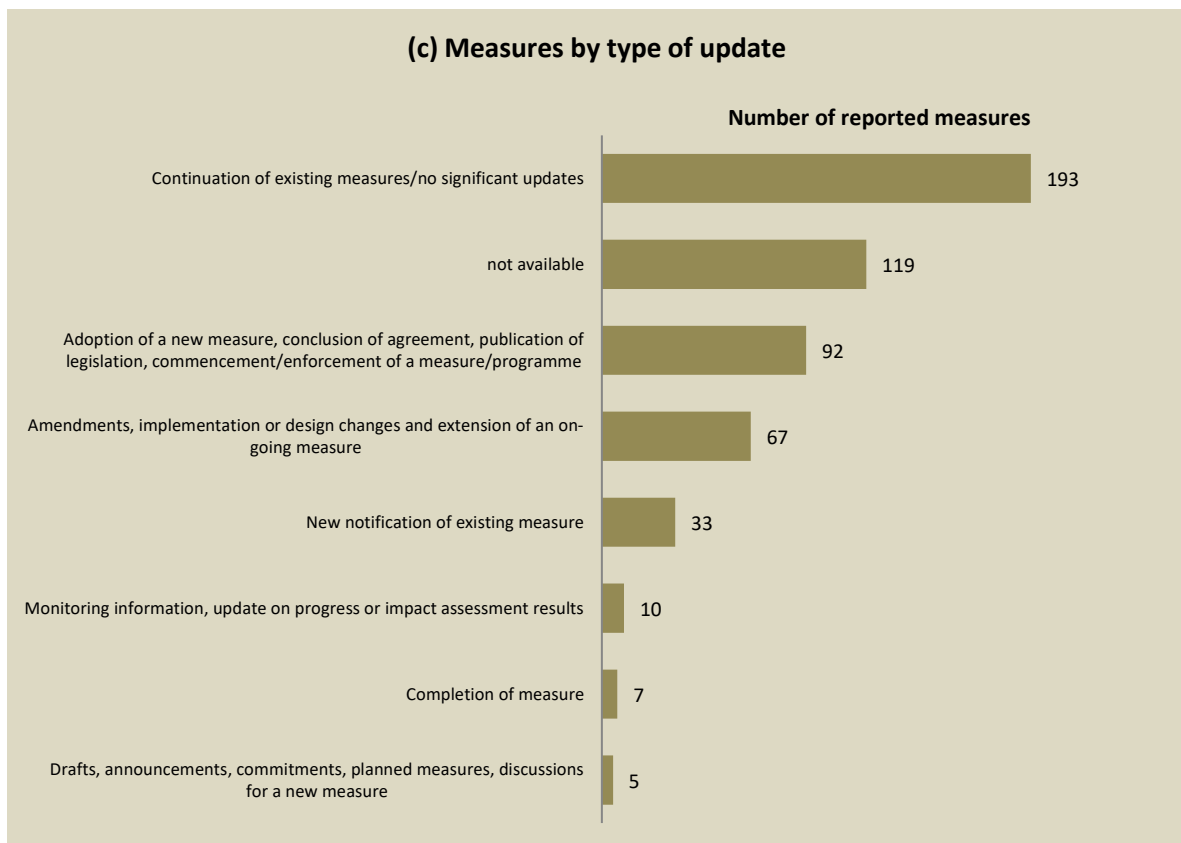
<sup>22</sup> Finland reported that "In 2019 and 2020, no new EE measures have been introduced to close the GAP or for EED Art. 7 implementation. Finland achieved 2020 EED Art. 3 and Art. 7 targets."

**Figure 20.** Summary of measures by type



Source: 2020 Reporting, JRC, 2022

**Figure 21.** Summary of measures reported in Annual Reports 2020 by type of update.



## 6.2 Progress towards Article 7 in 2020

With regards to EED Article 7, a number of Member States notified updates on their Energy Efficiency Obligations Schemes (EEOSs) (Article 7(1)) and alternative policy measures (Article 7(9)) in their Annual Reports.

Table 6 provides a summary of the latest Article 7 implementation status. It provides an overview on the approach used by each Member State (i.e. obligation scheme and/or alternative measures) and the total amount of cumulative savings required by the end of 2020 per each Member State. The actual progress made is presented in terms of:

- A. savings achieved from new actions implemented in 2020
- B. savings achieved in 2020, from new actions implemented in 2020 and from actions implemented in 2014, 2015, 2016, 2017, 2018, 2019 and 2020 that continue delivering savings in 2020;
- C. cumulative savings achieved over the period 2014-2020.

Where applicable the progress is also expressed as a ratio of savings achieved from new actions implemented in 2020 (A) and of the cumulative savings achieved over the period 2014-2020 (C) against the expected annual savings on the basis of a linear delivery. In addition, the last column provides the share of cumulative savings (C) against the national cumulative savings requirement due by the end of 2020. As represented in Figure 22, the linear delivery (taken as reference) assumes that the new actions implemented every year (from 2014) achieve 1/28 of the total savings requirements to be achieved by the end of 2020.

The same colour-code system as above was used to highlight the level of the achievement in 2020: green indicates countries which fully reached or exceeded their expected savings for 2020, yellow denotes countries which fell short of their 2020 expected savings by up to 50% and red indicate countries which fell short by more than half.

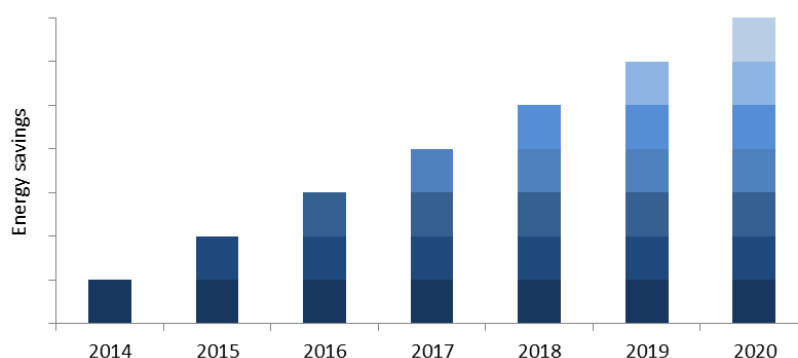
**Table 6.** Article 7 implementation status based on latest information available (reported values are in final energy).<sup>23</sup>

MS	Implementation approach		Total cumulative savings requirement in 2014-2020 under Article 7 [ktoe]	Progress made in 2020					
	Obligation schemes	Alternative measures		Savings achieved from new actions implemented in 2020 [ktoe]	Savings achieved from new actions implemented in 2020 against expected annual average savings on the basis of	Savings achieved [ktoe] in 2020 (amount of savings from new actions implemented from 2014 to 2020 that	Cumulative savings achieved over the period 2014-2020 [ktoe]	Cumulative savings achieved over the period 2014-2020 against expected average savings on the basis of linear delivery [%]	Share of savings achieved until 2020 against total cumulative savings requirement in 2014-2020 [%]
EU27			202489	11330	138%	43309	197554	98%	86%
BE		✓	6759	221	91%	1519	6815	101%	101%
BG	✓	✓	1942	39	57%	386	1785	92%	92%
CZ		✓	4882	201	115%	928	3459	71%	71%
DK	✓		3841	103	75%	1368	5821	151%	151%
DE		✓	41989	2691	179%	8173	36812	88%	88%
EE		✓	610	108	496%	133	790	130%	130%
IE	✓	✓	2164	89	115%	652	2627	121%	121%
EL	✓	✓	3333	224	188%	551	2450	73%	73%
ES	✓	✓	15979	727	127%	3776	15207	95%	95%
FR	✓		31384	1639	146%	9156	35757	114%	114%
HR	✓	✓	1296	13	28%	n.a.	n.a.	n.a.	n.a.
IT	✓	✓	25502	832	91%	5464	23239	91%	91%
CY		✓	242	63	731%	78	325	134%	134%
LV	✓	✓	851	110	363%	212	898	106%	106%
LT		✓	1004	114	319%	253	1115	111%	111%
LU	✓		515	20	106%	81	267	52%	52%
HU		✓	4001	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
MT	✓	✓	67	6	262%	17	78	117%	117%
NL		✓	11512	749	182%	749	16043	139%	139%
AT	✓	✓	5200	760	409%	2096	10309	198%	198%
PL	✓	✓	14818	270	51%	2517	10473	71%	71%
PT		✓	2532	227	251%	610	1885	74%	74%
RO		✓	5511	n.a.	n.a.	461	165	3%	3%
SI	✓	✓	945	54	159%	261	913	97%	97%
SK		✓	2284	52	63%	613	2550	112%	112%
FI		✓	4213	522	347%	1761	7831	186%	186%
SE		✓	9114	1496	460%	1496	9940	109%	109%

Source: 2020 REPORTING, JRC 2022.

<sup>23</sup> The energy savings reported in ARs of taxation measures have been adjusted to have a lifetime of 1 year unless otherwise have been clarified.

**Figure 22.** Example of linear delivery of the total cumulative savings requirement under Article 7.



At EU level, 14 of the Member states have achieved their cumulated target over the period 2014-2020 (C). Good partial results achieved by Finland, Denmark and Austria are to be emphasised as they have overachieved their cumulative target for more than 50%. On the other side, 6 Member States (Luxembourg, Poland, Greece, Portugal, Romania and Czechia) seem to be far away from their savings requirements as they have missed their target for more than 25%.

A variety of policy measures were used by Member States to generate the energy savings claimed under Article 7 in 2020. The breakdown of the savings achieved from new actions in per type of policy measure is shown in Figure 23. Here the measures have been grouped into the following 6 categories:

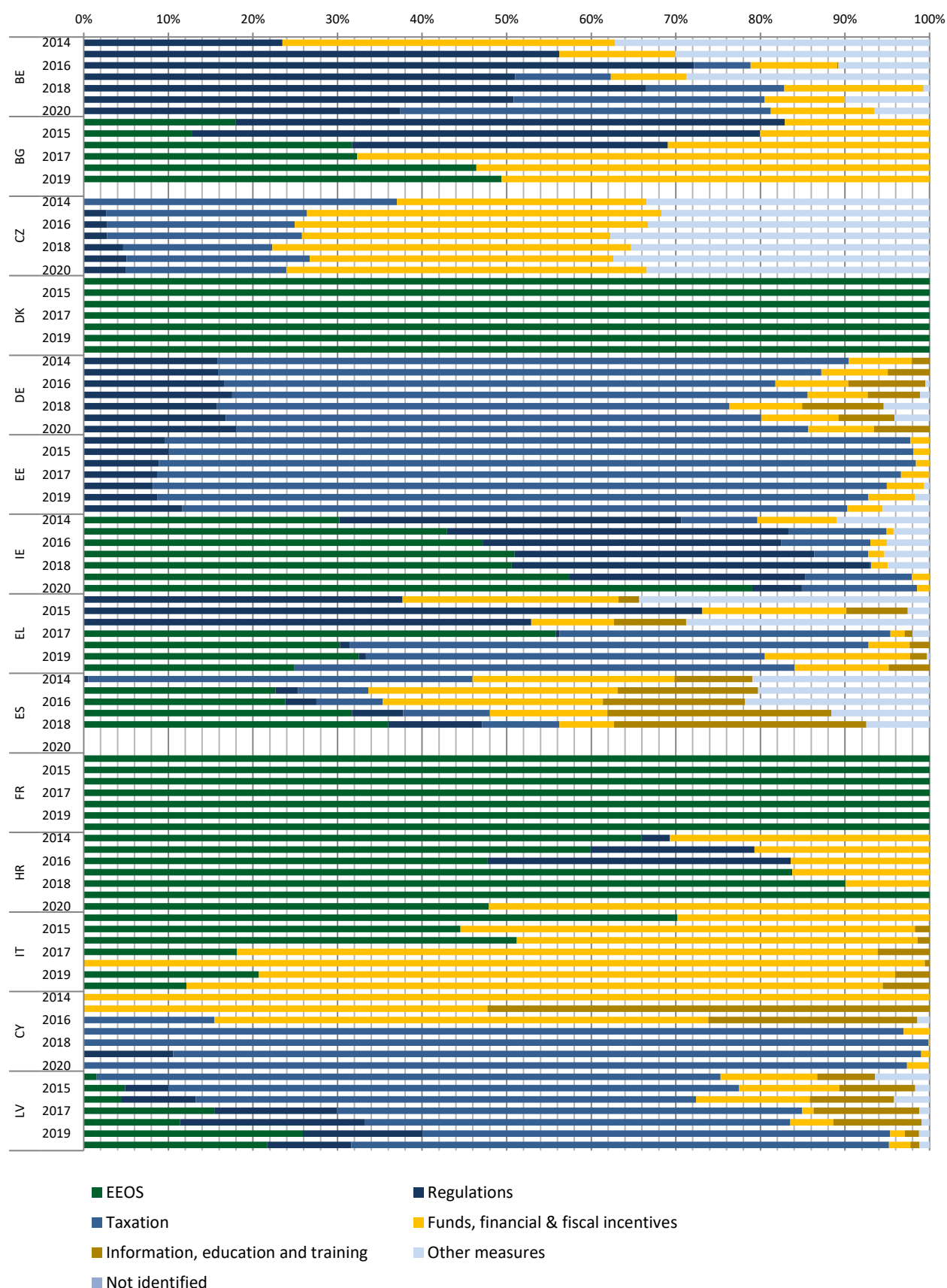
- energy efficiency obligation schemes (EEOS);
- regulations;
- taxation;
- funds, fiscal and financial incentives;
- information, training and education;
- other measures.

