

Energy Efficiency Directive

Review and revision of Directive 2012/27/EU, amended by Directive 2018/2002/EU

This briefing is one in a series of 'implementation appraisals', produced by the European Parliamentary Research Service (EPRS), on the operation of existing EU legislation in practice. Each briefing focuses on a specific EU law, which is likely to be amended or reviewed, as envisaged in the European Commission's annual work programme. 'Implementation appraisals' aim to provide a succinct overview of publicly available material on the implementation, application and effectiveness to date of an EU law, drawing on input from EU institutions and bodies, as well as external organisations. They are provided by the EPRS Ex-Post Evaluation Unit, to assist parliamentary committees in their consideration of new European Commission proposals, once tabled.

SUMMARY

The Energy Efficiency Directive (EED) was adopted in 2012 to promote energy efficiency across the EU and to help the EU to reach its (at least) 20 % energy efficiency target by 2020. In 2018, the EED was amended as part of the 'Clean energy for all Europeans package'. The amendments included raising the EU energy efficiency target to (at least) 32.5 %, to be achieved by 2030, among other things.

In its resolution on the European Green Deal, adopted on 15 January 2020, the European Parliament called for a revision of the EED and the Energy Efficiency of Buildings Directive (EEBD), in line with the EU's new and more ambitious climate strategy. The Parliament also called for strengthened implementation of the two directives, by introducing binding national targets and focusing on vulnerable citizens, as well as taking the need for more economic predictability for the sectors involved into consideration.

The European Commission plans to submit its proposal for the revision of the EED in June 2021, with the aim of better adjusting the EED to the European Green Deal objectives and an increased climate ambition. Improvements will aim to achieve the objective for Europe to become the first climate-neutral continent, with net zero greenhouse gas emissions by 2050.

The implementation of the EED is progressing. The European Commission's report, published in October 2020, indicated that both primary and final energy consumption were above the trajectory to meet the 2020 targets, but that reaching the energy efficiency targets may be in jeopardy while the impact of the Covid-19 crisis on energy efficiency savings in Member States is still as yet only partially measurable.

Background

The Energy Efficiency Directive (Directive 2012/27/EU)¹ was adopted in 2012, with the aim of promoting energy efficiency across the EU and to help the EU to reach its 20 % energy efficiency [target](#) by 2020. The 2012 EED target was for EU final energy consumption in 2020 of no more than 1 086 million tonnes of oil equivalent (Mtoe) and primary energy consumption of no more than 1 483 Mtoe, the equivalent of closing 400 power stations. For this purpose, Member States were obliged to prepare three year national energy efficiency action plans ([NEEAPs](#)).

The 2012 EED was amended in December 2018,² as part of the [Clean energy for all Europeans package](#). The package contains eight legislative acts, including the Energy Efficiency Directive, the Energy Performance of Buildings Directive (2018/844/EU), the Renewable Energy Directive (2018/2001/EU), the Regulation on the Governance of the Energy Union and Climate Action (2018/1999/EU), and regulations concerning electricity market design, as well as non-legislative initiatives.

The 2018 EED set a more ambitious EU energy efficiency target of 32.5 %, to be achieved collectively in the EU by 2030. This means that EU energy consumption should be no more than 1 273 Mtoe of primary energy and/or no more than 956 Mtoe of final energy. With the United Kingdom withdrawal from the EU, and based on a European Commission [decision](#), the target was lowered to no more than 1 128 Mtoe of primary energy and no more than 846 Mtoe of final energy. The directive also obliged the EU Member States to put measures in place to cut an average 4.4 % of their annual energy consumption by 2030. For this purpose, Member States were required to prepare integrated ten year national energy and climate plans ([NECPs](#)) outlining how they intended to meet the energy efficiency and other targets by 2030.

