

Special report

EU climate and energy targets

2020 targets achieved, but little indication that actions to reach the 2030 targets will be sufficient



EUROPEAN
COURT
OF AUDITORS

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Executive summary

I Climate change is a global challenge, one which has a significant effect on EU citizens' lives. Over time, the EU has set itself increasingly ambitious climate and energy targets to respond to it. These include 2020 and 2030 targets for reducing greenhouse gas emissions, increasing the use of renewable energy, and promoting energy efficiency.

II We decided to carry out this audit now given the high level of public interest. By drawing lessons from successful practice related to the achievement of the 2020 targets, we expect our report to help the Commission assess the draft National Energy and Climate Plans and the member states to finalise them.

III The EU has a legal framework in place governing climate and energy targets. Member states were required to submit National Energy and Climate Plans for the 2021-2030 period. In these plans, they outlined policies aimed at achieving these targets. The Commission and member states monitor and report on progress made towards achieving the targets.

IV The EU committed to spending at least 20 % of its 2014-2020 EU budget on climate action. For the 2021-2027 EU budget, this figure has increased to 30 %, about €87 billion per year. This amount is less than 10 % of the total investment needed to reach the 2030 targets, estimated at around €1 trillion per year. It is envisaged that the rest of the investment will come from national and private funds.

V For this audit, we assessed whether the EU has built on successful actions to reach its 2030 energy and climate targets. We examined whether the EU had learned lessons from the achievement of 2020 targets which would help it to reach the more ambitious 2030 targets.

VI We found that the EU had indeed achieved its 2020 targets. However, this achievement was also due to the contribution of external factors. The Commission has not assessed the extent to which this progress was a result of the policies rather than external factors, such as the financial crisis in 2009 and the exact contribution of the COVID-19 pandemic in 2020.

VII We found that the EU's greenhouse gas emissions reduction compared well to those of other industrialised countries. However, accounting for the EU's 2020 greenhouse gas emissions does not include emissions occurring as a result of trade, caused by carbon leakage (which, if included, are estimated to increase by about 8 %) and from international aviation and shipping (respectively 3.4 % and 3.6 %).

VIII The Commission has only a partial overview of the actions that proved successful for achieving the 2020 targets. It has identified the sectors which have been successful, i.e. those covered by the EU Emissions Trading System but lacks information on the cost and effects of actions. It lacks data on the cost to the EU budget, national budgets and private sector of achieving the EU targets.

IX The National Energy and Climate Plans also lack data on investment needs and funding sources to assess whether such plans are a sound basis to reach the 2030 targets. Overall we found little indication so far that the ambitious 2030 EU targets will be translated into sufficient action. There is no information that sufficient financing will be made available to reach the 2030 targets, in particular from the private sector.

X We recommend that the Commission should:

- provide more transparency on the performance of the EU and its member states on climate and energy action;
- account for all greenhouse gas emissions caused by the EU, including emissions embodied in trade and from international aviation and navigation;
- support member states' commitment to achieving the 2030 targets.

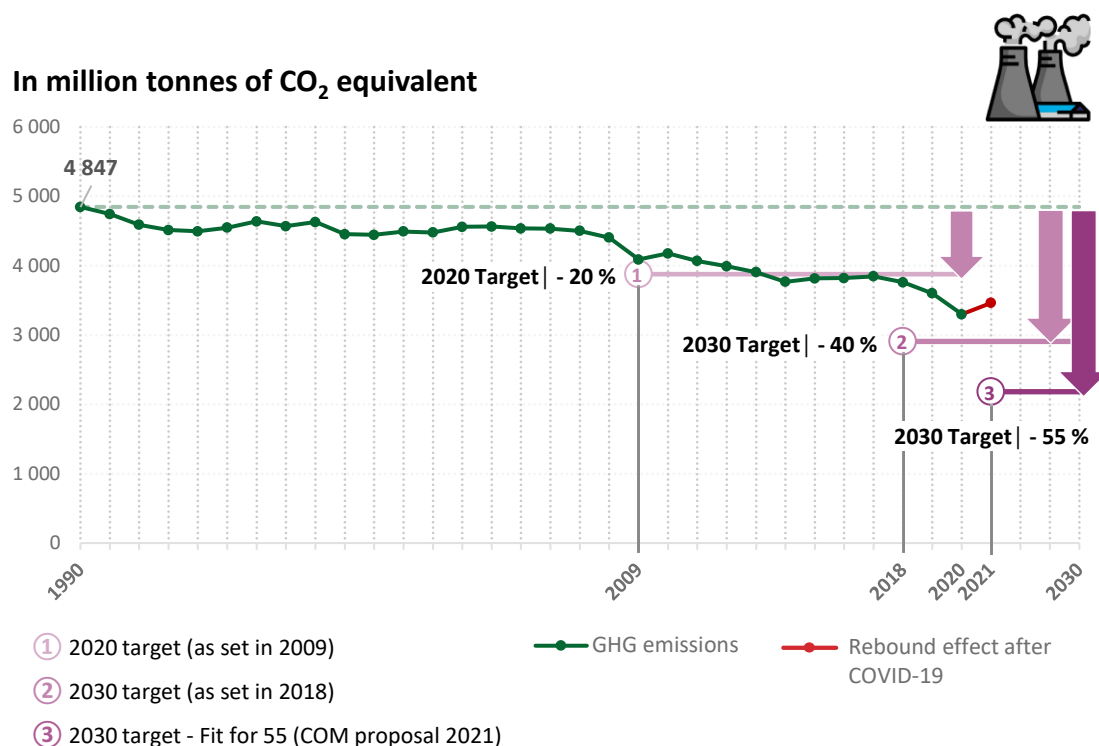
Introduction

The EU climate and energy targets

01 Climate change is a global challenge, with significant impact on EU citizens' lives. Over time, the EU has set itself increasingly ambitious climate and energy targets to respond to it. These include 2020 and 2030 targets for:

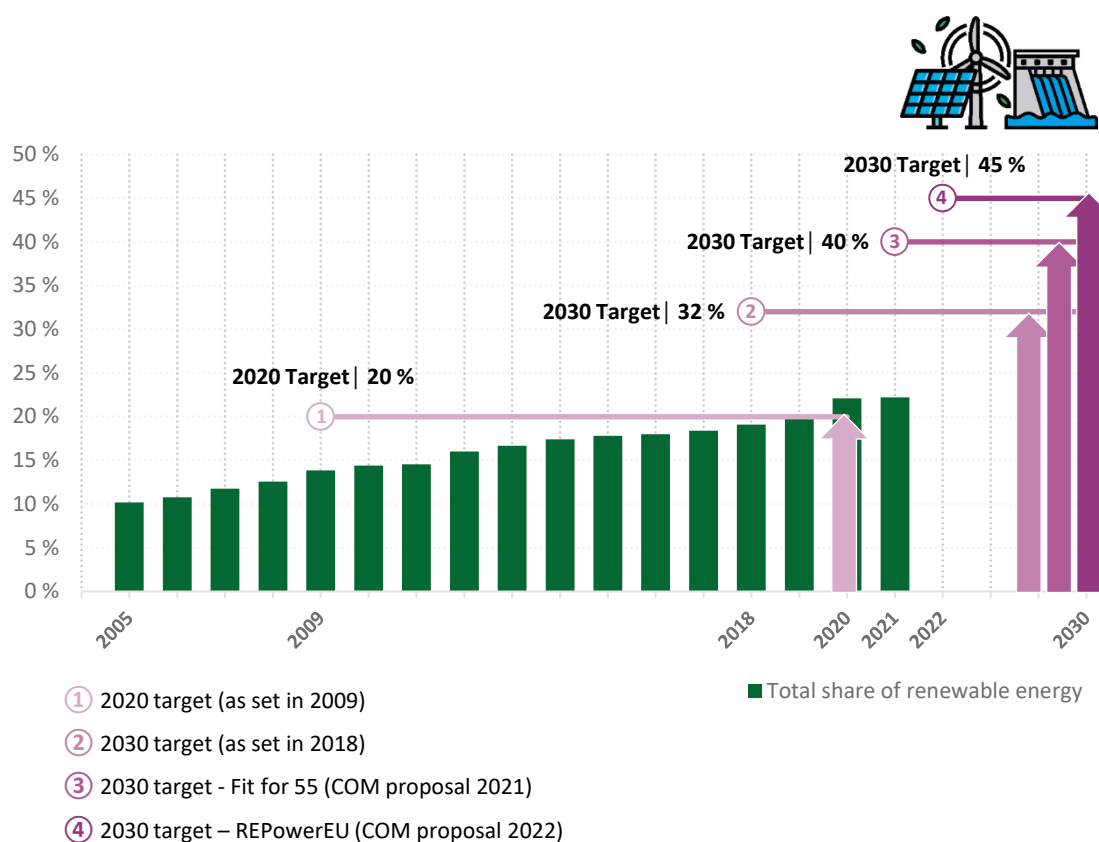
- reducing greenhouse gas emissions, compared to 1990 levels (see [Figure 1](#));
- increasing the share of renewable energy (see [Figure 2](#)); and
- promoting energy efficiency, i.e. reducing energy consumption (see [Figure 3](#)).

Figure 1 – Evolution of the EU greenhouse gas emissions target



Source: ECA based on data from [European Environment Agency](#). [Data for 2021 are provisional].

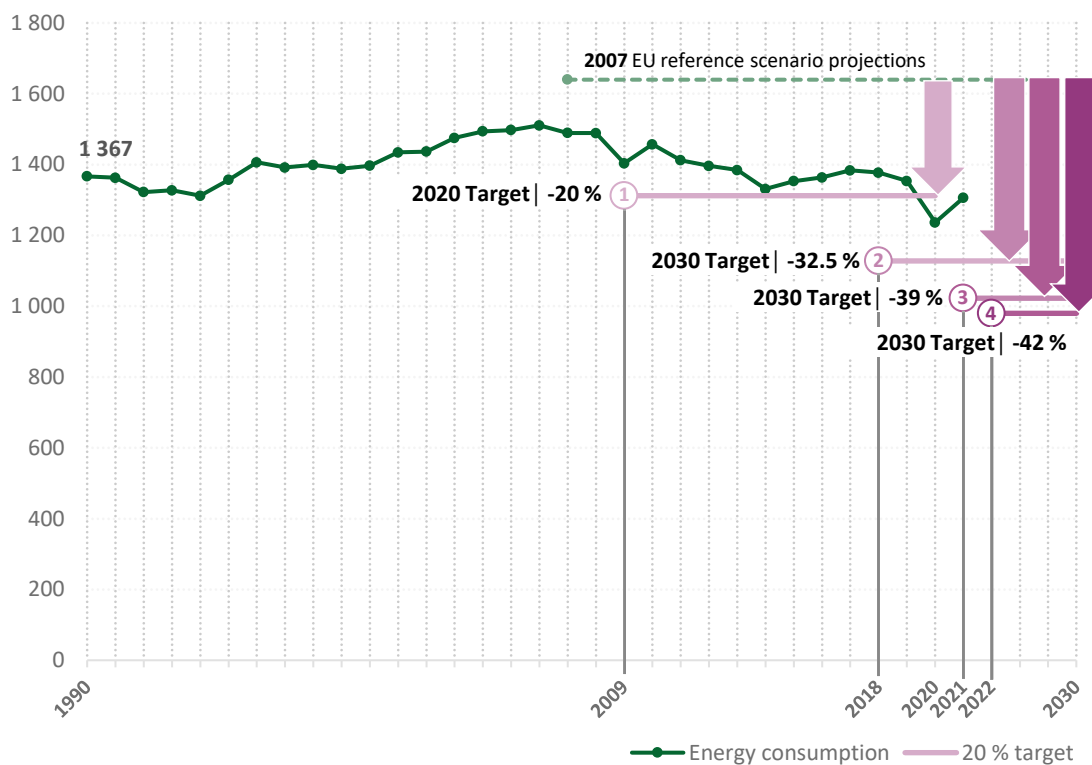
Figure 2 – Evolution of the EU renewable energy share target



Source: ECA based on data from [Eurostat](#).

Figure 3 – Evolution of the EU energy efficiency target, expressed in terms of energy consumption

In million tonnes of oil equivalent



- ① 2020 target (as set in 2009)
- ② 2030 target (as set in 2018)
- ③ 2030 target – Fit for 55 (COM proposal 2021)
- ④ 2030 target – REPowerEU (COM proposal 2022)

Source: ECA based on data from [Eurostat](#).

02 All three 2020 headline targets were broken down into targets for each individual member state. The aim was to ensure that the targets for the EU are achieved collectively, as a whole.