The figure about the savings achieved from new actions implemented in 2020 (A) is not available for 2 Member States (Romania and Hungary). In addition, the Netherlands has been removed from the final figures, as they include negative savings due to double counting. Of the rest, 14 Member States either partially or fully generated their 2020 savings through the implementation of EEOS: Bulgaria, Denmark, Croatia, Italy, Ireland, Latvia, Greece, Spain, France, Luxemburg, Malta, Austria, Poland, and Slovenia. In absolute terms, the savings generated by the EEOSs represent the 23.7% of the Article 7 savings at the EU level.

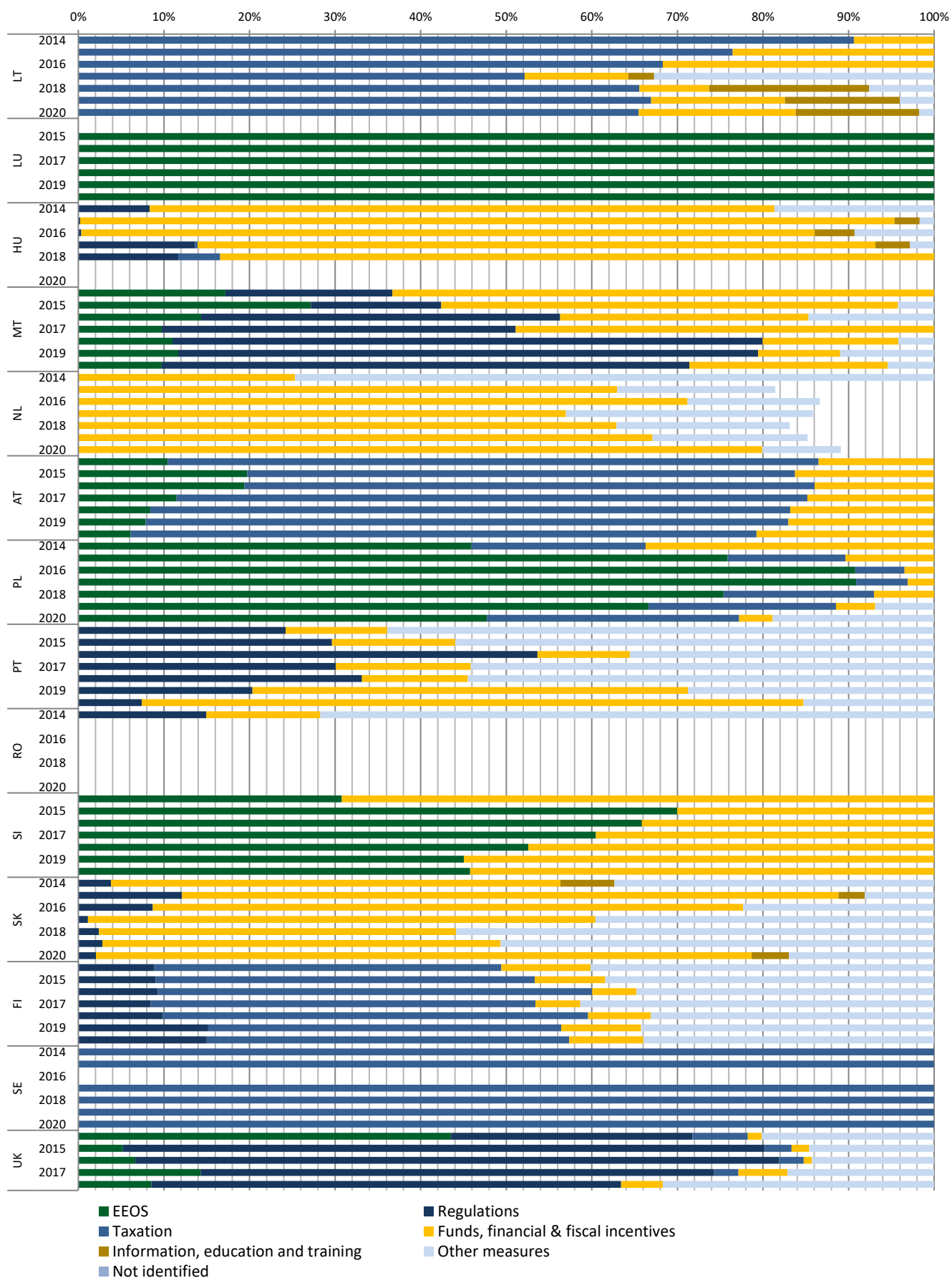
Looking at the current (not exhaustive) picture, savings through alternative measures (EED Article 7(9)) play a relevant role for generating the new energy savings under Article 7 in 2020. The measures falling under the category "Taxation" covered a substantial share (45.2%) of the total achieved savings in 2020 while "Funds, fiscal and financial incentives" measures provided the 15.8% of the savings. Regulatory measures were adopted by 12 Member States (Belgium, Czechia, Germany, Estonia, Ireland, Greece, Spain, Latvia, Malta, Portugal, Slovakia, Finland) generating 7.3% of the total savings reported for 2020. "Information, education and training" measures used by Belgium, Germany, Greece, Spain, Italy, Latvia, Lithuania, Austria, and Slovakia generated 3.8% of the total saving achieved by new actions that were implemented in 2020. Instead, 4.0% was achieved through other measures, as voluntary agreements, public transport development programmes, etc.



**Figure 23.** Share of energy savings achieved in 2014, 2015, 2016, 2017, 2018, 2019 and 2020 from new actions that were implemented in these years, by type of policy measure<sup>24</sup>.



<sup>24</sup> UK: no available reports as of 28 October 2022



Source: 2020 REPORTING DG ENERGY, JRC, 2022.

### 6.3 Measures under Article 7 aimed at alleviation of energy poverty

Member States should take into account the need to alleviate energy poverty in accordance with Article 7 (11) of the EED when designed policies and measures. Ten out of 27 Member States reported energy savings from actions to alleviate energy poverty either for 2019 or for 2020. These are: Belgium, Czechia, Cyprus, Greece, Estonia, France, Ireland, Austria, Poland and Slovenia.

Among these Member States, the highest amount of savings generated from energy poverty actions, were reported from Greece (8.2 ktoe in 2020) and especially from measure 'Energy upgrade for residential buildings'. The second Member State having declared high amount of savings generated from energy poverty actions was Belgium (6.2 ktoe in 2020). Among Belgium energy poverty measures, which generate the most of the savings was the measure 'Wallonia - Pivert Financial scheme (investment) - social housing'. Finally, Ireland reported 2.2 ktoe of savings from energy poverty actions, all of them achieved through EEOS. The rest of the Member States produced under 2.0 ktoe of savings from energy poverty measures.

When looking at shares of energy savings achieved by policies and measures aimed at alleviation of energy poverty to total new annual savings in 2020, the highest share was recorded by Poland (18.9% from measure named 'Clean Air'. This is followed by Greece (3.6% in 2020) and Belgium (2.8% in 2020).

In total, 22 measures were declared by the Member States to confront energy poverty challenge, producing energy savings either in 2019 or in 2020 or both. Most of them (77.3%) were Funds, financial & fiscal incentives. From the rest the 18.2% were measures under EEOS, while the remaining share corresponded to other types of measures.

More information is provided in Table 7.

**Table 7** Overview of energy poverty measures in 2019 or 2020 under Article 7

	No energy poverty measures	Energy poverty measures	Measure Types	Comments
<b>BE</b>		X	Funds, financial & fiscal incentives	2.8% of new annual savings was achieved from energy poverty measures in 2020
<b>BG</b>	X			
<b>CZ</b>		X	Funds, financial & fiscal incentives	0.9% of new annual savings was achieved from energy poverty measures in 2020
<b>CY</b>		X	Funds, financial & fiscal incentives	0.02% of new annual savings was achieved from energy poverty measures in 2020
<b>DK</b>	X			
<b>DE</b>	X			
<b>EE</b>		X	Funds, financial & fiscal incentives	0.04% of new annual savings was achieved from energy poverty measures in 2020
<b>IE</b>		X		2.5% of new annual savings was achieved from energy poverty measures in 2020
<b>EL</b>		X	EEOS, Funds, financial & fiscal incentives	3.7% of new annual savings was achieved from energy poverty measures in 2020
<b>ES</b>	X			
<b>FR</b>		X	EEOS	Cumulative 2014-2020 savings are given
<b>HR</b>	X			
<b>IT</b>	X			
<b>LV</b>	X			
<b>LT</b>	X			
<b>LU</b>	X			
<b>HU</b>	X			
<b>MT</b>		X	Funds, financial & fiscal incentives	0.05% of new annual savings was achieved from energy poverty measures in 2020
<b>NL</b>	X			
<b>AT</b>		X	EEOS	Under 0.01% of new annual savings was achieved from energy poverty measures in 2020

<b>PL</b>		X	Other measures	18.9% of new annual savings was achieved from energy poverty measures in 2020
<b>PT</b>	X			
<b>RO</b>	X			
<b>SI</b>		X	Funds, financial & fiscal incentives	0.3% of new annual savings was achieved from energy poverty measures in 2020
<b>SK</b>	X			
<b>FI</b>	X			
<b>SE</b>	X			

Source: 2020 REPORTING DG ENERGY, JRC, 2022.

## 6.4 Progress towards Article 5 in 2020

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

A summary of the latest progress made by Member States in connection with Article 5 are presented in Table 8 (default approach) and Table 9 (alternative approach). This is based on the latest data<sup>25</sup> reported by Member States on the central government building stock and the obligations calculated by Member States to comply with the Article 5 provisions in terms of annual floor area to be renovated or annual energy savings to be reached. The actual progress made in 2020 (in terms of renovated floor area or energy savings) is currently under review. Moreover, the fifth column displays the actual obligation achievement for the year 2020 (if available), which is expressed as the:

- ratio of renovated floor area in 2020 to the respective annual renovation obligation for countries opting for the default approach (Article 5(1));
- ratio of achieved annual energy savings in 2020 compared to the annual energy saving obligation for countries opting for the alternative approach (Article 5(6)).

The last column reports (when provided data allow to calculate this values):

- ratio of the total renovated floor area over the period 2014-2020 and the total renovation requirements over the same period for Member States opting for the default approach (Article 5(1));
- ratio of total savings generated in 2014-2020 and the total savings requirement over the same period for Member States opting for the alternative approach (Article 5(6)).

The following colour-code system was used to depict the level of obligation achievement: green circles indicate countries which fully reached or exceeded their obligation in 2020, while the yellow and red circles show countries which fell short of their 2020 obligation by up to 0-50% and 50-99%, respectively.

<sup>25</sup> Where an updated target figure was not made available by Member States, we considered the value provided in previous annual reports.

**Table 8** Implementation status of Article 5 of Member States which chosen the default approach (Art. 5(1)), based on the reports of the Member States<sup>26 27 28</sup> (data currently under review)

MS	Central government buildings with floor area > 250 m <sup>2</sup> in 1/1/2021		Article 5. annual requirement	Article 5 progress in 2020				
	All [m <sup>2</sup> ]	Non-compliant with MEPS [m <sup>2</sup> ]		Renovated floor area [m <sup>2</sup> ]	Annual obligation achieved in 2020 in terms of floor area [%]	Sum of savings in 2014-2020	Total renovated floor area over the period 2014-2020	Total obligation achieved in 2014-2020 in terms of floor area [%]
BG	2,571,112	1,761,062	54,903	91,796	167.2%	n.a.	480595	59.3%
EE	1,386,400	853,951	26,600	9,471	35.6%	n.a.	209041	105.4%
EL	212725	200725	6,030	0	0.0%	0.25	12000	27.7%
ES	11,273,677	9,198,323	279,902	304,763	108.9%	n.a.	1930977	95.7%
HU	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
IT	16485850	13401778	404,023	89,180	22.1%	n.a.	3107612	99.6%
LT	n.a.	1996799	62,541	2,720	4.3%	n.a.	504249	113.8%
LU	126,253	61,050	1,832	0	0.0%	n.a.	23013	148.9%
LV	1,862,320	1,862,320	53,550	98,102	183.2%	n.a.	409659	91.9%
PT	4,478,805	849,415	24,967	3,107	12.4%	n.a.	28034	27.2%
RO	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
SI	957014	890992	24822	2528	10.2%	0.33	59717	n.a.