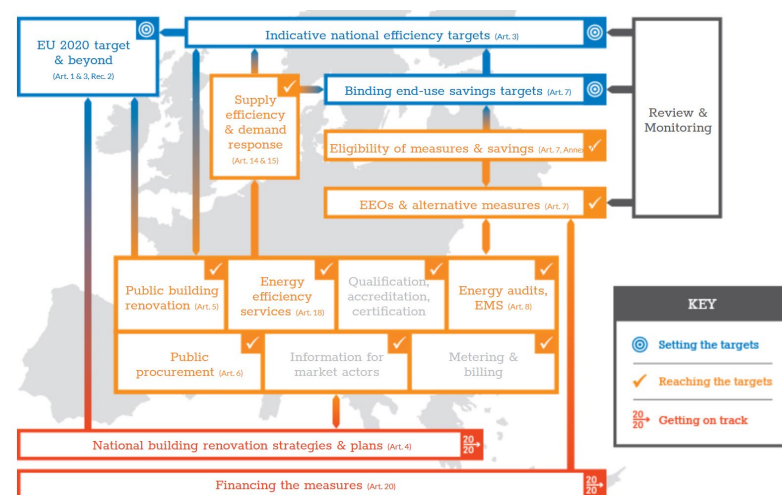
To help Member States with the implementation process, the European Commission published several guidelines, including on [energy savings obligations](#), on [metering and billing provisions](#) and on [heating and cooling](#), as well as [guidelines on good practice in energy efficiency](#). The Commission also prepared a recommendation on [transposing the energy savings obligations under the EED](#).

The deadline for transposing the EED obligations into national law was set for 25 June 2020, except for metering and billing provisions, which were set for 25 October 2020. The transposition process is progressing, although not without delays requiring European Commission intervention (see European Commission reports below).

On 14 October 2020, the European Commission published the [2020 state of the energy union report](#).

It is the fifth report on the state of energy union since November 2015, when the first report was published,³ and the first report since the adoption of the [European Green Deal](#). The report looks at the Energy Union's contribution to Europe's long-term climate goals. It was accompanied by other reports, including a progress report on improving energy efficiency. See the presentation of findings in the 'EU-level reports' section below.

Figure 1 – Energy Efficiency Directive (EED)



Source: [The Coalition for Energy Savings](#).

EU-level reports

European Commission reports

Annual assessments

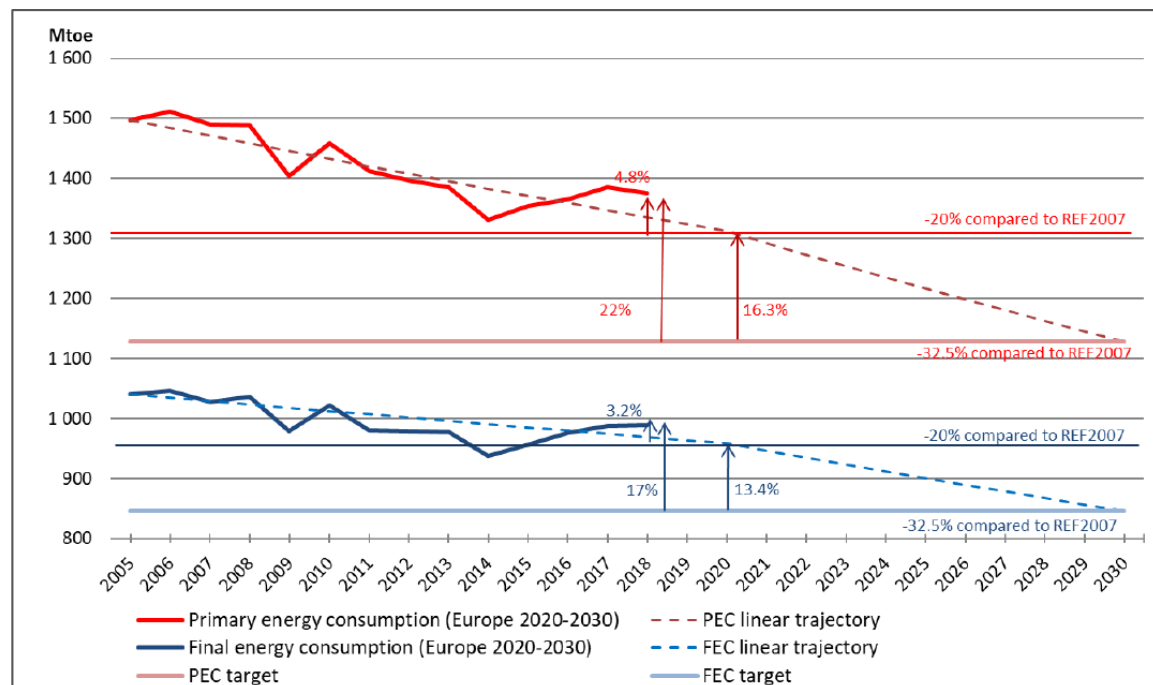
Report from the European Commission (July 2020)