Main policies aimed at achieving the climate and energy targets

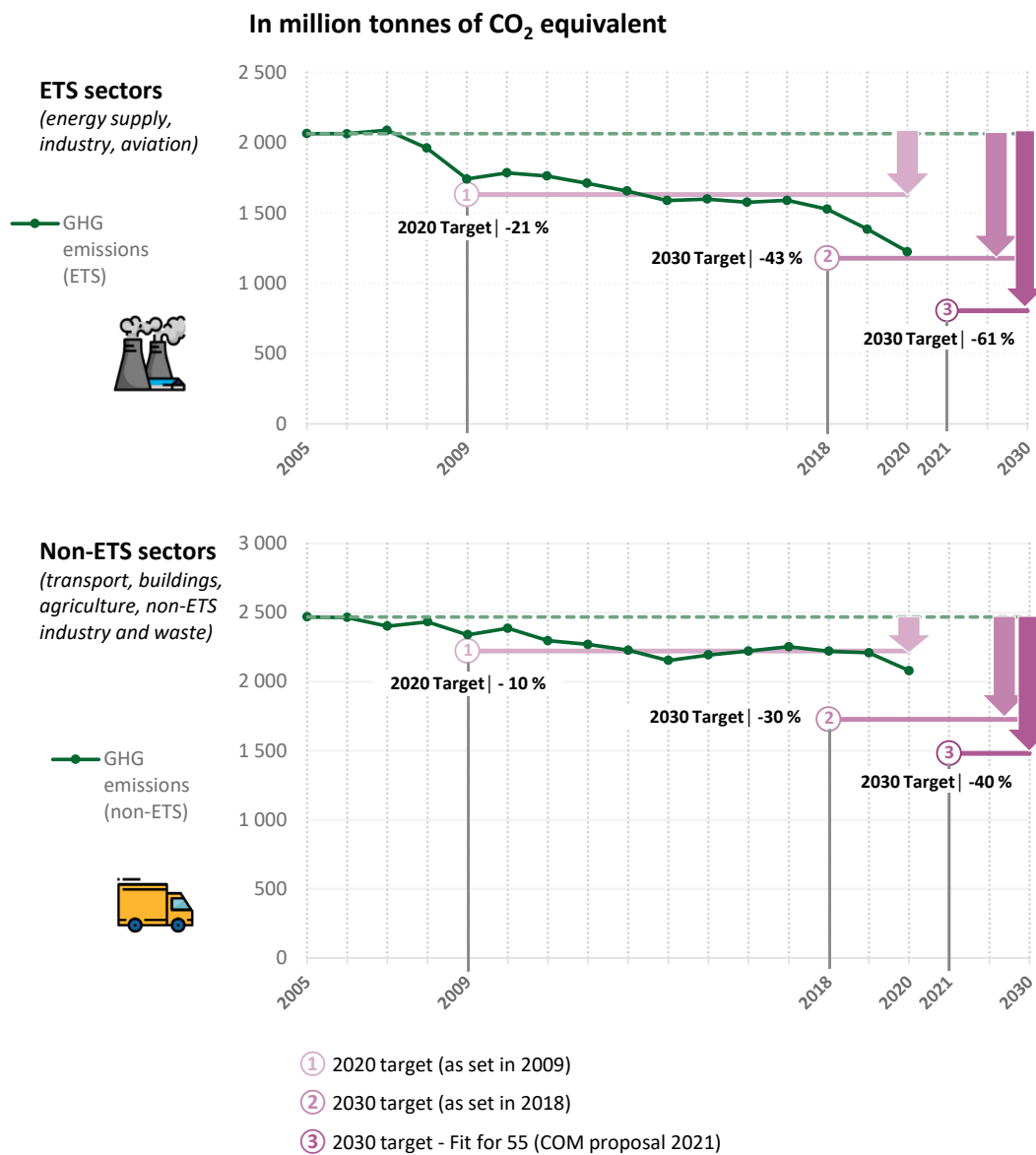
03 In 2009, the EU introduced a set of policies (the “[Climate and Energy Package](#)”), aimed at achieving the 2020 targets. This package included a reviewed Directive on Emissions Trading (the [ETS Directive](#)) and the [Effort-Sharing Decision](#).

Under the package, the EU's overall greenhouse gas emissions target was further broken down into:

- an EU emissions trading system target (a 21 % reduction in emissions by 2020 compared to 2005 values) – setting a maximum emissions cap for the sectors covered by the ETS (energy supply and heavy industry);
- an EU non-ETS target (a 10 % reduction in emissions by 2020 compared to 2005 values), broken down into national binding targets for emissions not currently covered by the ETS (transport, buildings, agriculture, non-ETS industry and waste).

04 Figure 4 provides an overview of the progress towards meeting these two sub-targets:

Figure 4 – Evolution of greenhouse gas emissions from EU ETS and non-ETS sectors

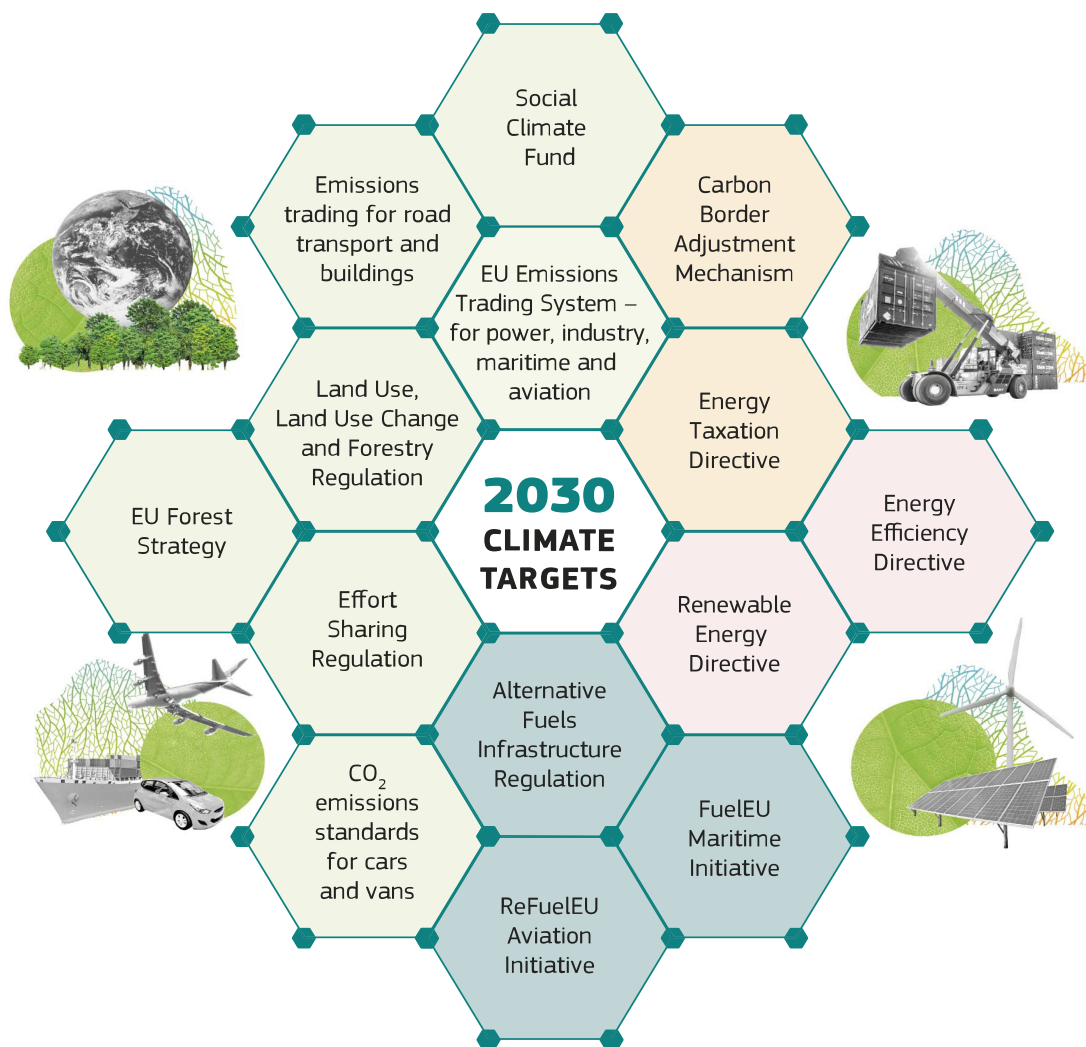


Source: ECA based on data from European Environment Agency for ETS and for non-ETS.

05 In 2019, the EU adopted the “[Clean Energy for All Europeans Package](#)”, which consisted of eight laws and three non-legislative initiatives. These were aimed at further decarbonising the EU’s energy system, and putting in place measures to allow the EU to reach its 2030 targets. One of the main novelties related to climate and energy targets was a new [Regulation on the Governance of the Energy Union and Climate Action](#). This introduced the requirement for member states to establish integrated 10-year national energy and climate plans (NECPs), outlining policies for 2021-2030 to achieve climate and energy targets. The Commission monitors progress based on member states’ reporting .

06 In 2021, the EU adopted its [European Climate Law](#), establishing a binding EU target of zero net greenhouse gas emissions by 2050. It also set an intermediate target of reducing net emissions by 55 % by 2030, compared to 1990 levels. To support this ambition, the Commission proposed a series of legislative proposals in July 2021 under the “[Fit for 55](#)” package, including more ambitious EU renewable energy and energy efficiency targets. [Figure 5](#) provides an overview of the Commission’s main initiatives to achieve the proposed updated 2030 climate and energy targets. The current status of the 20 legislative proposals included in this package is available on the [European Parliament’s website](#).