Source: 2020 Reporting JRC, 2022.

<sup>26</sup> ES: From the report: "The total building floor area [m<sup>2</sup>] of buildings renovated in 2020 as referred to in Article 5(6) is 304.763 m<sup>2</sup>, therefore the fulfilment is 109% of 279.944 m<sup>2</sup>, which is the 3% of 9.331.465 m<sup>2</sup> (total building floor area [m<sup>2</sup>] of the buildings which did not meet the energy performance requirements referred to in Article 5(1) on 1 January of 2020). Taking into account the 1.930.977 m<sup>2</sup> of building floor area renovated in the period 2014-2020, the fulfilment is 96% of the target of 2.016.921 m<sup>2</sup>. The difference of 85.944 m<sup>2</sup> can be balanced with an excess over the goal next years." IT: "The difference with respect to the total value of the surface referred to in the upper row indicates the total surface of the heated and / or cooled buildings owned and occupied by central public administrations, with a total useful floor area of over 250 m<sup>2</sup>, which has been redeveloped or whose redevelopment was scheduled during the year."

<sup>27</sup> Unless otherwise stated annual renovation obligation is calculated by multiplying the reported non-compliant with MEPS floor area of last year per 3%.

<sup>28</sup> LU: As the overall objective for the whole period is overachieved, there were no additional buildings renovated in 2020.

**Table 9** Implementation status of Article 5 of Member States which chosen the alternative approach based on the reports of the Member States (data currently under review)<sup>29</sup>303132

MS	Central government buildings with floor area > 250 m2 in 1/1/2021		Article 5. annual requirement	Article 5 progress in 2020				
	All [m2]	Non-compliant with MEPS [m2]		Savings achieved [ktoe]	Annual obligation achieved in 2020 in terms of energy savings [%]	Sum of savings in 2014-2020	Total renovated floor area over the period 2014-2020	Annual obligation achieved in 2014-2020 in terms of energy savings [%]
AT	n.a.	750,000	0.15	0.89	593.3%	4.90	n.a.	478.9%
BE	n.a.	n.a.	0.11	1.13	1054.8%	8.42	n.a.	1119.2%
CY	n.a.	n.a.	0.11	0.17	153.3%	1.78	n.a.	97.8%
CZ	2,405,077	1,599,209	0.49	0.60	121.4%	7.60	n.a.	219.6%
DE	2900000 (2019)	n.a.	0.61 (2019)	5.58 (2019)	909% (2019)	83.996 (2014-2019)	n.a.	2128% (2014-2019)
DK	n.a.	988,782	0.38	0.80	210.5%	4.20	n.a.	157.9%
FI	n.a.	2,195,943	0.09	0.14	156.4%	1.55	n.a.	206.1%
FR	n.a.	22200000	35.55	98.02	275.7%	764.40	n.a.	307.2%
HR	n.a.	n.a.	0.12	0.00	0.0%	4.07	n.a.	497.9%
IE	n.a.	335,954.00	0.16	0.77	478.8%	4.24	n.a.	378.2%
MT	167,166.00	49,715.00	n.a.	0.02	n.a.	0.04	n.a.	n.a.
NL	n.a.	n.a.	4.18	1.87	44.7%	185.90	n.a.	635.4%
PL	n.a.	n.a.	0.37	0.58	155.3%	3.22	n.a.	123.2%
SE	n.a.	86,871	0.24	-3.71	0.0%	1.57	n.a.	83.7%
SK	n.a.	1,339,616.22	4.49	10.63	236.9%	43.22	n.a.	160.6%

Source: 2020 Reporting JRC, 2022.

Compared to the Annual Reports submitted in 2020, there was a better level of compliance with reporting obligations in Target Reports submitted in 2022. Three Member States did not provide the requested update on Article 5 progress regarding energy savings achieved or renovated floor area in latest submitted reports instead of five Member States that had not provided this update in previous submission: Hungary, Romania and Germany (the last notified achievements for 2019 but not for 2020).

As shown in Table 8, from the 12 Member States that have chosen the default approach:

There are 3 Member States that achieved their annual targets in terms of renovated floor area in 2020. These are Bulgaria, Spain and Latvia. However, they have not achieved their total targets for 2014-2020 period.

<sup>29</sup> CY: In 2020 Hospitals and health centres have been removed from the list, given that they have fallen under the administration of the State Health Services Organisation (SHSO) instead of the Ministry of Health. SHSO is an organisation, independent from the central government, and was set up in the context of the recent public health sector reform. The new annual energy-saving target based on Long-Term Renovation Strategy for the 2021-2030 period is 1.31 GWh. Therefore, the target for the year 2020 will be 1.31 GWh instead of 3.316 GWh.

<sup>30</sup> HR: From report: "The 2020 target has not been met. In 2020, 205 energy renovation projects in the public building sector were completed, but none of the buildings were owned and occupied by central government. Please note that 2020 was particularly problematic as, in the midst of the COVID-19 pandemic, the Republic of Croatia was hit by terrible earthquakes, which have significantly slowed down and pushed the deadlines for the renovation of buildings."

<sup>31</sup> NL: The cumulative savings in energy (gas, heat and electricity) consumed by buildings owned and occupied by the central government is 227 ktoe cumulatively in the period 2014 -2021. This results in an average energy reduction per year of 5%. 2021: -0.2 ktoe of energy savings, 2014-2021: 226.7 ktoe of energy savings

<sup>32</sup> BE, DK, DE, IE, CY, PL: primary energy savings CZ, ES, FR, HR, MT, NL, AT, SI, FI: final energy savings, IT, SK, SE: not clear if primary or final

There are 2 Member States that did not provide any information for Article 5 so it's not possible to assess if their obligations for 2020 have been achieved. These are Hungary and Romania.

There 7 Member States that have not achieved their annual targets in terms of renovated floor area in 2020.

From them:

4 Member States have fulfilled their total targets for the period 2014-2020. These are, Italy, Luxembourg, Estonia and Lithuania.

Portugal and Greece provided data establishing that they have missed their total targets for 2014-2020.

Missing information from previous years' targets and renovated floor area do not allow to assess if Slovenia has achieved their overall targets.

As displayed in Table 9, from the 15 Member States that have implemented the alternative approach:

10 Member States achieved their annual energy saving targets in 2020. These are the Austria, Belgium, France, Finland, Denmark, Czechia, Ireland, Cyprus, Poland and Slovakia. All of them except Cyprus provided data allowing establishing that they have fulfilled their total targets for the period 2014-2020.

Germany has achieved their targets for 2019.

From the remaining ones:

2 countries have achieved their overall 2014-2020 target in terms of energy savings while not the annual energy savings target in 2020. These are: Croatia and the Netherlands

Malta did not provide information for annual target, so it's not possible to assess if both annual and overall targets have been achieved

Sweden reported negative savings for 2020 while it missed the overall 2014-2020 target

In addition, it should be noted that 19 Member States provided data within their 2020 Target Reports related to the floor area which is non-compliant with the minimal energy performance standards. These are Bulgaria, Estonia, Greece, Spain, Italy, Lithuania, Luxembourg, Latvia, Portugal, Denmark, Sweden, Slovenia, Austria, Czechia, Finland, France, Ireland, Malta, Slovakia. Two Countries notified a slightly larger non-compliant total floor area with respect to the previous year: Slovenia (+7.7%) and Portugal (+2.1%).

## 6.5 New measures under Article 5 and Article 7

In an attempt to step up efforts towards the achievement of the 2020 targets, some EU Member States have included new policies and measures under Article 7 and article 5. "New" measures in this context refer to measures which are declared as 'new' by the Member States in their 2020 Target Reports. These new measures may include newly-implemented measures, but can also be on-going measures which have not contributed to the Article 5 or 7 targets before.

As shown in Table 10, more Member States listed new measures under Article 7 compared to Article 5: only 6 Member States (Belgium, Czechia, Malta, the Netherlands, Slovakia and Finland) listed new Measures under Article 5, while 12 Member States listed new measures under Article 7. These are Belgium, Bulgaria, Czechia, Denmark, Estonia, Greece, Croatia, Italy, Cyprus, Lithuania, Poland, Portugal.

There are in total 45 new measures under Article 7 in 2020 Reporting. Of these, 16 (35.6%) were implemented by Estonia and other 9 by Denmark (20.0%)<sup>33</sup> and 4 (8.9%) by Poland and Belgium. Under Article 5, 37 new measures are listed, most of them reported by Slovakia and Belgium (22 and 10 respectively)<sup>34</sup>.

The savings generated by these measures varied from country to country. In case of Portugal, 65% of total 2020 savings have been generated by new policies and measures listed in 2020 Target Reports. The measure that has generated the largest share of these savings is a Programme to support the use of public transport. In case of Estonia, 29% of the total savings generated in 2020 are associated with new measures. Among the new Estonian measures, "Renewable tax" generated the largest share of these savings. In case of Bulgaria, 33% of total 2020 savings have been generated by new policies and measures listed in 2020 Target Reports. The measure that has generated of these savings is the "Derogation art. 7 (8) EED". In case of Cyprus, 15% of the total savings generated in 2020 by new measures. Among the new measures from Cyprus, "Minimum energy performance requirements in buildings" generated the largest share of these savings. For Poland, the 13% of the total savings in 2020 has been generated by the new listed measures and mainly by the 'Thermomodernisation Fund'.

<sup>33</sup> New measures reported by Denmark will be implemented in the period 2021-2030 so they did not contribute to the 2020 target.

<sup>34</sup> Slovakia reported in the latest Annual Report very generic measures, while in this new notification the measures are listed in details. It is not clear if these measures are all completely new, but since they are reported for the first time, they are considered as new measures.

For the remaining countries with available savings (Czechia, Greece, Lithuania), the share of savings of new measures against the total savings of 2020 are less significant (under 10%).

In summary, more than the half of the new measures under Article 7, fell under the category "Funds, financial & fiscal incentives" (60.0%), followed by "Regulations" (17.8%), "Taxation" and "Other measures" (transport sector measures, voluntary agreements etc.) (11.1% and 8.9% respectively). Finally, new "Information, education and training" measures, covered the 2.2%.

For Article 5, the new measures reported by Slovakia generated savings equal to 10.63 ktoe in 2020 while the Netherlands generated savings equal to 1.9 ktoe in 2020. Belgium does not report the savings from new measures under Article 5 in 2020 while all the other Member States reported savings under 1 ktoe.

More information regarding the new policies and measures under Articles 5 and 7 can be found in Annex 4.

**Table 10** Overview of *new* measures in 2020 under Article 5 and Article 7

	Article 5		Article 7		Information on new measures under Article 7
	No new	New	No new	New	
<b>BE</b>		X		X	Premiums for energy efficiency measures, Premium for demolition
<b>BG</b>	X			X	Derogation art. 7 (8) EED: 33% of total savings in 2020.
<b>CZ</b>		X		X	Energy audits (less than 0.1% of total savings in 2020)
<b>DK</b>	X			X	The measures relate only to the period of 2021-2030 and are not
<b>DE</b>	X		X		
<b>EE</b>	X			X	Taxation, regulations and financial measures equal to 34% of total
<b>IE</b>	X		X		
<b>EL</b>	X			X	Provision of higher depreciation in enterprises (less than 1% of total
<b>ES</b>	X		X		
<b>FR</b>	X		X		
<b>HR</b>	X			X	Condensing boilers — as part of installation measures in
<b>IT</b>	X			X	Not notified as the measure is an extension of the Ecobonus and of
<b>CY</b>	X			X	Newly reported financial measures: around 15% of total savings in
<b>LV</b>	X		X		
<b>LT</b>	X			X	Relief for industry in the form of the recovery of part of the cost of
<b>LU</b>	X		X		
<b>HU</b>	X		X		
<b>MT</b>		X	X		
<b>NL</b>		X	X		
<b>AT</b>	X		X		
<b>PL</b>	X			X	Thermomodernisation Fund, Green Investment Scheme, Ful Tax and
<b>PT</b>	X			X	Newly reported financial measures and NEEAP excluding the policies
<b>RO</b>	X		X		Not clear which measures are new
<b>SI</b>	X		X		
<b>SK</b>		X	X		
<b>FI</b>		X	X		
<b>SE</b>	X		X		

Source: 2020 Reporting JRC, 2022.