Every year, the Commission publishes its assessment of Member States' progress towards the national energy efficiency targets for 2020 and towards the implementation of the EED as required by Article 24(3) of the EED. The last assessment, published in July 2020 ([COM\(2020\)326](#)), analysed the progress made by the EU-28 to meet these targets up to 2018, using official European statistics as a primary data source. The overall findings of the report indicated that both primary and final energy consumption were above the trajectory to meet the 2020 targets. Although primary energy consumption declined by 0.7 % in 2018 compared to 2017, the report stated that the pace of reduction would not be sufficient to reach the targets. The report also found that weather fluctuations and growth in economic activity continued to increase energy consumption, and that the 2019 annual energy efficiency reports showed that Member States achieved much lower savings (in 2018) than what would be needed to reach their cumulative savings targets for 2014-2020.

The report concluded that, with a limited time to implement new measures, and without taking the considerable effects of the Covid-19 crisis into account, the 2020 targets were unlikely to be reached.

Report from the European Commission (October 2020)

Figure 2 – Progress towards 2030 targets at EU-27 level



Source: European Commission report, COM(2020) 945 – Eurostat data, DG ENER's calculations.

In October 2020, the Commission published a report ([COM\(2020\) 945](#)), analysing Member States' progress towards the implementation of the Energy Efficiency Directive (2012/27/EU) and towards the deployment of nearly zero-energy buildings (NZEB) and cost-optimal minimum energy performance requirements in the EU, in accordance with the Energy Performance of Buildings Directive [2010/31/EU](#) (EPBR). Since Article 24(3) would no longer apply as of January 2021, this

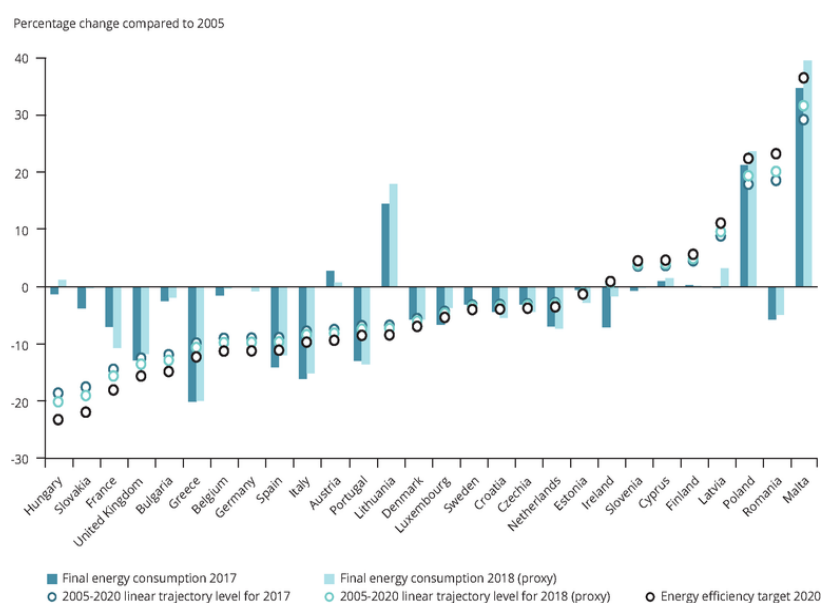
would be the last report published in line with that provision, and Article 35 of [Regulation \(EU\) 2018/1999](#) would supersede all future reports regarding progress in different energy efficiency policy areas.⁴