Figure 5 – Commission proposals to support the delivery of the 2030 targets



Source: European Commission.

07 In May 2022, the Commission adopted the [REPowerEU Plan](#) to reduce dependence on Russian fossil fuels. This plan proposed to further increase the 2030 energy efficiency target from 39 % to 42 %, and the 2030 target for the share of energy from renewables from 40 % to 45 %. On 30 March 2023, the Council and the Parliament negotiators reached a provisional political agreement to raise the share of energy from renewables to 42.5 % by 2030 with an additional 2.5% indicative top up that would allow to reach 45 %. By April 2023, negotiations between the Council and the European Parliament on the proposal to increase the 2030 energy efficiency target are still ongoing. The current status of the four legislative proposals included in the REPowerEU plan is available on the [European Parliament's website](#).

Main responsibilities

08 The Commission and co-legislators (the European Parliament and the Council) have established an EU legal framework on climate and energy targets.

09 In their National Energy and Climate Plans (NECPs) submitted to the Commission in 2019 and 2020, member states outlined the policies that they intended to put in place for the 2021-2030 period to achieve the EU targets, set in 2018 (see paragraph [01](#)). They will have to report by 15 March 2023, and every two years thereafter, on the action they have taken. By 30 June 2023, member states must submit to the Commission draft updated NECPs, reflecting the increased ambition of the EU targets (see paragraphs [06](#) and [07](#)). Otherwise, they must provide to the Commission reasons justifying why the plan does not require updating. The Commission assesses draft NECPs and issues recommendations, which member states must take into account when submitting final NECPs. These are due by 30 June 2024.

10 The Commission tracks progress towards the targets with the assistance of the European Environment Agency (EEA), which verifies the quality of the data and projections submitted by member states. The Commission monitors and reports annually on the achievement of the targets, for example through the Commission's State of the Energy Union report and the Climate Action Progress Report. Member states also report directly to the United Nations on their greenhouse gas emissions.

Budget to reach the climate and energy targets

11 In 2021, the Commission estimated that achieving the 55 % greenhouse gas emissions reduction target by 2030 would require additional investment of €392 billion per year¹ compared to the 2011-2020 average in the energy system alone. Experts have estimated that reaching net-zero emissions by 2050 in the EU-27 would require total (i.e. ongoing plus additional) investment of around €1 trillion per year² in the 2021-2050 period.

12 The EU committed to spending at least 20 % of its 2014-2020 EU budget for climate action. In June 2021, the Commission reported that the EU had spent 20.1 % of its 2014-2020 budget, or €216 billion, on combating climate change, delivering on its 20 %

¹ [Commission Staff Working Document Impact Assessment Report](#), SWD(2021) 621 final.

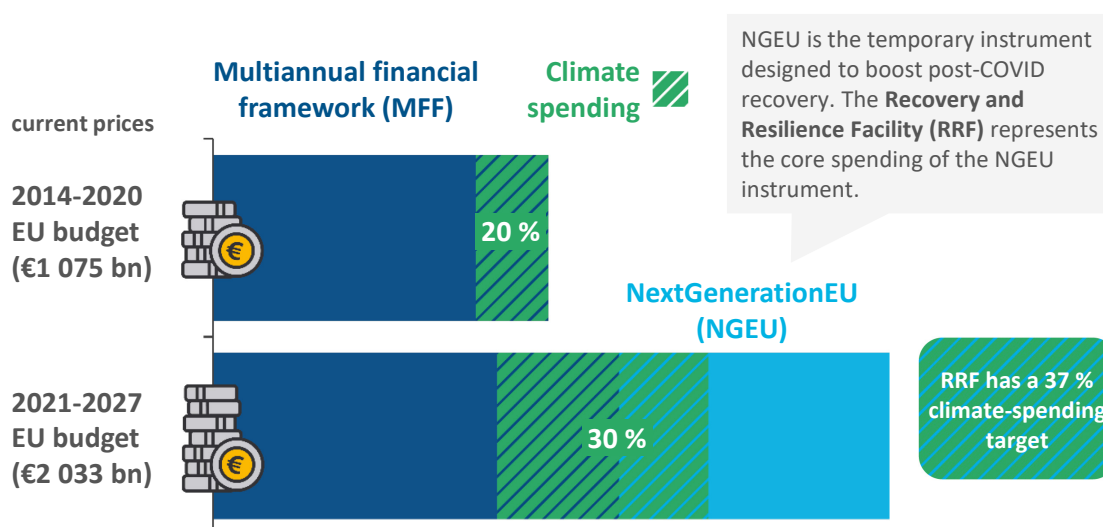
² McKinsey & Company, [How the European Union could achieve net-zero emissions at net-zero cost](#), 2020.

greenhouse gas emission reduction target³. In our [special report 09/2022](#) on climate spending we found that the Commission had overstated climate spending by at least €72 billion, which meant that around 13 % of the 2014-2020 EU budget had been spent on climate action.

13 For 2021-2027, the EU has set an overall goal of spending 30 % of its budget to climate action, a total of €610 billion throughout the period, or €87 billion per year.

[Figure 6](#) provides an overview of the EU's spending on achieving its climate and energy targets.

Figure 6 – Climate-spending targets for the EU budget



Source: ECA special report 09/2022, based on: Commission, A Modern Budget for a Union that Protects, Empowers and Defends; The Multiannual Financial Framework for 2021-2027, COM(2018) 321; European Council, Conclusions - Special meeting of the European Council, EUCO 10/20, 2020, p. 7; Commission, Guidance to Member States, Recovery and Resilience Plans, SWD(2020) 205, p 5.

14 This spending under the EU budget is less than 10 % of the total estimated investment needed to reach the 2030 targets (i.e. €87 billion compared to €1 trillion, see paragraphs [11-13](#)): a major proportion of the investment will need to come from national and private funds.

³ Commission, [2020 Annual Management and Performance Report for the EU budget](#), Volume I.

Audit scope and approach

15 Our main audit question was aimed at determining whether the EU is building on successful actions in order to reach its 2030 energy and climate targets.

16 We analysed whether the achievement of the 2020 targets was based on the EU's own climate actions and compared well to other industrialised countries in the world. We then examined whether the EU had drawn lessons, by assessing whether the Commission and member states had identified actions which had proved successful (and unsuccessful) in achieving the 2020 targets, and whether these lessons had fed into the framework for achieving the more ambitious 2030 targets.

17 We decided to carry out this work now given the high level of public interest. By drawing lessons from successful practice related to the achievement of 2020 targets, we expect our report to help the Commission assess the draft NECPs and the member states to finalise them. We expect our recommendations to be useful in the context of the EU's objective of achieving climate neutrality by 2050.

18 We reviewed the work of the Commission and analysed data for the 1990-2021 period mainly from Eurostat and the European Environment Agency. We also interviewed authorities from five member states (Germany, Ireland, Italy, Poland and Sweden), representing 48 % of EU greenhouse gas emissions. We reviewed evaluations and studies from the Joint Research Centre, the European Parliament Research Service, and built upon previous ECA work.

Observations

The EU reached its 2020 targets, but not only due to its own climate action

19 On 18 October 2022, the Commission reported that the EU had reached its three 2020 climate and energy targets⁴. For the EU to be able to learn from this achievement, it is important to assess and report in a transparent manner whether the EU's performance was due to its own climate actions.