## 7 Nearly Zero Energy Buildings and energy audits

The Art. 9 of the Energy Performance in Buildings Directive (EPBD), set nearly zero-energy buildings (NZEBs) as the minimum standard for new buildings in Member States as of the end of 2020<sup>35</sup>. NZEBs definitions have been established and their performance requirements have progressively strengthened over the last decade, providing a significant contribution to the decarbonisation of the EU building stock. Currently all Member States have NZEBs definitions in place, with varying performance levels for new residential and non-residential buildings and, in many Member States, also for refurbished buildings<sup>36</sup>.

In their reporting obligations under Art 27 of the Energy Governance regulation a significant share of Member States reported on the uptake of the NZEBs in 2019 and 2020 as they were required to notify the number and floor area of new and renovated NZEBs<sup>37</sup>.

According to the data submitted, the overall number of new NZEBs in EU in 2019 and 2020 is 330704 and 585340 respectively, while renovated NZEBs are 165130 in 2019 and 203394 in 2020.

The overall picture results more scattered when looking at the figures reported by each MS. Table 11 shows the number and the floor area of newly constructed NZEBs in 2019 and 2020; while Table 12 indicates the reported number and floor areas of renovated NZEBs both in 2019 and 2020.

**Table 11** Number and floor area of renovated NZEBs

MS	Number		Floor area	
	2019	2020	2019	2020
BE	10167	15698	2421440	3299152
BG	n.a.	n.a.	n.a.	n.a.
CZ	22405	23905	10301164.34	13383130
DK	29966	32558	4695396	4584943
DE	197785	205276	35243000	35162000
EE	188	206	135019	131687
IE	7566	12206	4741139	5958199
EL	126	247	43082.98	109376.2
ES	n.a.	n.a.	n.a.	n.a.
FR	n.a.	349200	n.a.	52732050
HR	n.a.	n.a.	n.a.	n.a.
IT	538	968	133683.9	147707.86
CY	691	724	151691	159028
LV	n.a.	n.a.	n.a.	n.a.
LT	n.a.	50	n.a.	103.607
LU	1389	1350	362203	360000
HU	n.a.	n.a.	n.a.	n.a.
MT	1860	1282	196175	127550
NL	n.a.	206498	n.a.	n.a.
AT	4930	5279	3343520.89	2879857.87
PL	n.a.	n.a.	n.a.	n.a.
PT	23324	32669	3244806	5119457.9
RO	n.a.	n.a.	n.a.	n.a.

<sup>35</sup> Directive 2010/31/EU (EPBD).

<sup>36</sup> Member States established national NZEB definitions and provided numerical indicators expressed in kWh/(m<sup>2</sup>y) that appear 10% on average higher than the 2016 Commission benchmark levels in most Member States. However, as different approaches are followed in the NZEB definition, reflecting specific climatic, market and local conditions, the requirements reveal heterogeneity and different calculation methodologies and boundaries. Regarding the energy performance level, more than half of the Member States have an energy performance class associated with the NZEB level. Some countries make a distinction in the EPC class between residential and non-residential NZEBs while others between new and existing NZEBs (D'Agostino D, et al, 2021).

<sup>37</sup> Member States can do this by statistical sampling, if necessary.

SI	195	200	29340	31545
SK	2754	3035	856037.35	877952.6
FI	12700	25000	5096000	9723000
SE	3953	2491	3552527	2927114
<b>TOTAL</b>	<b>330704</b>	<b>585340</b>	<b>77316865.46</b>	<b>141013006</b>

Source: 2020 Reporting JRC, 2022.

**Table 12** Number and floor area of renovated NZEBs

MS	Number		Floor area	
	2019	2020	2019	2020
BE	599	1206	120369	224319
BG	n.a.	n.a.	n.a.	n.a.
CZ	5233	6997	4697868.2	6879895
DK	188	300	132204	94300
DE	3449	6936	n.a.	n.a.
EE	198	275	487443	476367
IE	n.a.	n.a.	n.a.	n.a.
EL	136	275	137938.18	182965.22
ES	n.a.	n.a.	n.a.	n.a.
FR	n.a.	n.a.	n.a.	n.a.
HR	n.a.	n.a.	n.a.	n.a.
IT	624	431	138328.82	130659.8
CY	22	43	2310	8149
LV	n.a.	n.a.	n.a.	n.a.
LT	n.a.	n.a.	n.a.	n.a.
LU	n.a.	n.a.	n.a.	n.a.
HU	n.a.	n.a.	n.a.	n.a.
MT	79	49	9967	6248
NL	n.a.	8342	n.a.	n.a.
AT	612	839	283683.16	319949.65
PL	n.a.	n.a.	n.a.	n.a.
PT	3137	5016	587464.02	1001985.8
RO	n.a.	n.a.	n.a.	n.a.
SI	23	20	2982	3284
SK	429	471	672532.9	756755.62
FI	151000	173400	54787000	63291000
SE	n.a.	n.a.	n.a.	n.a.
<b>TOTAL</b>	<b>330704</b>	<b>585340</b>	<b>77316865.46</b>	<b>141013006</b>

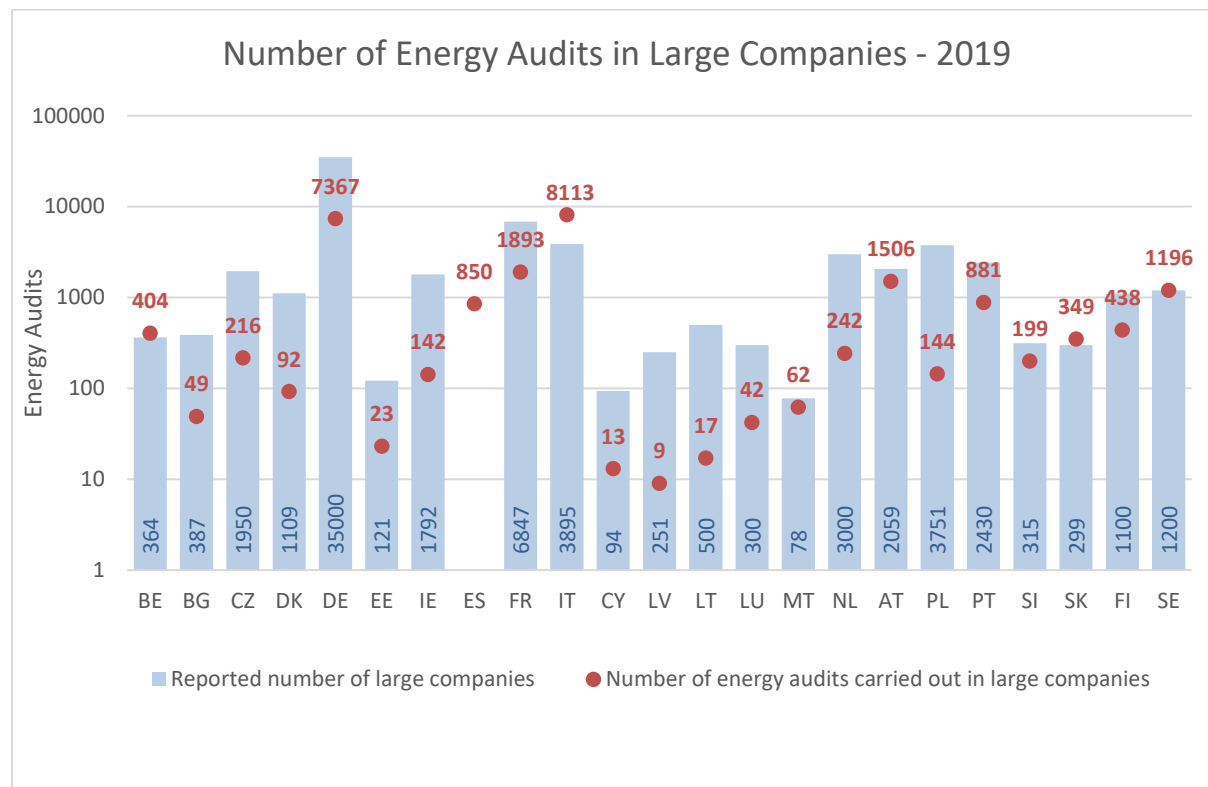
Source: 2020 Reporting JRC, 2022.

This section is less complete than other parts of the MS reports, showing that precise figures on NZEBs are not always available yet. Data on new constructions are generally more available: nearly 70% of MSs did report the corresponding information, but for renovated NZEBs, as showed in the table, the completeness of the overall reporting is nearly 50%, as 12 Member States did not report any information.

Member States were required to report also on the total estimated number of large companies in their territory to which Article 8(4) of Directive 2012/27/EU is applicable and the number of energy audits carried out in those enterprises.

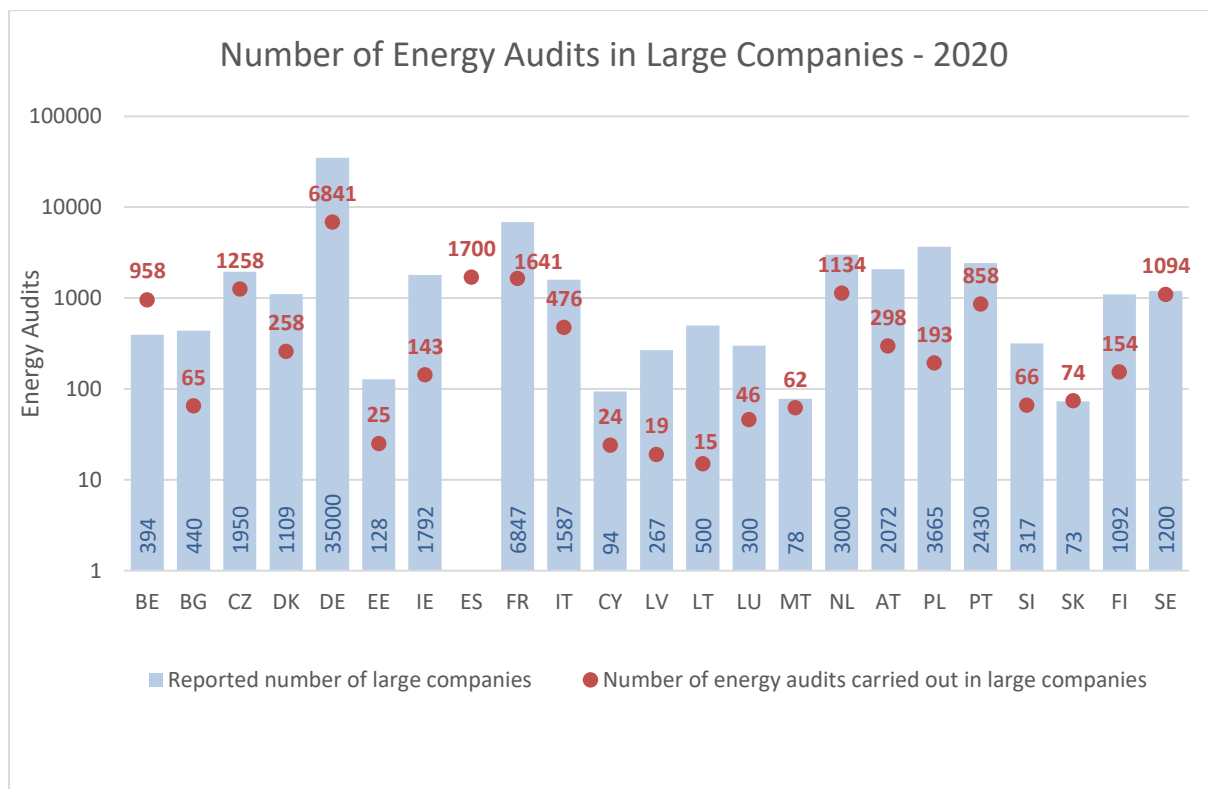
The overview of the notifications for 2019 and 2020 are shown in Figure 24<sup>38</sup>.

**Figure 24.** Energy audits carried out in large companies in 2019 and 2020



Source: 2020 Reporting JRC, 2022.

<sup>38</sup> For visualization purposes the graphs have a logarithmic scale on the vertical axes. ES did not provide data on number of large companies under Art 8(4) EED; for MT the same data as 2019 are assumed for 2020 (missing).



Source: 2020 Reporting JRC, 2022.

Only four MSs did not report information on the number of large companies, nor the energy audits carried out in those companies<sup>39</sup>.

The mismatches observed between the two values in the same year can be explained by the fact that energy audits are not required on yearly basis but, at least, every four years: In addition, given the circumstances of the Covid-19 pandemics, a certain number of companies may have postponed their energy audits<sup>40</sup>.

Unfortunately, MS reporting obligations for energy audits did not include historical data (from 2015 onward), therefore reported data for 2019 and 2020 are the only one available. It is also difficult to draw firm conclusions from these figures comparing years. Heterogeneous approaches in MSs, both on definitions and on the exemptions, coupled with different rules for accounting and in the prevailing ownership structure of firms make also difficult to compare between MS on the basis of the data reported<sup>41</sup>.