The report introduced new reporting on the buildings sector, as well as a brief update on the cost-optimal levels of minimum energy performance requirements for buildings in line with Directive 2010/31/EU on the EPBD.⁵ Regarding the analysis of progress towards the 2020 energy targets, since the information and data used to elaborate the 2019 report published in July 2020 remained unchanged, this report added a forward-looking perspective, by placing a particular focus on the progress made towards the 2030 targets. The report covered data and additional information up to 2018 and looked at the EU-28 performance.

The main findings revealed that the energy efficiency obligation schemes (EEOs) remain an effective tool to achieve energy savings. However, although the aggregated process towards cumulative energy savings under Article 7 (about the EEOs) of the EED in 2018 should be sufficient, the report stated that 12 Member States were unlikely to reach their targets. The preliminary data for 2020 revealed that energy demand has been considerably affected by the Covid-19 crisis, and therefore the 2020 energy efficiency targets may be achieved despite the lack of implementation of sufficient measures. The report indicated that without structural, climate-targeted measures, the economic recovery would likely lead to pre-crisis energy consumption levels. The findings of the report also pointed out that most Member States appropriately adopted the cost-optimal approach,⁶ which was used to establish minimum requirements for the energy performance of new and existing buildings and NZEBs. Although the share of NZEBs has generally increased in the total construction market, NZEB requirements in most countries are still less ambitious than the 2016 Commission's benchmarks. Nevertheless, the NZEB requirements in about half of the Member States are considerably more ambitious compared to cost-optimal levels for new buildings.

The report also provided the latest insights regarding EU-27 progress towards the achievement of the 2030 targets. It indicated that insufficient progress to reach the 2020 targets generated a gap distance to the 2030 targets that stands at 22 % in the case of primary energy consumption and 17 % for final energy consumption (Figure 2; see also Figure 3). The report also analysed the EU-wide assessment⁷ of national energy and climate plans (NECPs), which identified a lack of collective ambition in national contributions. Some of the conclusions of the report pointed out that, in order to reach the energy efficiency 2030 targets, Member States must increase their efforts, especially if

Figure 3 – Final and primary energy consumption and linear trajectory level to reach 2020 target



Source: European Environment Agency [data](#).

economic recovery after the crisis leads to pre-coronavirus energy consumption levels. The report also concluded that stronger energy efficiency measures should be incorporated in the crisis recovery plans, as well as more ambitious energy efficiency targets. Regarding NZEB, the main challenges to decarbonise the building stock by 2050 would include increasing the low renovation rates and applying more ambitious minimum requirements for existing buildings.

Joint Research Centre Technical Report: Analysis of the annual reports 2019 under the Energy Efficiency Directive

The Joint Research Centre published its 2020 [report](#) as the third of the 'summary report series', which monitors the progress at the EU and Member State level on the essential elements of the EED. Through an evaluation and analysis of the annual progress reports submitted by Member States, the report aimed at providing an overview of the main energy trends in the EU, placing a special focus on 2005-2017.

The analysis showed that 2015 was a turning point in progress towards the energy efficiency targets, since it put an end to five consecutive years of declining energy consumption, which returned to an increase during 2016 and 2017. The report concluded that the levels of energy consumption (primary and final) in 2017 were above the theoretical levels to be on the right path to reach the 2020 targets. In their Annual Reports, Member States pointed out that this increasing trend was mostly related to contextual factors, such as economic growth and the increase of value added, the increase in passenger and goods transport, increased in population and number of households, or climate fluctuations. Although these factors are expected to raise energy consumption, the report recommended Member States review the trends and take action by implementing additional policy measures or strengthening existing ones.