20 The following sections describe the impact of COVID-19, the impact of unexpected GDP fluctuations, and the extent to which the flexibilities allowed member states to achieve their 2020 targets.

Commission did not assess the extent of the COVID-19 pandemic's contribution to achieving the EU's 2020 targets

21 By March of the year n+2, member states must send their emissions data to the Commission. The Commission sends the EU's consolidated data to the United Nations Framework Convention on Climate Change secretariat by April of the same year⁵. In our [special report 18/2019](#) on greenhouse gas emissions, we concluded that EU's emission data is appropriately reported.

22 As shown in [Figure 1](#), the EU reduced its greenhouse gas emissions by 31.9 % by 2020, thereby achieving its 2020 greenhouse gas target (a reduction of 20 %). Greenhouse gas emissions dropped by 8.4 % from 2019 to 2020 (a reduction of 303 million tonnes CO₂e), the year marked by the economic downturn caused by the COVID-19 pandemic (-5.7 % in EU GDP). This drop in greenhouse gas emissions was the largest in the 1990-2020 period.

⁴ [State of the Energy Union Report 2022](#).

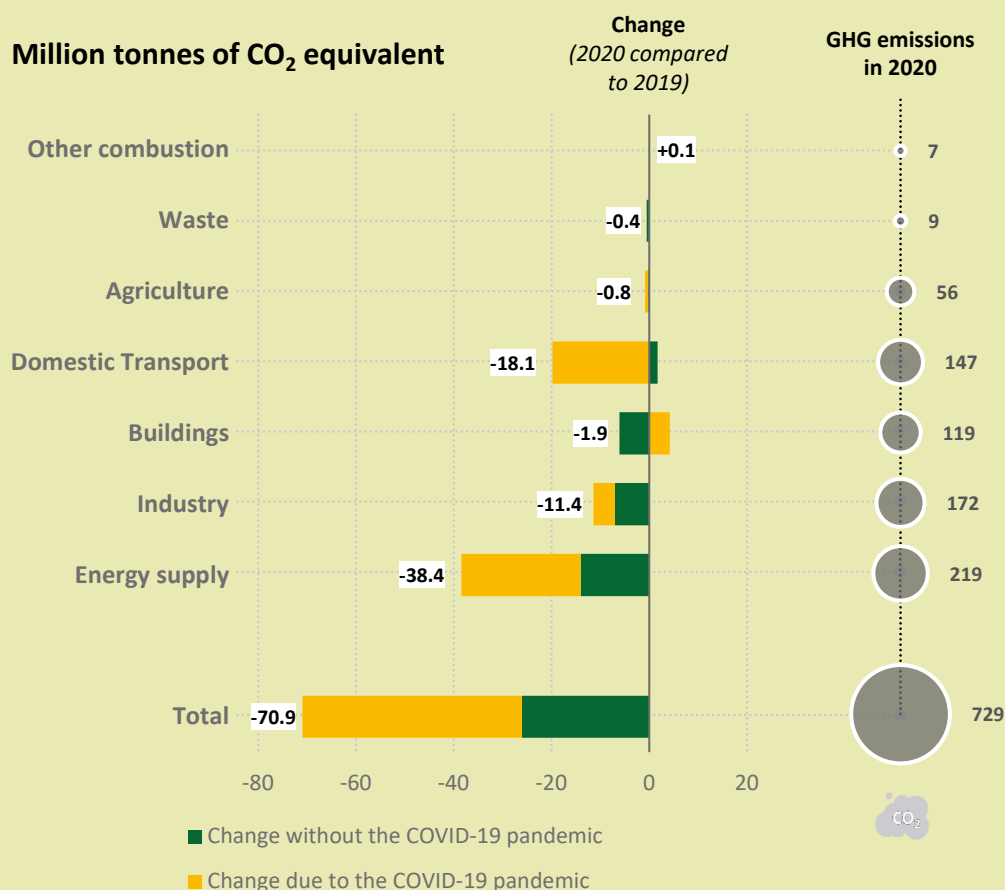
⁵ See [Regulation \(EU\) No 525/2013](#) and the [United Nations Framework Convention on Climate Change](#) (UNFCCC).

23 The Commission considered the impact of COVID-19 on the achievement of the EU's 2020 targets in its reports⁶. It however did not assess the exact contribution of the COVID-19 pandemic to achieving these targets. We noted that Germany reported on the extent of the impact of COVID-19 on greenhouse gas emissions (see [Box 1](#)). We estimated the likely value of the 2020 EU greenhouse gas emissions in the absence of COVID-19, by extrapolating it from the 2009-2019 trend, assuming a linear annual average reduction continuing for the year 2020. Following this approach, EU greenhouse gas emissions would in 2020 have been around -27 % compared to 1990 levels instead of -31.9 %. This still exceeds the reductions called for by the 2020 target. Provisional EEA data on 2021 greenhouse gas emissions indicates a major rebound effect, with emissions rising up by 5 % to 3 460 million tonnes CO₂e.

⁶ 2021 EU Climate Action progress report;
[2022 Report on the Achievement of the 2020 renewable energy targets](#);
[2022 Report on the achievement of the 2020 energy efficiency targets](#).

Box 1: Reporting on the impact of COVID-19 on greenhouse gas emissions in Germany

In Germany, greenhouse gas emissions decreased by 8.9 % from 2019 to 2020: from 800 to 729 million tonnes CO₂e. In its [report on the 2020 greenhouse gas emissions](#), the German Expert Council for Climate Matters carried out an estimation of the impact of COVID-19 by sector:



Source: European Environment Agency and Bericht zur Vorjahresschätzung der deutschen Treibhausgasemissionen für das Jahr 2020.

According to this estimation, 63 % of the total reduction (45 out of 71 million tonnes) can be attributed to the one-off factor of COVID-19. Without this factor, emissions would only have decreased by 3.3 % or around 26 million tonnes, compared to 2019. The method used to estimate this impact is based on an extrapolation of the trends observed for the 1995-2019 period to 2020.

24 Member states submit yearly data on their energy consumption to Eurostat⁷. Based on this data, verified by Eurostat, the Commission monitors progress towards

⁷ See Regulation (EC) No 1099/2008 on energy statistics.

the 2020 energy efficiency target. The Commission also uses energy consumption data to monitor progress towards the 2020 renewable energy share target, whereby energy consumption is the denominator. The numerator of this share derives from data that member states report yearly to Eurostat:

$$\text{renewable energy share} = \frac{\text{energy consumption from renewable sources}}{\text{energy consumption}}$$

25 As shown in [Figure 2](#), the EU achieved its 2020 renewable energy share target (20 %), by increasing this share to 22.1 % in 2020. This share increased sharply from 2019 to 2020, partly as a result of the exceptional reduction (of 7.4 %) in the gross final energy consumption caused by the COVID-19 pandemic. Without such a drop, we estimate that the renewable energy share would have been around 20.5 % in 2020, just above the 20 % target, based on extrapolation of 2009-2019 data. Provisional data on 2021 EU renewable energy share indicates it remained stable, close to the 2020 value, mainly because of the rebound effect on the denominator (the gross final energy consumption).