<sup>39</sup> They are not displayed in Figure 24: EL, HR, HU and RO

<sup>40</sup> This is explicitly mentioned by some Member States (e.g. NL and LV).

<sup>41</sup> Some MSs (BE and SK, and IT in 2019) reported more audits than companies, which may be due to reporting mistake but also, for instance, due to the presence of large companies with many smaller branches. The same company may therefore account for more than one energy audit.

## 8 Summary and Conclusions

In light of the latest 2020 energy consumption data, the EU energy consumption trends can now be viewed alongside the overall targets. In 2020, both primary and final energy consumption targets were achieved. However, 2020 values were significantly influenced by COVID-19 crisis and the consequent lockdown measures. This is confirmed by the explanatory factors provided by the Member States to justify energy consumption trends: the exceptional event of pandemic and the increase of teleworking activities in the context of lockdown measures are among the main reasons reported by Member States for growing or stable residential energy consumption. On the other hand, economic growth and increase of value added had an impact on industry and services. Regarding transport, even if it has decreased in all the Member States, some of them reported that increase of transport of goods/passengers as well as economic growth had an impact on the final trends.

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

The assessment of the 2020 Target Reports submitted by Member States in 2022 has confirmed good progress with regards to the implementation of Article 7 and of Article 5. However, there is still a lack of information provided in 2020 Target Reports and sometimes there are gaps regarding information corresponding to previous years that have been missed from past submitted Annual Reports. This does not enable to have a complete picture of the achievements at EU level. Beyond the various information gaps, our analysis suggests that Article 7 target has been achieved in EU level for the year 2020 while the cumulative target for 2014-2020 has been achieved by 98%. The latter corresponds to the sum of cumulative savings from MS with available data (currently 25) in the sum of all the 2014-2020 national Article 7 targets. The information gaps for Article 5 as well as the different approaches in reporting between Member States, do not allow to understand the level of target achievement at EU level, but it seems that the most of the Member States has achieved either the annual obligation in 2020 either the 2014-2020 total obligation. At this point, it's important to highlight that some Member States have included new measures in their 2020 Target Reports (officially reported as 'new' by the Member States' reports) in an attempt to accelerate the efforts to achieve the 2020 targets.

Regarding the national targets set under Article 3 of EED, 24 MS have reached them in terms of Primary Energy Consumption while 21 MS have reached them in terms of Final Energy Consumption. The factors reported by the MSs that contributed to the achievement of the targets are the effect of COVID-19 pandemic, implementation of energy efficiency measures and improvements, favourable climatic conditions, increased electricity production from renewable sources. The factors impeded the achievement instead, were the increase of population, increase of economic activities or economic growth, increase of the transport volume, overestimated projection or increased ambition.

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

## References

Annual Reports and National Energy Efficiency Action Plans, available at: <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>

D'Agostino D, Tzeiranaki S, Zangheri P, Bertoldi P, Data on nearly zero energy buildings (NZEBS) projects and best practices in Europe, Data in Brief 39 (2021) 107641, <https://doi.org/10.1016/j.dib.2021.107641>

DIRECTIVE 2012/27/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.

Economidou M. (2017), Assessing the progress towards the EU energy efficiency targets using index decomposition analysis, EUR 28710 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-71299-9, doi:10.2760/675791, JRC106782.

Economidou, M., Romàn Collado (2019), R., Assessing the progress towards the EU energy efficiency targets using index decomposition analysis in 2005–2016, EUR 29665 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-00170-6, doi:10.2760/61167, JRC115210.

Economidou M. (2020), Assessing the progress towards the EU energy efficiency targets using index decomposition analysis (*forthcoming*)

Eurostat Database, available at: <http://ec.europa.eu/eurostat/data/database>

IEA (2014), Energy Efficiency Indicators: Fundamentals on Statistics, OECD Publishing, Paris.

Odyssee Database, available at: <https://www.odyssee-mure.eu/>

REGULATION (EU) 2018/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council

Statistical Pocketbook 2019, DG MOVE, available at: [https://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2019\\_en](https://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2019_en)

Tsemekidi-Tzeiranaki, S., Paci, D., Cuniberti, B., Economidou, M. and Bertoldi, P., Analysis of the Annual Reports 2020 under the Energy Efficiency Directive, EUR 30517 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-27416-2, doi:10.2760/180952, JRC122742.

Tsemekidi-Tzeiranaki, S., Economidou, M., Cuniberti, B. and Bertoldi, P. (2020), Analysis of the annual reports 2019 under the Energy Efficiency Directive, EUR 30160 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-17831-6 (online), doi:10.2760/525535 (online), JRC120194.

## List of abbreviations and definitions

AR	Annual Report
CHPP/ CHP	Combined Heat and Power Plants
EE	Energy Efficiency
EED	Energy Efficiency Directive
EPBD	Energy Performance of Buildings Directive
EU27 / EU27_2020	European Union after 2020
FEC	Final Energy Consumption
GDP	Gross Domestic Product
GVA	Gross Value Added
HDD	Heating Degree Days
MS	Member State
NEEAP	National Energy Efficiency Action Plan
PEC	Primary Energy Consumption
thPG	Thermal Power Generation
TSSEED	Technical and Scientific Support to the implementation of the EED and the EPBD, as well as contribution to the development of concepts for the strengthening of the overall EU legislative framework for energy saving

## List of figures

<b>Figure 1</b> Submission Overview .....	7
<b>Figure 2.</b> Final and Primary Energy Consumption trends of the EU27_2020 (the dotted line represent a linear trajectory between the 2005 actual consumption and the 2020 target consumption).....	8
<b>Figure 3.</b> Contribution of different effects on the variation of the PEC in EU27 over the period 2014-2020.....	9
<b>Figure 4.</b> Contribution of different effects on the variation of the PEC in EU27 and Members States over the period 2019-2020.....	9
<b>Figure 5.</b> Primary energy consumption trends (2005-2020) and average annual change in 2005-2020 .....	10
<b>Figure 6.</b> Final energy consumption trends (2005-2020) and average annual change in 2005-2020 .....	11
<b>Figure 7.</b> Primary energy intensity trends and average annual change in 2005-2020.....	14
<b>Figure 8.</b> Final energy consumption dynamics through main sectors in the EU27, 2005-2020 .....	15
<b>Figure 9.</b> Final energy intensity trends in industry and average annual change in 2005-2020.....	15
<b>Figure 10.</b> Climate-normalised residential final energy consumption per capita and average annual change in 2005-2020..	16
<b>Figure 11.</b> Final energy intensity in the services sector and average annual change in 2005-2020 .....	17
<b>Figure 12.</b> Final energy consumption in the transport sector and average annual change in 2005-2020.....	17
<b>Figure 13.</b> FEC and PEC Targets achieved in percentage. ....	18
<b>Figure 14.</b> Achievement of PEC and FEC 2020 Targets .....	20
<b>Figure 15.</b> Difference from 2020 targets in PEC (%).....	20
<b>Figure 16.</b> Contribution of different effects on the variation of the residential FEC over the period 2019-2020.....	23
<b>Figure 17.</b> Contribution of different effects on the variation of the productive sectors FEC over the period 2019-2020.....	24
<b>Figure 18.</b> Contribution of different effects on the variation of the transport sectors FEC over the period 2019-2020.....	24
<b>Figure 19.</b> Summary of measures reported by type of legal basis.....	25
<b>Figure 20.</b> Summary of measures by type .....	26
<b>Figure 21.</b> Summary of measures reported in Annual Reports 2020 by type of update.....	26
<b>Figure 22.</b> Example of linear delivery of the total cumulative savings requirement under Article 7.....	29
<b>Figure 23.</b> Share of energy savings achieved in 2014, 2015, 2016, 2017, 2018, 2019 and 2020 from new actions that were implemented in these years, by type of policy measure.....	30
<b>Figure 24.</b> Energy audits carried out in large companies in 2019 and 2020 .....	40



## List of tables

<b>Table 1.</b> Overview of variations of main energy indicators (part 1).....	11
<b>Table 2.</b> Overview of variations of main energy indicators (part 2).....	12
<b>Table 3</b> FEC and PEC Targets achievement – full table (Mtoe).....	19
<b>Table 4</b> Trends in consumption in key sectors at national level in the period 2019-2020.....	21
<b>Table 5</b> Main reasons provided by Member States (sorted from high to low recurrences) to justify growing or stable final energy consumptions over the period 2019-2020.....	22
<b>Table 6.</b> Article 7 implementation status based on latest information available (reported values are in final energy).....	28
<b>Table 7</b> Overview of energy poverty measures in 2019 or 2020 under Article 7.....	32
<b>Table 8</b> Implementation status of Article 5 of Member States which chosen the default approach (Art. 5(1)), based on the reports of the Member States (data currently under review).....	34
<b>Table 9</b> Implementation status of Article 5 of Member States which chosen the alternative approach based on the reports of the Member States (data currently under review).....	35
<b>Table 10</b> Overview of <i>new</i> measures in 2020 under Article 5 and Article 7.....	37
<b>Table 11</b> Number and floor area of renovated NZEBs.....	38
<b>Table 12</b> Number and floor area of renovated NZEBs.....	39

## Annex 1: EUROSTAT indicators

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

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/ product(s)	Unit(s)	Period (EU28)
<b>(i) primary energy consumption</b>	Primary energy consumption (Europe 2020-2030)	Simplified energy balances - annual data [nrg_bal_s]	PEC2020-2030	All products	ktoe	2005-2020
<b>(ii) total final energy consumption</b>	Final energy consumption (Europe 2020-2030)	Simplified energy balances - annual data [nrg_bal_s]	FEC2020-2030	All products	ktoe	2005-2020
<b>(iii) final energy consumption - industry</b>	Final consumption - industry sector - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_IND_E	All products	ktoe	2005-2020
<b>(iii) final energy consumption - transport</b>	Final consumption - transport sector - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_TRA_E	All products	ktoe	2005-2020
<b>final energy consumption in pipeline transport</b>	Final consumption - transport sector - pipeline transport - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_TRA_PIPE_E	All products	ktoe	2005-2020
<b>(iii) final energy consumption - households</b>	Final consumption - other sectors - households - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_OTH_HH_E	All products	ktoe	2005-2020
<b>(iii) final energy consumption - services</b>	Final consumption - other sectors - commercial and public services - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_OTH_CP_E	All products	ktoe	2005-2020
<b>final energy consumption - agriculture</b>	Final consumption - other sectors - agriculture and forestry - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_OTH_AF_E	All products	ktoe	2005-2020
<b>final energy consumption - other sectors</b>	Final consumption - other sectors - not elsewhere specified - energy use	Simplified energy balances - annual data [nrg_bal_s]	FC_OTH_NSP_E	All products	ktoe	2005-2020

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
<b>(iv) gross value added - industry</b>	- Industry (except construction) - Construction	Gross value added and income by A*10 industry breakdowns [nama_10_a10]	- B-E - F	Value added, gross	Million euro, chain-linked volumes, reference year 2015 (at 2015 exchange rates)	2005-2020
<b>(iv) gross value added - services</b>	- Wholesale and retail trade, transport, accommodation and food service activities - Information and communication - Financial and insurance activities - Real estate activities - Professional, scientific and technical activities; administrative and support service activities - Public administration, defence, education, human health and social work activities - Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies	Gross value added and income by A*10 industry breakdowns [nama_10_a10]	- G-I - J - K - L - M_N - O-Q - R-U	Value added, gross	Million euro, chain-linked volumes, reference year 2015 (at 2015 exchange rates)	2005-2020
<b>(v) disposable income for households</b>	Gross disposable income	Non-financial transactions [nasa_nf_tr]	- S14 (if available) or S14_S15	Households (if available) or Households; non-profit institutions serving households	Million euro (current prices)	2005 - 2020
<b>(vi) gross domestic product (GDP)</b>	Gross domestic product at market prices	GDP and main components - volumes [nama_10_gdp]	B1GQ - Gross domestic product at market prices	-	Million euro, chain-linked volumes, reference year 2015(at 2015 exchange rates)	2005 - 2020