The study also analysed the 2019 Annual Reports submitted by Member States and the findings indicated that progress had been generally positive with regards to the implementation of EED Article 7 (on the energy efficiency obligation schemes) and, to a lesser extent, of EED Article 5 (on the exemplary role of public bodies' buildings). Finally, the study emphasised the importance of a common reporting format, such as the template introduced in 2015 and improved in 2016-2017, and recommended this aspect be considered for the future reporting framework of the new Energy Union Governance.

Inception impact assessment

On 3 August 2020, the European Commission published the [combined evaluation roadmap/ inception impact assessment](#), which points out that 'efficient use of energy is key to achieve the [European Green Deal](#) objectives', including 'increasing the EU's climate ambition for 2030 and 2050', 'supplying clean, affordable and secure energy', and 'building and renovating in an energy and resource efficient way'. With the aim of achieving the European Green Deal objectives, the Commission will therefore review and revise EU energy legislation, including the EED.

The main objective of the review of the EED is to 'assess the effectiveness of the framework of the EED since its entry into force in 2018, except for those elements already evaluated as part of the Clean Energy for all Europeans package, and to establish to what extent the objectives of the policy intervention have been achieved'. The review will also focus on such aspects as 'security of supply, resource-efficiency, circular economy, competitiveness and jobs and growth, and reducing pollution among others'. Simultaneously, the European Commission will evaluate final National Energy and Climate Plans (NECPs) prepared by Member States and will take 'outcome of the impact assessment of the 2030 climate target plan' into consideration.

The Commission expects that the revision of the EED can have a positive economic impact if it leads to additional energy savings, even if new action would require new investment. An increased sectoral competitiveness and a direct positive impact on employment in the sectors linked to energy efficiency and positive environmental effects are also expected. A reduction in administrative burden can also be achieved through better synergy of the EED with other legislative acts.

European Parliament position/Members' questions

European Parliament resolutions

Over the years, the European Parliament has shown keen interest in different aspects of energy efficiency. On 23 June 2016, it adopted a [resolution](#) on the implementation report of the EED. The resolution emphasised, inter alia, the importance of energy efficiency for achieving the climate and energy targets, as well as for reducing energy dependence on imports, creating jobs and reducing energy poverty, and confirmed the positive contribution for the Energy Efficiency Directive to these goals. However, it called for more effort from Member States and local authorities in fully implementing the EED provisions. The Parliament also adopted a [resolution](#) regarding an EU strategy on heating and cooling on 13 September 2016. The Parliament called on the Commission to implement effective measures on energy efficiency, placing a particular focus on energy-poor households. The resolution also pointed out the importance of including specific sustainable measures for heating and cooling during the revision of the EED, and of developing heating and cooling strategies to be implemented at national level.

In the context of the 2018 revision of the EED, the Parliament published its [position](#) in advance of the trilogue negotiations, with the aim of strengthening the provisions related to annual energy savings obligations. Parliament's position included a minimum of 35 % binding headline targets on energy efficiency by 2030, to be achieved through indicative national energy efficiency targets, and placed a particular focus on the responsibility of Member States to establish energy poverty alleviation as a priority.

On 6 February 2018, the European Parliament adopted a series of non-legislative recommendations elaborated by the Industry, Research and Energy Committee (ITRE). The Parliament confirmed its support for education schemes for European citizens to learn about energy conservation and efficiency, and stated its willingness to increase the EU financing of low-emission energy projects to 50 %. In its [resolution](#), the Parliament recalled that energy efficiency should be a priority in EU research and innovation policy, as well as reiterating the importance of the 'energy efficiency first' principle that should be applied throughout the entire energy chain. The resolution also highlighted the importance of innovation in clean energies and energy efficiency to create new and better jobs, emphasising the fact that, in order to achieve a sustainable and decarbonised economy, a just transition in the labour market will be necessary.