26 As shown in [Figure 3](#), the EU achieved its 2020 energy efficiency target, expressed in terms of energy consumption (-20 %). It did so by decreasing its energy consumption by 24.6 % against a scenario where no additional action was taken, i.e. compared to the 2007 forecast of 2020 consumption level. Energy consumption fell by 8.7 % between 2019 and 2020, mainly because of the economic downturn caused by the COVID-19 pandemic. We estimate that without this sharp drop, energy consumption would have declined by 17.8 % compared to the baseline scenario (rather than 24.6 %), assuming that the annual average decline over the period 2009-2019 continued into 2020. Thus, without the COVID-19 pandemic, the EU-27 would most likely not have reached its 2020 energy efficiency target. Despite the economic slowdown caused by the COVID-19 pandemic, seven member states (Austria, Belgium, Bulgaria, Germany, Lithuania, Poland and Sweden) did not achieve their 2020 national targets. Provisional data indicate a major rebound effect, as EU energy consumption rose by 5.6 % from 2020 to 2021. Therefore, the EU energy consumption, which was -24.6 % in 2020 (compared to consumption growth projected in 2007), was only -20.3 % in 2021, a little below the - 20 % target.

The Commission did not assess the extent of unexpected GDP fluctuations on member states' achievement of the EU's 2020 targets

27 National targets for greenhouse gas emissions covered by the [Effort-Sharing Decision](#) were set using 2005 emission levels as baseline⁸. The EU agreed that all targets should remain within a margin of 20 % above or below this baseline. The main criterion for setting the target for each member state was the relative GDP per capita in 2005.

28 The higher a member state's per capita GDP in 2005, the more it was required to reduce its greenhouse gas emissions by 2020. Denmark, Luxembourg and Ireland, for example, were required to reduce their emissions by 20 %, and Sweden by 17 %. The lower the GDP per capita, the smaller the reduction target was. Some member states with the lowest per capita GDP were even allowed to increase their emissions compared to 2005 levels. Bulgaria and Romania, for example, were allowed to increase their emissions by 20 % and 19 % respectively. The reasoning behind this is that member states with a lower GDP per capita were expected to have higher growth rates up to 2020, which would generate higher emissions. They would also have less funds available to invest in modern technologies that boost energy efficiency and the uptake of renewable energy⁹. [Annex I](#) provides an overview of these targets and achievements for each member state.

29 The [renewable energy directive](#) established national targets¹⁰ based on the same main principle of relative GDP per capita¹¹. [Annex II](#) provides an overview of these targets and achievements for each member state.

30 For energy efficiency, the [energy efficiency directive](#) required member states to set their own indicative targets as their national contribution to the EU's collective 2020 target. When doing so, member states had to consider factors such as cost-effectiveness and GDP forecasts. They also had to ensure that their collective ambition was sufficient to reach the EU 2020 target¹². [Annex III](#) provides an overview of these targets and achievements for each member state.

⁸ Article 3 of [Decision No 406/2009/EC](#).

⁹ European Council conclusions of March 2007, paragraph 33.

¹⁰ Article 3 of [Directive 2009/28/EC](#).

¹¹ [Impact assessment SEC\(2008\) 85](#), paragraph 12.

¹² Article 3 of [Directive 2012/27/EU](#).

31 Forecast GDP growth thus played a major role in setting the 2020 national targets. However, the GDP of several member states did not grow as expected, mainly because of the 2009 financial crisis, which reduced the EU's GDP by 4.5 %¹³. This led to an overall reduction in energy consumption and contributed to the fact that nine member states achieved their 2020 renewable targets as early as 2014, five years after the targets were set (see **Box 2**). The COVID-19 pandemic, which caused a drop of 5.7 % in EU GDP in 2020, also influenced the overall achievement of EU targets. For example, the 2020 energy efficiency target, which several reports from the Commission and European Environment Agency¹⁴ considered unlikely to reach, became reachable because of the impact of the COVID-19 pandemic.

Box 2

Examples of member states which reached their 2020 renewable energy targets early

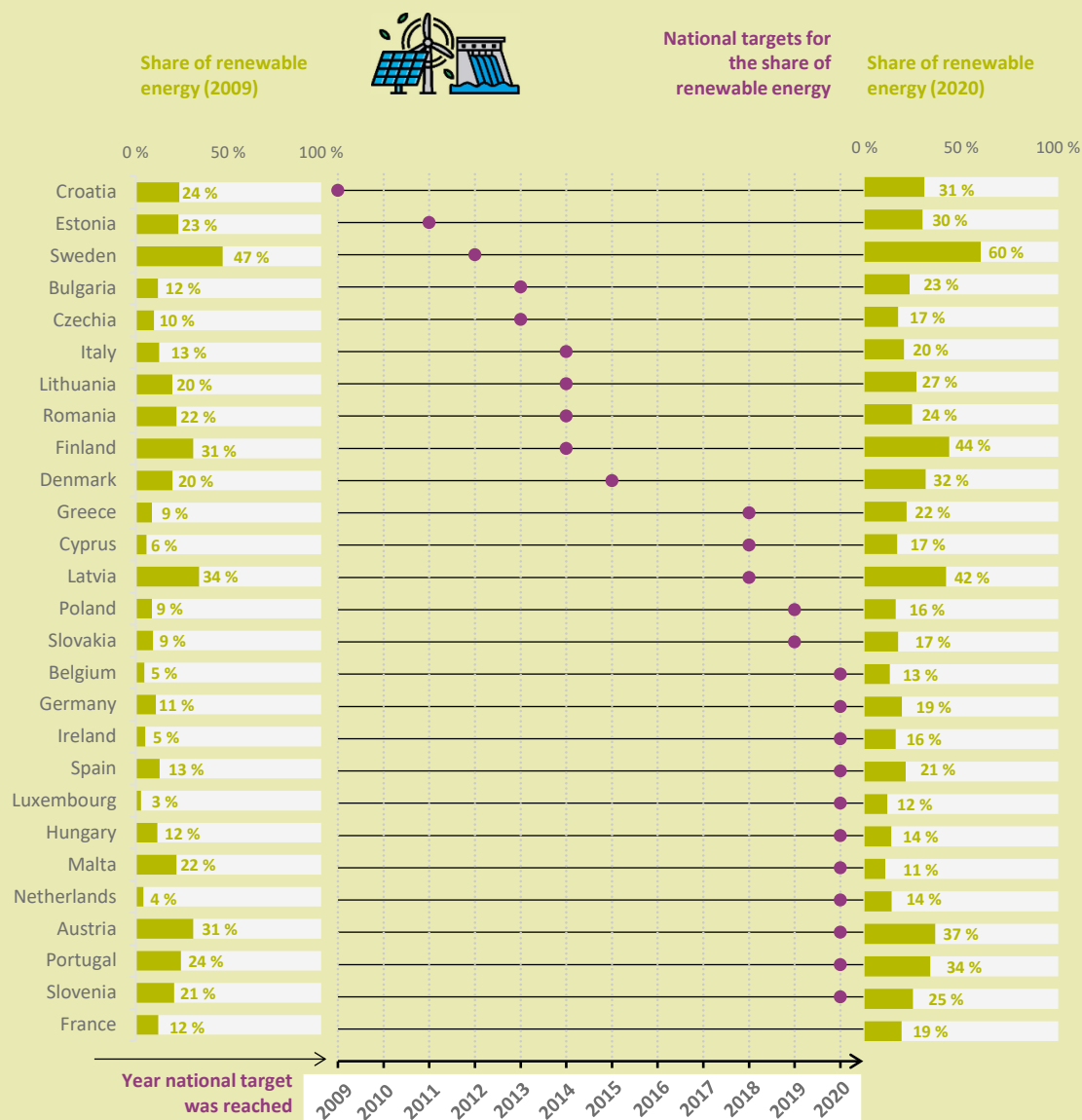
By 2014, nine member states (Bulgaria, Czechia, Estonia, Croatia, Italy, Lithuania, Romania, Finland and Sweden) had already reached their 2020 targets, set in 2009.