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
(vii) electricity generation from thPG	<ul style="list-style-type: none"> <li>- Gross electricity generation Main activity electricity only - Nuclear</li> <li>- Gross electricity generation Main activity CHP plants - Nuclear</li> <li>- Gross electricity generation Autoproducer electricity only - Nuclear</li> <li>- Gross electricity generation Autoproducer CHP plants - Nuclear</li> <li>- Gross electricity generation Main activity electricity only - Geothermal</li> <li>- Gross electricity generation Main activity electricity only - Combustible Fuels</li> <li>- Gross electricity generation Main activity electricity only - Other Sources</li> <li>- Gross electricity generation Main activity CHP plants - Geothermal</li> <li>- Gross electricity generation Main activity CHP plants - Combustible Fuels</li> <li>- Gross electricity generation Main activity CHP plants - Other Sources</li> <li>- Gross electricity generation Main activity electricity only - Solar Thermal</li> <li>- Gross electricity generation Autoproducer electricity only - Geothermal</li> <li>- Gross electricity generation Autoproducer electricity only - Combustible Fuels</li> <li>- Gross electricity generation Autoproducer electricity only - Heat from Chemical Sources</li> <li>- Gross electricity generation Autoproducer electricity only - Other Sources</li> <li>- Gross electricity generation Autoproducer CHP plants - Geothermal</li> <li>- Gross electricity generation Autoproducer CHP plants - Combustible Fuels</li> <li>- Gross electricity generation Autoproducer CHP plants - Heat from Chemical Sources</li> <li>- Gross electricity generation Autoproducer CHP plants - Other Sources</li> <li>- Gross electricity generation Autoproducer electricity only - Solar Thermal</li> </ul>	Gross and net production of electricity and derived heat by type of plant and operator [nrg_ind_peh]	-GEP	<ul style="list-style-type: none"> <li>-</li> <li>PRR_MAIN</li> <li>- ELC - N9000</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - N9000</li> <li>-</li> <li>PRR_AUTO</li> <li>- ELC - N9000</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - N9000</li> <li>-</li> <li>PRR_MAIN</li> <li>- ELC - RA200</li> <li>-</li> <li>PRR_MAIN</li> <li>- ELC - CF</li> <li>-</li> <li>PRR_MAIN</li> <li>- ELC - X9900</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - RA200</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - CF</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - X9900</li> <li>-</li> <li>PRR_MAIN</li> <li>- ELC - RA400</li> <li>-</li> <li>PRR_AUTO</li> <li>- ELC - RA200</li> <li>-</li> <li>PRR_AUTO</li> <li>- ELC - CF</li> <li>-</li> <li>PRR_AUTO</li> <li>- ELC - X9900H</li> <li>-</li> <li>PRR_AUTO</li> <li>- ELC - X9900</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - RA200</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - CF</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - X9900H</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP -</li> </ul>	GWH	2005 - 2020

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
(viii) electricity generation from CHP	<ul style="list-style-type: none"> <li>- Gross electricity generation Main activity CHP plants</li> <li>- Nuclear</li> <li>- Gross electricity generation Autoproducer CHP plants</li> <li>- Nuclear</li> <li>- Gross electricity generation Main activity CHP plants</li> <li>- Geothermal</li> <li>- Gross electricity generation Main activity CHP plants</li> <li>- Combustible Fuels</li> <li>- Gross electricity generation Main activity CHP plants</li> <li>- Other Sources</li> <li>- Gross electricity generation Autoproducer CHP plants</li> <li>- Geothermal</li> <li>- Gross electricity generation Autoproducer CHP plants</li> <li>- Combustible Fuels</li> <li>- Gross electricity generation Autoproducer CHP plants</li> <li>- Heat from Chemical Sources</li> <li>- Gross electricity generation Autoproducer CHP plants</li> <li>- Other Sources</li> </ul>	Gross and net production of electricity and derived heat by type of plant and operator [nrg_ind_peh]	-GEP	<ul style="list-style-type: none"> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - N9000</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - N9000</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - RA200</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - CF</li> <li>-</li> <li>PRR_MAIN</li> <li>- CHP - X9900</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - RA200</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - CF</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - X9900H</li> <li>-</li> <li>PRR_AUTO</li> <li>- CHP - X9900</li> </ul>	GWH	2005 - 2020

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/ product(s )	Unit(s)	Period (EU28)
(ix) heat generation from thPG <sup>42</sup>	<ul style="list-style-type: none"> <li>- Gross heat production Main activity CHP plants - Nuclear</li> <li>- Gross heat production Main activity heat only plants - Nuclear</li> <li>- Gross heat production Autoproducer CHP plants - Nuclear</li> <li>- Gross heat production Autoproducer heat only plants - Nuclear</li> <li>- Gross heat production Main activity CHP plants - Geothermal</li> <li>- Gross heat production Main activity CHP plants - Combustible Fuels</li> <li>- Gross heat production Main activity CHP plants - Heat Pumps*</li> <li>- Gross heat production Main activity CHP plants - Electric Boilers*</li> <li>- Gross heat production Main activity CHP plants - Other Sources</li> <li>- Gross heat production Main activity CHP plants - Solar</li> <li>- Gross heat production Autoproducer CHP plants - Geothermal</li> <li>- Gross heat production Autoproducer CHP plants - Combustible Fuels</li> <li>- Gross heat production Autoproducer CHP plants - Heat Pumps*</li> <li>- Gross heat production Autoproducer CHP plants - Electric Boilers*</li> <li>- Gross heat production Autoproducer CHP plants - Heat from Chemical Sources</li> <li>- Gross heat production Autoproducer CHP plants - Other Sources</li> <li>- Gross heat production Autoproducer CHP plants - Solar</li> <li>- Gross heat production Main activity heat only plants - Geothermal</li> <li>- Gross heat production Main activity heat only plants - Solar</li> <li>- Gross heat production Main activity heat only plants - Combustible Fuels</li> <li>- Gross heat production Main activity heat only plants - Heat Pumps*</li> <li>- Gross heat production Main activity heat only plants - Electric Boilers*</li> <li>- Gross heat production Main activity heat only plants - Other Sources</li> <li>- Gross heat production Autoproducer heat only plants - Geothermal</li> <li>- Gross heat production Autoproducer heat only plants - Solar</li> <li>- Gross heat production Autoproducer heat only plants - Combustible Fuels</li> <li>- Gross heat production Autoproducer heat only plants - Heat Pumps*</li> <li>- Gross heat production Autoproducer heat only plants - Electric Boilers*</li> <li>- Gross heat production Autoproducer heat only plants - Heat from Chemical Sources</li> <li>- Gross heat production Autoproducer heat only plants - Other Sources</li> </ul>	Gross and net production of electricity and derived heat by type of plant and operator [nrg_ind_peh]	- GHP	<ul style="list-style-type: none"> <li>- PRR_MAIN - CHP - N9000</li> <li>- PRR_MAIN - HEAT - N9000</li> <li>- PRR_AUTO - CHP - N9000</li> <li>- PRR_AUTO - HEAT - N9000</li> <li>- PRR_MAIN - CHP - RA200</li> <li>- PRR_MAIN - CHP - CF</li> <li>- PRR_MAIN - CHP - X9900</li> <li>- PRR_MAIN - CHP - RA400</li> <li>- PRR_AUTO - CHP - RA200</li> <li>- PRR_AUTO - CHP - CF</li> <li>- PRR_AUTO - CHP - X990H</li> <li>- PRR_AUTO - CHP - X990</li> <li>- PRR_AUTO - CHP - RA400</li> <li>- PRR_MAIN - HEAT - RA200</li> <li>- PRR_MAIN - HEAT - RA400</li> <li>- PRR_MAIN - HEAT - CF</li> <li>- PRR_MAIN - HEAT - X990</li> <li>- PRR_AUTO - HEAT - RA200</li> </ul>	TJ	2005 - 2020

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
<b>(x) heat generation from CHPP<sup>43</sup></b>	<ul style="list-style-type: none"> <li>- Gross heat production Main activity CHP plants - Nuclear</li> <li>- Gross heat production Autoproducer CHP plants - Nuclear</li> <li>- Gross heat production Main activity CHP plants - Geothermal</li> <li>- Gross heat production Main activity CHP plants - Combustible Fuels</li> <li>- Gross heat production Main activity CHP plants - Heat Pumps</li> <li>- Gross heat production Main activity CHP plants - Electric Boilers</li> <li>- Gross heat production Main activity CHP plants - Other Sources</li> <li>- Gross heat production Main activity CHP plants - Solar</li> <li>- Gross heat production Autoproducer CHP plants - Geothermal</li> <li>- Gross heat production Autoproducer CHP plants - Combustible Fuels</li> <li>- Gross heat production Autoproducer CHP plants - Heat Pumps</li> <li>- Gross heat production Autoproducer CHP plants - Electric Boilers</li> <li>- Gross heat production Autoproducer CHP plants - Heat from Chemical Sources</li> <li>- Gross heat production Autoproducer CHP plants - Other Sources</li> <li>- Gross heat production Autoproducer CHP plants - Solar</li> </ul>	Gross and net production of electricity and derived heat by type of plant and operator [nrg_ind_peh]	- GHP	'- PRR_MAIN - CHP - N9000 - PRR_AUTO - CHP - N9000 - PRR_MAIN - CHP - RA200 - PRR_MAIN - CHP - CF - PRR_MAIN - CHP - X9900 - PRR_MAIN - CHP - RA400 - PRR_AUTO - CHP - RA200 - PRR_AUTO - CHP - CF - PRR_AUTO - CHP - X990H - PRR_AUTO - CHP - X990 - PRR_AUTO - CHP - RA400	TJ	2005 - 2020

<sup>42</sup> Not available data for gross heat production from electric boilers and heat pumps

<sup>43</sup> Not available data for gross heat production from electric boilers and heat pumps

Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
<b>(xi) fuel input for thPG</b>	<ul style="list-style-type: none"> <li>- Transformation input - electricity and heat generation - main activity producer electricity only - energy use</li> <li>- Transformation input - electricity and heat generation - main activity producer combined heat and power - energy use</li> <li>- Transformation input - electricity and heat generation - main activity producer heat only - energy use</li> <li>- Transformation input - electricity and heat generation - autoproducer electricity only - energy use</li> <li>- Transformation input - electricity and heat generation - autoproducer combined heat and power - energy use</li> <li>- Transformation input - electricity and heat generation - autoproducer heat only - energy use</li> </ul>	Complete energy balances [nrg_bal_c]	<ul style="list-style-type: none"> <li>- TI_EHG_MAPE_E</li> <li>- TI_EHG_MAPC_HP_E</li> <li>- TI_EHG_MAPH_E</li> <li>- TI_EHG_APE_E</li> <li>- TI_EHG_APCHP_E</li> <li>- TI_EHG_APH_E</li> </ul>	<ul style="list-style-type: none"> <li>- All products except Renewables and biofuels (RA000)</li> <li>- All products except Renewables and biofuels (RA000)</li> <li>- All products except Renewables and biofuels (RA000)</li> <li>- All products except Renewables and biofuels (RA000)</li> <li>- All products except Renewables and biofuels (RA000)</li> <li>- All products except Renewables and biofuels (RA000)</li> </ul>	ktoe	2005 - 2020
<b>(xii) passenger kilometres (pkm)</b>	Railway TRA_COV: Total transport	Railway transport - Total annual passenger transport (1 000 pass., million pkm) [rail_pa_total]	- TOTAL	-	Millions of passenger-kilometres	2005 - 2018
	Road VEHICLE: Total	Passenger road transport on national territory, by type of vehicles registered in the reporting country [road_pa_mov]	- TOTAL	-	Millions of passenger-kilometres	2005 - 2019
<b>(xiii) tonnes kilometres (tkm)</b>	Railway TRA_COV: Total transport	Railway transport - Goods transported, by type of transport (1 000 t, million tkm) [rail_go_total]	- TOTAL	-	Millions of Tonne-kilometre	2005 - 2020



Annual Report Indicator	EUROSTAT Indicator(s)	EUROSTAT database table	EUROSTAT Code	Field/product(s)	Unit(s)	Period (EU28)
	Road TRA_OPER: Total - Total transport	Summary of annual road freight transport by type of operation and type of transport (1 000 t, Mio Tkm, Mio Veh-km) [road_go_ta_tot]	- TOTAL	Total	Millions of Tonne-kilometre	2005-2020
	Waterway TRA_COV: Total transport	Transport by type of good (from 2007 onwards with NST2007) [iww_go_at_ygo]	- TOTAL	Total	Millions of Tonne-kilometre	2007-2020
<b>(xv) population</b>	Population on 1 January - total	Demographic balance and crude rates [demo_gind]	JAN	-	Persons	2005-2020