On 15 January 2020, Parliament adopted a [resolution](#) on the European Green Deal calling for a revision of the Energy Efficiency Directive and the Energy Efficiency of Buildings Directive, following the more ambitious EU climate strategy. The Parliament also called for a strengthened implementation of the two directives by introducing binding national targets and focusing on vulnerable citizens, as well as taking the need for more economic predictability for the sectors involved into consideration. The resolution underlined the essential role of energy in the transition to a net-zero GHG emissions economy by 2050, and called 'for an increase of the EU's domestic GHG emissions reduction target for 2030 to 55 % compared to 1990 levels'. Parliament also highlighted that the transition must be socially sustainable. In this regard, the resolution called for the implementation of specific actions in cooperation with the Member States and for the sharing of best practices to contribute to the reduction of energy poverty, as well as ensuring the accessibility of financing tools for energy efficiency renovations. The resolution also stressed the importance of digital technologies in improving resource and energy efficiency.

Selected written questions

[Written question](#) by Simona Bonafè (S&D, Italy), 8 July 2020

The question referred to energy consumption of water and wastewater facilities. Simona Bonafè stressed that both water and wastewater facilities represent 30 % to 40 % of local authorities' total

electricity bill. The Member also stated that the energy efficiency Best Available Techniques Reference Document (BREF) does not take the nexus between water and energy into consideration (based on the findings of the 2016 International Energy Agency (IEA) Special [Report](#) on the Water-Energy Nexus). Simona Bonafè asked the European Commission if there was a cross-sectoral strategy to take this nexus into account and to address broader resource and energy efficiency issues of water and its contribution to decarbonisation. In a second question, the Member asked if the Commission intended to improve the regulatory framework to promote smart water, storm water and wastewater measures, with the aim of reducing energy consumption and emissions in municipalities.

[Answer given by Commissioner Virginijus Sinkevičius on behalf of the European Commission, 28 August 2020](#)

Commissioner Sinkevičius answered that the Commission was aware of the findings of the 2016 International Energy Agency (IEA) report, and that the amended EED acknowledged the considerable contribution of effective management of water to energy savings. He also highlighted that the issue would be further assessed in the upcoming revision of the EED.

[Written question by Mauri Pekkarinen \(Renew, Finland\), 18 May 2020](#)

Mauri Pekkarinen stressed that the three central objectives of the EU's climate policies are often contradictory, since in some cases the action required to promote low-carbon and renewable energy sources might not contribute to energy efficiency. The Member explained that the electrification of some sectors using renewable sources and other CO₂-free options would require large amounts of primary energy, and considerably more than would have been the case if production had taken place using fossil energy.

Mauri Pekkarinen therefore asked the Commission what would be prioritised between increasing the amount of renewable and CO₂-free energy and improving energy efficiency, and also between achieving a carbon-neutral society and fulfilling its energy efficiency requirements. The Member asked if the Commission agreed that better indicators are needed to measure energy efficiency progress, in addition to the total amount of energy consumed. Lastly, the Member asked if the Commission could analyse the potential effects on sector integration and the competitiveness of EU industries by making GHGs one of the main targets of EU climate policy post-2030.

[Answer given by Executive Vice-President Frans Timmermans on behalf of the European Commission, 12 August 2020](#)

Executive Vice-President Timmermans answered that a large proportion of the reduced energy demand was meant to take place in buildings, which are responsible for 40 % of energy consumption. Vice-President Timmermans confirmed that large-scale electrification of the energy system should be driven by the deployment of renewable energies, whether at the end-user level, or to produce carbon-free fuels and feedstock for industry. Vice-President Timmermans also explained that EU climate and energy policies are aligned with the 'energy efficiency first' principle.

Additionally, the Vice-President stressed that the most informative and comparable indicator to measure energy efficiency progress to date is the absolute level of energy consumption, and that the Commission also takes other indicators into account. Lastly, Vice-President Timmermans emphasised that energy efficiency targets are not sector-specific, and therefore if consumption in a particular sector or company increases, this could be compensated for by applying energy efficiency measures in other parts of the economy. The Vice-President indicated that the Commission advocates for energy efficiency where it is a cost-effective solution to reduce GHG emissions and to contribute to cost competitiveness in EU industry.