¹³ Eurostat.

¹⁴ 2020 report on the State of the Energy Union, COM(2020) 950.

Trends and projections in Europe 2020, EEA Report No 13/2020.

Member states' progress towards achieving their national renewable energy targets



Source: ECA based on Eurostat.

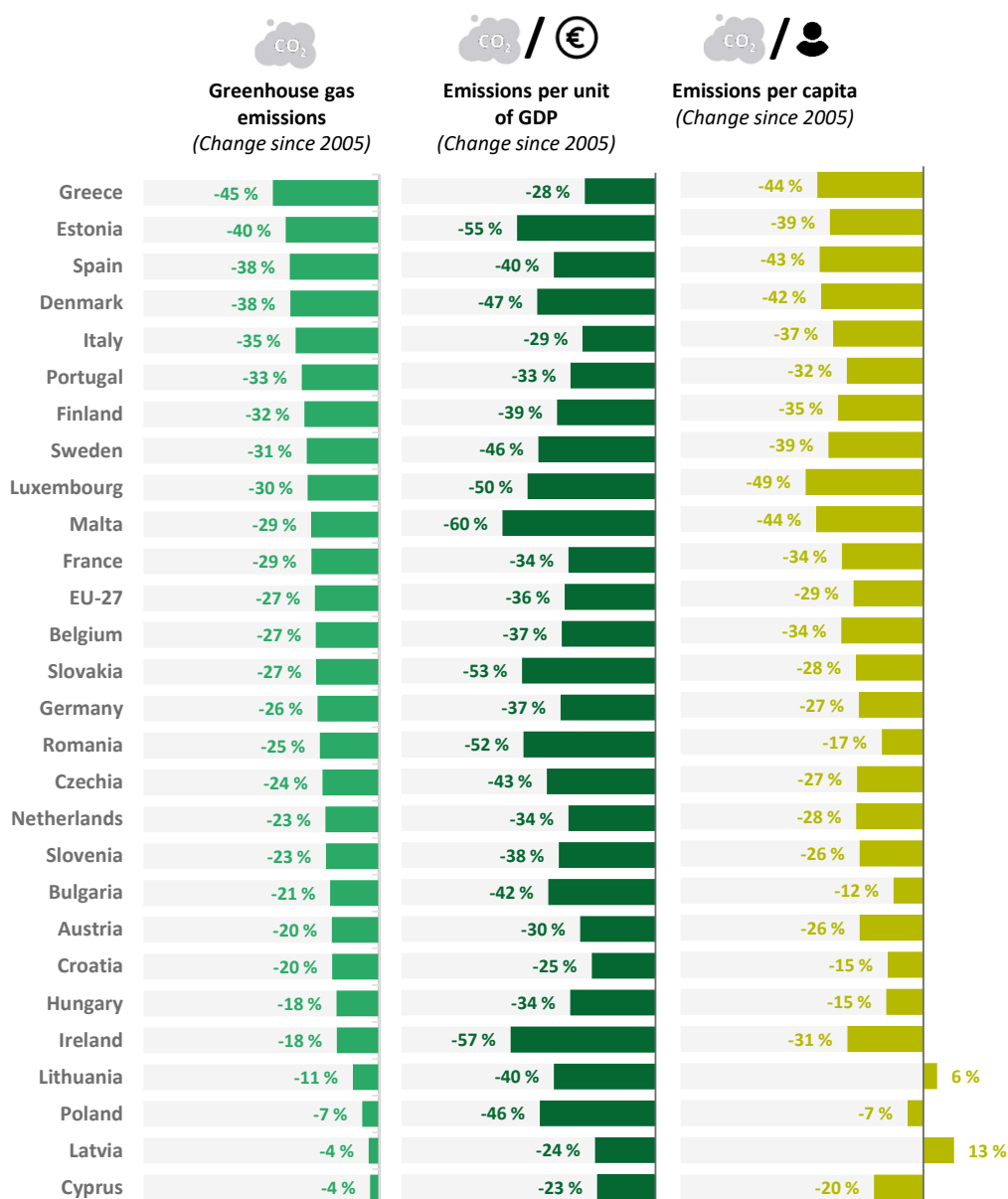
Croatia had already met in 2009 its renewable energy share target of 20 % by 2020, before Croatia joined the EU, in 2013.

32 In addition to the reporting on greenhouse gas emissions and energy efficiency, the Commission also reports on greenhouse gas emissions intensity indicators such as emissions per GDP or per capita.

33 These intensity indicators could be useful for assessing the drivers of progress towards the climate and energy targets, especially when GDP does not grow as forecast. This was the case in the 2005-2020 period because of the financial crisis and the COVID-19 pandemic.

34 Using intensity indicators would make it possible to isolate the member states' performance towards achieving the targets through their policies and technological progress, from the impact of other factors, such as the economic cycle or changes in population. *Figure 7* shows, for each member state, the evolution of total greenhouse gas emissions, the emissions per unit of GDP and the emissions per capita. It shows that some member states which performed the best in terms of reducing greenhouse gas emissions (first column of *Figure 7*) over the 2005-2020 period, such as Greece and Italy, would have performed less well than most member states when considering emission per GDP (second column of *Figure 7*). If considering emissions per capita (third column of *Figure 7*), member states such as Romania or Bulgaria would have performed less well. On the other hand, member states such as Ireland or Malta would have performed better if using emission intensity indicators.

Figure 7 – Evolution of total greenhouse gas emissions, emissions per unit of GDP and emissions per capita in 2005-2020 period



Source: ECA based on [European Environment Agency](#).

35 However, we found that, when assessing member states' performance, the Commission did not use the existing reporting on intensity indicators to analyse the drivers of progress and recommend improvements in climate and energy action.

There is a lack of transparency on how flexibilities allowed member states to achieve their targets in a cost-effective manner

36 Some national targets were binding, and some were not:

- o The greenhouse gas sub-target covered by the Effort-Sharing Decision (see paragraph **03**) was broken down into binding national targets. The other greenhouse gas sub-target (for ETS sectors) was not broken down into national targets, as the ETS provides an EU wide market for economic operators.
- o The renewable energy share target was translated into binding national targets.
- o The energy efficiency target was translated into indicative (i.e. non-binding) national targets.

37 If binding targets are not achieved, the Commission can start corrective actions followed by infringement procedures, if necessary. These procedures can lead to the European Court of Justice sanctioning a member state for failing to reach its targets. Binding national targets also tend to increase member states' commitment, provide certainty for investors, and encourage the continuous development of technologies¹⁵. Indicative targets, by contrast, cannot be enforced. But they can encourage progress, serve as a benchmark between member states and make it easier to agree on more ambitious targets. Experience from the 2020 targets shows that the energy efficiency target, which was not broken down into binding national targets, was the hardest one to achieve (see paragraph **26**).

38 Under the legislative framework for achieving the 2030 targets (see paragraph **05**) binding national targets exist only for the greenhouse gas emissions covered by the Effort-Sharing Regulation. Both the 2030 national targets for energy efficiency and renewable energy share are indicative for member states. The Fit-for-55 proposal confirms this approach.