## Annex 2: Comparison between Eurostat and MS reporting on Article 3 Targets 2020

MS	Eurostat (Mtoe)						MS Reporting (Mtoe)			
	PEC	PEC Target	% Acheived PEC	FEC	FEC Target	% Acheived FEC	PEC MS Reporting	% Acheived PEC MS Reporting	FEC MS Reporting	% Acheived FEC MS Reporting
BE	43.9	43.7	99.54%	33.3	32.5	97.60%	43.9	99.54%	33.3	97.60%
BG	17.2	16.9	98.13%	9.5	8.6	90.82%	17.2	98.13%	9.5	90.82%
CZ	37.5	44.3	118.25%	24.5	25.3	103.42%	37.5	118.25%	24.6	102.92%
DK	15.3	17.5	114.35%	13.1	15.2	115.36%	16.7	104.91%	13.6	111.54%
DE	262.3	276.6	105.45%	201.7	194.3	96.35%	262.5	105.37%	201.7	96.35%
EE	4.3	6.5	151.16%	2.8	2.8	100.00%	4.3	151.16%	2.8	100.00%
IE	13.4	13.9	103.51%	11.2	11.7	104.66%	IE provided savings instead of FEC and PEC			
EL	19.2	24.7	128.65%	14.5	18.4	126.90%	19.2	128.65%	14.5	126.90%
ES	105.0	123.4	117.52%	73.8	86.3	116.91%	105.0	117.52%	73.8	116.91%
FR	208.4	226.4	108.64%	130.1	137.9	106.00%	211.8	106.89%	132.0	104.47%
HR	7.8	10.7	137.89%	6.5	7.0	107.55%	9.3	115.05%	6.5	107.08%
IT	132.3	158.0	119.41%	102.7	124.0	120.70%	132.3	119.41%	102.7	120.70%
CY	2.2	2.2	101.60%	1.6	1.9	121.84%	2.2	101.60%	1.6	121.84%
LV	4.3	5.4	126.04%	3.9	4.5	115.85%	4.3	126.04%	3.9	115.85%
LT	6.2	6.5	104.39%	5.3	4.3	81.01%	LT did not provide figures in the revised version			
LU	3.9	4.5	113.97%	3.8	4.2	111.29%	3.9	113.97%	3.8	111.29%
HU	23.9	26.6	111.36%	18.0	18.2	101.06%	HU provided empty template			
MT	0.7	0.8	111.05%	0.5	0.6	116.39%	0.7	111.05%	0.5	116.39%
NL	58.4	60.7	103.89%	45.5	52.2	114.66%	58.4	103.89%	45.5	114.66%
AT	29.7	31.5	106.06%	26.1	25.1	96.18%	32.1	98.22%	25.2	99.52%
PL	96.9	96.4	99.53%	71.1	71.6	100.64%	96.5	99.90%	71.0	100.85%
PT	19.5	22.5	115.15%	15.0	17.4	115.85%	19.5	115.15%	15.0	115.85%
RO	30.9	43.0	139.09%	23.5	30.3	128.86%	30.9	139.09%	23.5	128.86%
SI	6.3	7.1	112.09%	4.4	5.1	115.32%	6.3	112.09%	4.4	115.32%
SK	15.2	16.4	107.86%	10.4	10.4	100.09%	15.2	107.86%	9.6	108.13%
FI	29.9	35.9	119.96%	23.3	26.7	114.59%	30.5	117.70%	23.3	114.59%
SE	41.7	43.4	104.06%	30.9	30.3	97.84%	41.7	104.06%	30.9	97.84%

	MS reported a higher value compared to Eurostat
	MS reported a lower value compared to Eurostat
	MS did not report PEC and FEC figures for 2020

### Annex 3: Explanations provided by Member States

The table below collects all of the reasons provided by Member States in their 2020 Target Reports to explain growth or stable final energy consumption in 2020. The indicator shown in the "Trend" column refers to EUROSTAT data. Eventual disagreements between this indication and the reason provided are due to the fact that some Member States refer to national statistics which can be different respect the EUROSTAT ones.

MS	Sector	Trend	Reasons
AT	Industry	↘	<b>Economic growth - Increase of value added</b>
	Transport	↘	<b>Increase of transport of goods - Increase of transport of passengers</b>
	Households	→	<b>Increase of population and/or households</b>
	Services	↘	<b>Economic growth - Increase of value added – Increase of employment</b>
	Agriculture	↗	<b>Economic growth</b>
BE	Industry	↘	
	Transport	↘	
	Households	→	<i>The public health measures regarding working from home might have had an impact on energy consumption of households.</i>
	Services	↘	
	Agriculture	↘	
BG	Industry	↘	
	Transport	↘	<b>Increase of transport of passengers - Increase of transport of goods - Economic growth</b> <i>(This is the sector with the highest growth of FEC from 2008 to 2020 due to a significant increase in the share of road transport and behavioral factors (increased use of private cars, more travel).)</i>
	Households	↗	<b>Increase of disposable income of households - Economic growth</b> <i>(The restoration of the normal thermal comfort in the dwellings as well as the increased size of the new dwellings leads to an minimal increase in FEC.)</i>
	Services	↘	<b>Increase of value added – Economic growth</b> <i>(The main drivers for the growth of FEC are: the significant growth of economic activity in the sector and the restoration of the necessary thermal comfort in hospitals, schools and other public buildings.)</i>
	Agriculture	→	
HR	Industry	→	
	Transport	↘	
	Households	↗	
	Services	↘	
	Agriculture	↗	
CY	Industry	↗	<b>Other</b> (Increase of glass exports)
	Transport	↘	
	Households	→	<b>Increase of population and/or households - Other</b> (teleworking due to COVID-19)
	Services	↘	
	Agriculture	↗	<b>Increase of value added</b>
CZ	Industry	→	
	Transport	↘	
	Households	↘	
	Services	↘	<b>Increase of employment - Economic growth</b>
	Agriculture	→	
DK	Industry	↗	
	Transport	↘	

MS	Sector	Trend	Reasons
	Households	↘	<b>Increase of population and/or households</b> (In addition to increasing population etc, many more people worked from home in 2020 due to the Covid-19 emergency. This led to an increase in energy consumption in households.)
	Services	↘	
	Agriculture	↘	
EE	Industry	↘	
	Transport	↘	<b>Economic growth - Increase of transport of passengers - Increase of transport of goods</b> (Kilometres driven have increased year by year, except 2020 because of the effects on COVID crises. In 2021 kilometres driven started increasing again. Taxes on transport fuels were decreased due to COVID crises but now we are seeing record energy and fuel costs despite decrease in taxes.)
	Households	↗	<b>Economic growth - Increase of disposable income of households - Worsening of summer climatic conditions</b> (Household energy consumption is dependent on climate. In 2020 we saw a warm winter which is why consumption decreased. We are also seeing warmer and warmer summers which is why many consumers are buying air conditioners. Until 2020 economy was growing at a fast rate which also increased or left consumption at the same level. Housing renovations are very popular in Estonia which also has an effect.)
	Services	↘	<b>Economic growth - Worsening of summer climatic conditions - Increase of employment</b> (Energy consumption in service sector has kept rising year by year especially due to economic growth.)
	Agriculture	↘	
FI	Industry	↘	
	Transport	↘	
	Households	↘	
	Services	↘	
	Agriculture	↘	
FR	Industry	↘	
	Transport	↘	
	Households	↘	
	Services	↘	
	Agriculture	↗	<b>Exceptional event</b> (In 2020, both upward and downward sectoral developments appear mainly to be a consequence of lockdown measures)
DE	Industry	↘	
	Transport	↘	<b>Increase of transport of goods - Increase of transport of passengers</b>
	Households	→	<b>Worsening of winter climatic conditions - Increase of population and/or households - Other</b> (Decline of fuel prices, stock changes)
	Services	↘	
	Agriculture	↗	<b>Increase of value added</b>
EL	Industry	↘	
	Transport	↘	
	Households	↗	
	Services	↘	
	Agriculture	→	
HU	Industry	→	
	Transport	↘	
	Households	↗	
	Services	↘	

MS	Sector	Trend	Reasons
	Agriculture	↗	
IE	Industry	↘	<b>Economic growth - Increase of value added</b>
	Transport	↘	<b>Economic growth - Increase of population and/or households</b> (Transport was the sector most heavily impacted in 2020 by public health measures taken to combat the COVID-19 pandemic. There were significant restrictions on personal mobility which had direct effects on transport energy use, especially on international aviation and private cars.)
	Households	↗	<b>Increase of disposable income of households - Decline of fuel prices - Increase of population and/or households</b> (Residential energy use in 2020 was also affected by the public health measures taken to combat the COVID-19 pandemic.)
	Services	→	<b>Economic growth - Increase of employment - Other (increase of datacentres)</b>
	Agriculture	→	
IT	Industry	↘	
	Transport	↘	
	Households	↘	
	Services	↘	
	Agriculture	↗	<b>Exceptional event</b>
LV	Industry	↗	<b>Economic growth - Increase of value added - Increase of transport of passengers</b>
	Transport	↘	
	Households	↘	
	Services	↘	
	Agriculture	↗	<b>Economic growth - Increase of value added - Exceptional event</b>
LT	Industry	↘	
	Transport	↘	
	Households	→	<b>Exceptional event</b>
	Services	↘	
	Agriculture	↗	
LU	Industry	↘	
	Transport	↘	<b>Economic growth - Increase of employment - Increase of population and/or households</b> (continuous increase from 2015 to 2019 (the 3 reasons refer to this general trend) followed by a significant decrease in 2020 due to the coronavirus pandemic and a massive practice of home office, among others)
	Households	↗	
	Services	↘	<b>Economic growth - Increase of employment - Increase of population and/or households</b> (similar evolutions (and reasons) than for 'transport')
	Agriculture	↘	
MT	Industry	↗	<b>Increase of value added - Change in the methodology of measurement or calculation of energy consumptions</b>
	Transport	↘	<b>Increase of value added - Increase of transport of passengers</b>
	Households	↗	<b>Increase of population and/or households - Exceptional event</b> (The energy household consumption increased by 7.0% in 2019 and by 1.2% in 2020. The 7.0% increase in 2019 is most likely due to climatic variation. Heating degree days and Cooling degree days in 2019 were significantly higher both than in 2018 and 2020. This occurred in a context of annual growth in total household expenditure of 12.2% increase in 2019 and a 4.9% increase in 2020 as well as an increase in total population level of 4.0% in 2019 and 2.2% in 2020. Although 2020 was an exceptional year due to the Covid pandemic and the lockdowns this brought with it, the increase in consumption was relatively low.)
	Services	↘	<b>Increase of value added</b>

MS	Sector	Trend	Reasons
	Agriculture	↗	<b>Change in the methodology of measurement or calculation of energy consumptions</b>
NL	Industry	→	
	Transport	↘	
	Households	↘	
	Services	↘	
	Agriculture	↘	
PL	Industry	↘	<b>Economic growth</b>
	Transport	↘	<b>Economic growth</b>
	Households	→	
	Services	↘	
	Agriculture	↗	n.a.
PT	Industry	↘	
	Transport	↘	
	Households	↗	<b>Exceptional event</b> (The increase in consumption in this sector was due to the compulsory lockdown due to the COVID19 pandemic.)
	Services	↗	
	Agriculture	↗	<b>Economic growth</b> (The increase in consumption is due to increases in production in the sector.)
RO	Industry	↘	
	Transport	↘	
	Households	→	
	Services	→	
	Agriculture	↘	
SK	Industry	↘	<b>Economic growth</b>
	Transport	↘	<b>Increase of transport of goods</b>
	Households	↘	<b>Other</b> (Growth prices of building works and materials)
	Services	↘	<b>Economic growth</b> (Other significant reason is very strict Eurostat rules for ESCO)
	Agriculture	↘	<b>Economic growth</b>
SI	Industry	↘	<b>Increase of value added</b>
	Transport	↘	
	Households	↗	
	Services	↘	<b>Exceptional event</b> (In 2020, the increase in final energy consumption was 1.4% caused by the the coronavirus pandemic and the implementation of measures for preventing the spread of SARS-CoV-2 virus, due to which we spent more time at home.)
	Agriculture	↘	
ES	Industry	↘	<b>Exceptional event - Other – Other</b> (The reason was the outbreak of the pandemic caused by COVID-19, and the consequent strict measures adopted by the Spanish government to prevent its spread. This circumstance affected the industrial activity because of the paralysis of a large part of its productive fabric linked to the reduction of the production of numerous companies and the closure of many others.)
	Transport	↘	<b>Exceptional event - Other – Other</b> (In the context of restrictions on mobility and suspension of activities caused by the COVID-19 crisis, the transport sector, closely interrelated with all sectors of the economy, suffered a sharp drop)

MS	Sector	Trend	Reasons
	Households	→	<b>Exceptional event - Other</b> (teleworking) – <b>Other</b> (The rebound in household demand responds to the uncertainty caused by the evolution of the pandemic, in the face of which it was necessary to implement strict measures of confinement and suspension of non-essential activities, limiting the movement of people, which forced citizens to stay longer in their homes.)
	Services	↘	<b>Exceptional event - Other – Other</b> (The services sector has been one of the hardest hit by the health crisis)
	Agriculture	↗	<b>Exceptional event - Increase of value added - Other</b>
SE	Industry	↗	<b>Other</b> (electrification of industrial processes)
	Transport	↘	
	Households	↘	
	Services	→	
	Agriculture	↘	

## Annex 4: New measures under Articles 7 and 5

The tables below provide all the policies and measures under Article 5 and 7 reported as new by Member States in the 2020 Target Reporting.