[Written question by Maria Grapini \(S&D, Romania\), 7 May 2020](#)

The question referred to EU expenditure on energy efficiency in buildings, and the Member stressed that cost-effectiveness is not a determining factor for allocating public funds in measures to improve

energy efficiency of residential buildings. Maria Grapini explained that, although the Commission provided guidance, EU funded projects still fail to achieve the greatest possible energy savings per euro invested. The Member emphasised the crucial role buildings play in achieving EU energy saving targets, and asked what the Commission's strategy would be to plan and channel future funds towards energy efficiency of buildings. Maria Grapini also asked how the Commission would monitor the progress made towards the achievement of the EU energy efficiency targets.

Answer given by Commissioner Kadri Simson on behalf of the European Commission, 21 July 2020

Commissioner Simson's answer stated that the Commission is constantly looking for alternatives to improve financing tools within the 2021-2027 multiannual financial framework and crisis recovery instruments. Kadri Simson referred to the smart finance for smart buildings programme adopted in 2016, which is already in use to prepare a pipeline of energy efficiency projects. Commissioner Simson also highlighted the important role played by the Sustainable Energy Investment Forums and the Energy Efficiency Financial Institutions Group.

Commissioner Simson stressed that the Commission's proposal for the Cohesion Funds for 2021-2027 also promotes the use of selection criteria and procedures to link energy efficiency investments in buildings to energy savings. Kadri Simson emphasised the importance of improving the cost-effectiveness of investments, as well as the use of appropriate instruments to support the financial framework and strengthen the implementation of financing products. Lastly, Commissioner Simson confirmed that the Commission would provide an update on progress on the energy efficiency targets in the State of the Energy Union report.

European Court of Auditors

In 2020, the European Court of Auditors (ECA) published a special [report](#) on energy efficiency in buildings, 'to issue recommendations that should help the EU to achieve its 2030 energy efficiency target by improving the cost-effectiveness of its 2021-2027 cohesion policy spending'. Based on examining five operational programmes prepared by Member States, the ECA found, among other things, that cost-effectiveness does not guide EU spending on energy efficiency in buildings, and that needs identified by the Member States in the NEEAPs could not be properly considered when designing the 2014-2020 operational programmes, due to timing constraints – the situation in 2021-2027 should be improved. The ECA therefore recommended: 1) improving the planning and targeting of investments; 2) improving project selection procedures; and 3) making the performance framework more result-oriented, to better monitor progress towards the EU energy efficiency targets and improve accountability.

EU citizens' views on EU climate and energy policies

EU citizens are concerned about climate and energy, and have expressed these concerns in two Eurobarometer surveys. Overall, 93 % respondents thought that 'climate change is a serious problem', whereas 90 % thought that the EU 'must ensure access to clean energy'. They also see their own role in the process, and 93 % of respondents declared that they took at least one action to tackle climate change (with trying to reduce waste and regularly separate it for recycling being top of the list of actions at 75 %). However, 88 % confirmed there is a need for governments to 'provide support for improving energy efficiency by 2030'.

The Eurobarometer respondents were also aware of the importance of energy in their lives. They were convinced that the EU 'must ensure access to energy to all EU citizens' (92 % of respondents), and that the EU 'must ensure access to affordable energy' (89 %). Respondents were also convinced of the need to strengthen cooperation between Member States to achieve those energy and climate goals (91 %). It is also worth adding that 92 % of respondents believed that the EU 'should encourage more investment in energy research and innovation'.

Source: [Europeans' attitudes on EU energy policy](#), Special Eurobarometer 492, September 2019 and [Europeans' attitudes on climate change](#), Special Eurobarometer 490, September 2019.

Also in 2020, the ECA published a special [report](#) on the EU action on eco-design and energy labelling, the requirements of which focus primarily on energy efficiency. The ECA found, among other things, that existing implementing measures (for more than 30 product groups) covered most of the products with the highest energy-saving potential, but that developing energy efficiency measures is a complex and lengthy process. According to the Commission this takes around three and a half years to set, but takes much longer in practice and lasts six to seven years, according to the ECA. The ECA also found that Market Surveillance Authorities (MSA) should conduct effective market surveillance to improve the level of compliance with eco-design and energy labelling legislation. The ECA recommended: 1) improving the regulatory process, 2) improving impact accounting, and 3) facilitating MSA cooperation.

European Commission consultation of stakeholders

In September-November 2020, the European Commission organised a series of stakeholder workshops to gather feedback on the evaluation of the existing directive and potential solutions for the planned revision. A period of gathering feedback preceded the workshop (between 3 August 2020 and 21 September 2020), during which the Commission received 189 [responses](#) from stakeholders.

From 17 November 2020 to 9 February 2021, the Commission organised a [public consultation](#) process to receive input, which would contribute to the Commission's preparatory work for the review and the revision of the directive. The results of the consultations are not yet published.

Petitions

In 2013-2020, the European Parliament Committee on Petitions (PETI) received 21 petitions, of which 11 are already closed. The largest number of petitions was submitted in Bulgarian (8 petitions) and in Romanian (4). The petitions related mostly to energy and consumers' rights. In more detail, they concerned the violation of consumer rights by a heating company in one Member State, the failure to transpose the directive into national law in two other Member States, and the alleged violation of the directive in one further Member State.

Citizens' enquiries (AskEP)

In 2018-2020, the EU received 11 enquiries from citizens regarding energy efficiency, six in 2018, and three in both 2019 and 2020. Citizens requested information or action concerning the implementation of the directive, they provided negative comments on the implementation of the directive, and they provided general comments regarding citizen's innovations in energy.

MAIN REFERENCES

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ENDNOTES

- ¹ [Directive \(EU\) 2012/27](#) 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, OJ L 315, 14.11.2012.
- ² Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency, OJ L 328, 21.12.2018.
- ³ Previous reports: [Fourth state of the energy union](#) (published in April 2019), [Third state of the energy union report](#) (November, 2017), [Second state of the energy union report](#) (February, 2017), [First state of the energy union report](#) (November 2015).
- ⁴ Article 35(1) of [Regulation 2018/1999](#) indicates that 'By 31 October of every year, the Commission shall submit to the European Parliament and to the Council a State of the Energy Union report' and Article 35(2) outlines the different elements that the State of the Energy Union report shall include.
- ⁵ The Energy Performance of Buildings Directive, (EPBD [Directive 2010/31/EU](#)) indicates in its Article 4.1 (recital 14), that Member States are obliged to 'assure that minimum energy performance requirements for buildings or building units are set with a view to achieving cost-optimal levels'. Member States should also 'take the necessary measures to ensure that minimum energy performance requirements are set for building elements that form part of the building envelope and that have a significant impact on the energy performance of the building envelope when they are replaced or retrofitted, with a view to achieving cost-optimal levels'.
- ⁶ The cost-optimal level is defined in Article 2.14 of the EPBD as 'the energy performance level which leads to the lowest cost during the estimated economic lifecycle, where: (a) the lowest cost is determined taking into account energy-related investment costs, maintenance and operating costs (including energy costs and savings, the category of building concerned, earnings from energy produced), where applicable, and disposal costs, where applicable; and (b) the estimated economic lifecycle is determined by each Member State. It refers to the remaining estimated economic lifecycle of a building where energy performance requirements are set for the building as a whole, or to the estimated economic lifecycle of a building element where energy performance requirements are set for building elements.'
- ⁷ European Commission report, An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning, [COM\(2020\) 564 final](#), September 2020.

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eprs@ep.europa.eu (contact)

www.eprs.ep.parl.union.eu (intranet)

www.europarl.europa.eu/thinktank (internet)

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