### New measures under Article 7

	Name of measure	Category	Total savings achieved in 2020 (ktoe)	Share with respect to total savings in 2020 (%)	Savings achieved in 2020 from new actions (ktoe)	Share with respect to new savings in 2020 (%)	Total cumulative expected savings [ktoe] by 2020 expressed in final energy (voluntary)	Share with respect to total cumulative savings expected by 2020(%)
<b>BG</b>	Derogation art. 7 (8) EED	Regulations	125.95	32.65%	0	0.00%	780.13	43.70%
<b>BE</b>	Premiums for energy efficiency measures	Funds, financial & fiscal incentives						
<b>BE</b>	Premium for demolition and rebuilding	Funds, financial & fiscal incentives						
<b>BE</b>	W-2019-06 - Contrats de gestion des services publics - SPGE (traitement des eaux)	Other measures			0.92			
<b>BE</b>	W-2019-07 -Fonds Kyoto - Renowindows	Other measures			0.086			
<b>CZ</b>	Energy audits	Regulations	0.01	0.000737%	0.00	0.00%		
<b>DK</b>	Measures related to existing buildings	Information, education and training	Measures for 2021-2030 not contributing to 2020 Targets					
<b>DK</b>	Competitive subsidy scheme related to residential buildings	Funds, financial & fiscal incentives						
<b>DK</b>	Competitive subsidy scheme related to private enterprises	Funds, financial & fiscal incentives						
<b>DK</b>	Subsidy scheme to replace oil boilers with heat pumps in buildings outside the district heating and gas grids	Funds, financial & fiscal incentives						
<b>DK</b>	Measures to promote the replacement of oil and gasboilers with district heating or heat pumps	Funds, financial & fiscal incentives						
<b>DK</b>	Energy efficiency in governmental institutions and other state institutions	Regulations						
<b>DK</b>	Agreement on green refurbishment of social housing	Funds, financial & fiscal incentives						



<b>DK</b>	Subsidy scheme targeted at municipalities and regions (public buildings)	Funds, financial & fiscal incentives						
<b>DK</b>	Increase in energy tax rates on business as part of Green Tax Reform, phase 1	Taxation						
<b>EE</b>	Renewable tax	Taxation	14.01	10.52%	14.01	12.98%		
<b>EE</b>	Time-based road tax	Taxation	1.11	0.83%	1.11	1.03%		
<b>EE</b>	Eco-driving	Regulations	1.50	1.13%	0.76	0.70%		
<b>EE</b>	Electricity smart metering	Regulations	8.66	6.50%	8.66	8.01%		
<b>EE</b>	Energy management system in electricity intensive industries	Regulations	3.15	2.36%	3.15	2.91%		
<b>EE</b>	Electric cars	Funds, financial & fiscal incentives	0.16	0.12%	0.01	0.01%		
<b>EE</b>	Renovation of private houses	Funds, financial & fiscal incentives	0.75	0.56%	0.23	0.21%		
<b>EE</b>	Central government building renovations	Funds, financial & fiscal incentives	0.00	0.00%	0.00	0.00%		
<b>EE</b>	Atmospheric air protection program, including heating equipment for apartment associations	Funds, financial & fiscal incentives	0.17	0.13%	0.04	0.04%		
<b>EE</b>	Renovation of rental apartments	Funds, financial & fiscal incentives	0.03	0.02%	0.03	0.03%		
<b>EE</b>	Oil boiler replacement	Funds, financial & fiscal incentives	0.16	0.12%	0.00	0.00%		
<b>EE</b>	Support for improving the energy efficiency of coastal fishing vessels	Funds, financial & fiscal incentives	0.02	0.01%	0.00	0.00%		
<b>EE</b>	Aid for energy and resource-efficient processing of fishery and aquaculture products	Funds, financial & fiscal incentives	1.76	1.33%	0.58	0.53%		
<b>EE</b>	Light traffic roads	Funds, financial & fiscal incentives	5.07	3.81%	1.03	0.95%		
<b>EE</b>	Mobile speed cameras	Regulations	0.02	0.01%	0.02	0.02%		
<b>EE</b>	Reinvestment of income tax	Funds, financial & fiscal incentives	8.65	6.50%	1.24	1.14%		
<b>EL</b>	Provision of higher depreciation in enterprises	Funds, financial & fiscal incentives	1.518	0.28%	0.39	0.17%		

<b>HR</b>	Condensing boilers — as part of installation measures in buildings/family houses damaged in the earthquake of 22/03/2020	Funds, financial & fiscal incentives			0.82	0.75%		
<b>IT</b>	Superbonus	Taxation						
<b>CY</b>	Replacement of street lighting in Municipalities and Communities	Funds, financial & fiscal incentives	0.93	1.20%	0.74	1.17%	1.13	0.32%
<b>CY</b>	Minimum energy performance requirements in buildings.	Regulations	9.42	12.06%	0.00	0.00%	18.84	5.34%
<b>CY</b>	Grant Scheme - Roof insulation in Residential Sector.	Funds, financial & fiscal incentives	1.04	1.33%	0.44	0.69%	1.65	0.47%
<b>LT</b>	Relief for industry in the form of the recovery of part of the cost of providing services of public interest	Funds, financial & fiscal incentives	2.12	0.84%	2.12	1.85%	2.12	0.19%
<b>PL</b>	Thermomodernisation Fund - Fundusz Termomodernizacji i Remontów	Funds, financial & fiscal incentives	142.18	5.65%	10.54	4.64%	661.97	6.32%
<b>PL</b>	Green Investment Scheme - System Zielonych Inwestycji	Funds, financial & fiscal incentives	31.87	1.27%	0.00	0.00%	200.10	1.91%
<b>PL</b>	Fuel tax - Oplata paliwowa	Taxation	79.66	3.17%	79.66	29.49%	354.62	3.39%
<b>PL</b>	Clean Air - Czyste Powietrze	Other measures	74.00	2.94%	51.00	18.88%	97.00	0.93%
<b>PT</b>	Energy Efficiency Programme in Central Public Administration (ECO.AP) and Operational Programme for Sustainability and Efficient Use of Resources (POSEUR) and Regional Operational Programs (mainly for municipalities) and promotion of efficiency in public street lightning	Funds, financial & fiscal incentives	9.62	1.58%	4.33	1.91%	18.42	0.98%
<b>PT</b>	Programme to support the use of public transport.	Funds, financial & fiscal incentives	158.32	25.96%	158.32	69.73%	209.53	11.12%
<b>PT</b>	NEEAP excluding the policies included in the alternative measures above	Other measures	227.66	37.33%	34.67	15.27%	864.32	45.85%

### New measures under Article 5

	Name of measure	Savings achieved in 2019 [ktoe]	Savings achieved in 2020 [ktoe]
--	-----------------	---------------------------------	---------------------------------

new	CZ	Real Estate Investment fund		n.a.
new	NL	Internal business operations of central government	0.1	1.9
new	MT	Replacement of Lighting systems, replacement of airconditioning, Sensor on apertures in a number public buildings	0.1863	0.02233
new	FI	Savings with long lifetime	0.11	0.089
new	FI	Savings with short lifetime	0.084	0.055
new/un clear	SK	3.1.1 Construction and technical installation of prefabricated buildings (EHB) - Hydraulic plumbing fixtures (ŠF 2007-2013, OP Zdravotníctvo)	0.000	0.000
new/un clear	SK	3.1.2 Construction and technical installation of prefabricated buildings (EHB) - Hydraulic plumbing fixtures (Verejné zdroje)	0.229	0.000
new/un clear	SK	3.2.1 Construction and technical engineering on-site construction equipment (EHB) - Schools and school facilities (ŠF 2007-2013, OP Výskum a vývoj)	0.000	0.000
new/un clear	SK	3.2.2 Construction and technical engineering on-site construction equipment (EHB) - Schools and school facilities (ŠF 2007-2013, ROP, opatrenie 1.1 Infraštruktúra vzdelávania)	0.000	0.000
new/un clear	SK	3.3 Construction and Technical Engineering (EHB) - Social services	0.000	0.000
new/un clear	SK	3.4 Construction and technical engineering joint venture (EHB) - Cultural design	0.000	0.000
new/un clear	SK	3.5 Construction and technical maintenance of general purpose buildings (EHB) - Road construction	0.000	0.000
new/un clear	SK	3.6 Construction and technical engineering department (EHB) - Administrative services, schools and school boards	0.556	1.095
new/un clear	SK	3.7.1 Construction and Technical Engineering (EHB) - Administrative Offices (OJS)(Rozpočtové kapitoly ÚOŠS)	0.000	0.000
new/un clear	SK	3.7.2a Construction and Technical Engineering (EHB) - Administrative Offices (OJS) (ÚOŠS priame bez relevantných) (Vlastné prostriedky rozpočtových kapitol)	0.000	0.000
new/un clear	SK	3.7.2b Zlepšovanie tepelno-technických vlastností verejných budov (EHB) - Administratívne budovy organizácií v pôsobnosti ÚOŠS (Vlastné prostriedky rozpočtových kapitol)	0.000	0.004
new/un clear	SK	3.9 Construction and engineering technical equipment (EHB) - Ekofond (Ekofond)	0.000	0.000
new/un clear	SK	3.10 Construction and engineering technical equipment (EHB) - Munseff (Munseff)	0.000	0.000
new/un clear	SK	3.11 Construction and engineering technical equipment (EHB) - Line L3: Expenditure on energy supply Existing property management facilities.(Envirofond)	1.366	1.032
new/un clear	SK	3.26.2 Construction and technical engineering on-site construction equipment (EHB) - Schools and school facilities (IROP 2014-2020)	0.027	0.011
new/un clear	SK	3.26.3 Carpentry and technical engineering equipment (EHB) - social and community centers. (OP BK 2007-2013, op. č. 1.1)	0.000	0.000
new/un clear	SK	3.27 Construction of technical and technical maintenance units (EHB) - Schools, community center, administrative offices (OP LZ, prioritná os 6)	0.062	0.036
new/un clear	SK	3.29 New minimum loan requirements (len verejné) (Vlastné prostriedky)	0.000	0.000
new/un clear	SK	3.31 Construction and technical engineering joint venture (EHB) - School and school boarding (Vlastné prostriedky, komerčné banky)	2.194	2.869
new/un clear	SK	3.32 Carpentry and technical installation of prefabricated buildings (EHB) - Hydraulic plumbing fixtures (Vlastné prostriedky, komerčné banky)	0.556	0.802
new/un clear	SK	3.33 Construction and Technical Engineering Services (EHB) - Administrative services (len verejné) (Vlastné prostriedky, komerčné banky)	2.883	4.487
new/un clear	SK	3.37.1 Exhibition of energy efficiency measures in various buildings - Verejné budovy (Slovseff III.)	0.000	0.289
new	BE	Roof insulation		
new	BE	Renovation of exterior facade		
new	BE	Insulate pipes / pumps / taps / hydraulics		
new	BE	Control interventions heating, cooling, ventilation		
new	BE	Relighting / Relamping		
new	BE	Glazing replacement		
new	BE	Stove site renovation		
new	BE	New construction and demolition		
new	BE	Awareness raising		
new	BE	Other (electric boiler,...)		

## GETTING IN TOUCH WITH THE EU

### GETTING IN TOUCH WITH THE EU

#### In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online ([european-union.europa.eu/contact-eu/meet-us\\_en](https://european-union.europa.eu/contact-eu/meet-us_en)).

#### On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696,
- via the following form: [european-union.europa.eu/contact-eu/write-us\\_en](https://european-union.europa.eu/contact-eu/write-us_en).

### FINDING INFORMATION ABOUT THE EU

#### Online

Information about the European Union in all the official languages of the EU is available on the Europa website ([european-union.europa.eu](https://european-union.europa.eu)).

#### EU publications

You can view or order EU publications at [op.europa.eu/en/publications](https://op.europa.eu/en/publications). Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre ([european-union.europa.eu/contact-eu/meet-us\\_en](https://european-union.europa.eu/contact-eu/meet-us_en)).

#### EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex ([eur-lex.europa.eu](https://eur-lex.europa.eu)).

#### Open data from the EU

The portal [data.europa.eu](https://data.europa.eu) provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

## The European Commission's science and knowledge service

Joint Research Centre

### JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



**EU Science Hub**  
[joint-research-centre.ec.europa.eu](http://joint-research-centre.ec.europa.eu)



@EU\_ScienceHub



EU Science Hub - Joint Research Centre



EU Science, Research and Innovation



EU Science Hub



EU Science



Publications Office  
of the European Union