39 The legislation also establishes that member states can use certain 'flexibilities' to reach their national targets when these are binding. This was to "enhance the overall cost-effectiveness of the total commitment of the Community"¹⁶ and "create opportunities for reducing the cost of achieving the targets"¹⁷. The sections below

¹⁵ Recital 13 of [Directive 2009/28/EC](#).

¹⁶ Recital 10 of [Decision No 406/2009/EC](#).

¹⁷ Recital 36 of [Directive 2009/28/EC](#).

explain how the use of binding targets and related flexibilities influenced their achievement.

Use of flexibilities for greenhouse gas emissions targets

40 Member states were able to use the following flexibilities to achieve the 2020 sub-target related to greenhouse gas emissions covered by the [Effort-Sharing Decision](#)¹⁸:

- carry over overachievement in a given year to subsequent years, up to 2020;
- using in advance up to 5 % of the emissions allocation for the following year;
- buy emissions allocations from other member states; and
- use international credits, which represent investments in projects that have reduced emissions in developing countries or other industrialised countries.

41 Three member states (Germany, Ireland and Malta) did not reach their 2020 greenhouse gas target on their own. They bought over the 2013-2020 period a total of 17 million tonnes CO₂e of greenhouse gas emissions allocations from other member states that over-achieved their targets (see third bullet of paragraph [40](#)). Ireland also used international credits for a total of 8.2 million tonnes CO₂e (see fourth bullet of paragraph [40](#)). This altogether represented 8.4 % of the emissions that these three member states had managed to cut based on their own actions (299 million tonnes CO₂e). One of the five member states we interviewed, Sweden, explained that they did not sell their over-achievement to other member states, to improve the environmental integrity of the EU system.

42 Member states determine the price of transferred emission allocations based on a bilateral agreement, which is kept confidential. As a term of comparison, if applying the [ETS average price of €39.9 per tonne CO₂e in 2021](#), the value of such purchases would be €790 million.

43 The [Effort-Sharing Decision](#) requires the Commission to adopt measures to increase the transparency of such transfers. The Commission receives information from member states on the quantity of emissions transferred and the price of the individual transactions between member states. The Commission publishes information on the quantities transferred but not on their price, in line with the [Commission's Implementing Regulation \(EU\) No 749/2014](#). The lack of transparency on the price paid by member states makes it difficult for citizens and stakeholders to determine whether

¹⁸ [Decision No 406/2009/EC](#), Articles 3 and 5.

flexibilities achieve their intended goal of improving the overall cost-effectiveness of achieving the targets (see paragraph 39). Under the regulation 2018/1999, the Commission will have to publish the price range of transfers as from 2023¹⁹, but not of individual transfers.

Use of flexibilities for the renewable energy share target

44 Member states were able to use the following flexibilities to achieve the renewable energy share target²⁰:

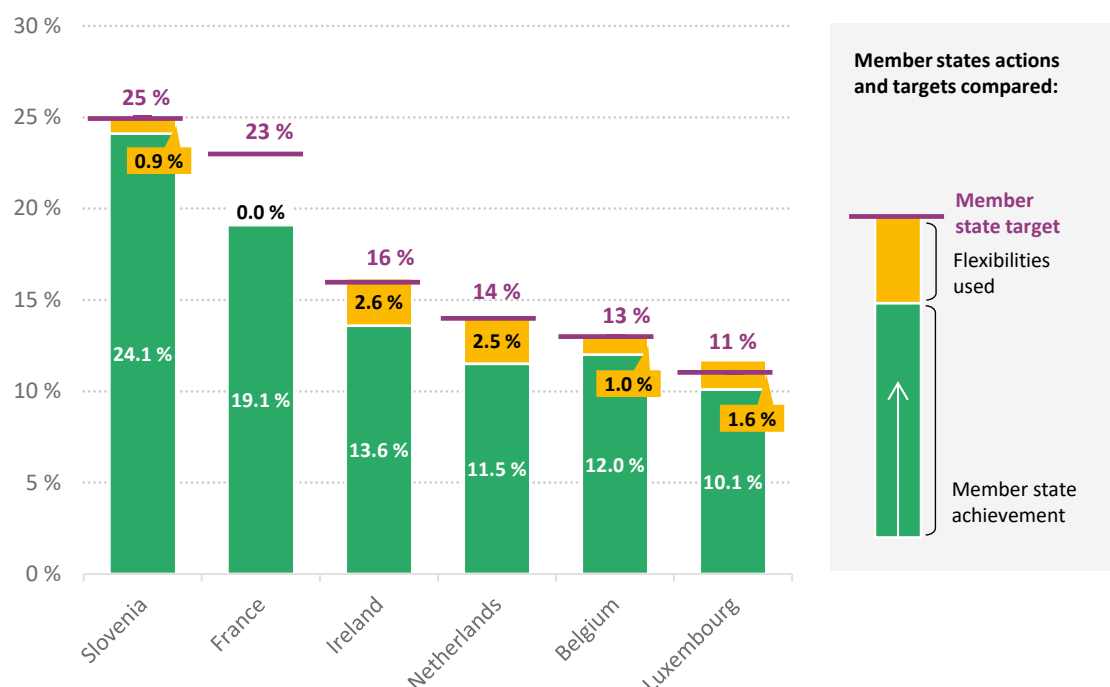
- buy renewable energy shares between member states;
- joint projects between member states;
- joint projects between member states and non-EU countries; and
- joint support schemes to spur renewable energy production in one or several member states' territories.

45 Six member states (Belgium, Ireland, France, Luxembourg, the Netherlands and Slovenia) did not reach their renewable energy share target solely based on their own climate action. They had to buy shares from other member states that over-achieved their targets (see first bullet of paragraph 44). By April 2023, France had not bought the missing shares to reach its target. *Figure 8* shows how close these six member states were to achieving their national target before using flexibilities.

¹⁹ Regulation 2018/1999, Article 26(3) and Annex V(f).

²⁰ Directive 2009/28/EC, Articles 6, 7, 9 and 11.

Figure 8 – Progress towards the national renewable energy share target for the six member states before buying shares



Source: ECA based on data from European Commission.

46 These six member states bought in total 22 137 million GWh of renewable energy from other member states. The Commission does not make public the price of the individual transactions between member states. The renewable energy directive required the Commission to do so in aggregated form²¹. Under the renewable energy directive revised in 2018²², there is no such requirement for the Commission. The lack of transparency about the way member states reach their national binding targets through the use of flexibilities makes it difficult for citizens and stakeholders to determine whether flexibilities achieve their intended goal of improving the overall cost-effectiveness of achieving the targets (see paragraph 39).

²¹ Articles 6(2) and 24(2) of Directive 2009/28/EC.

²² Directive (EU) 2018/2001.

The EU compares well internationally in terms of greenhouse gas emissions reduction, but not all emissions are accounted for

47 The EU has committed itself to being a global leader in the transition towards climate neutrality²³. This implies that it should compare well to other industrialised countries in terms of reducing greenhouse gas emissions and include all greenhouse gas emissions in its reporting, including those from imported goods and the ones from international aviation and shipping.

48 We compared progress in the EU towards achieving the EU greenhouse gas emissions target to that in other countries in the world. This target is the only of the three EU headline targets for which there is comparable data with other countries.

The EU compares well internationally in terms of reducing greenhouse gas emissions

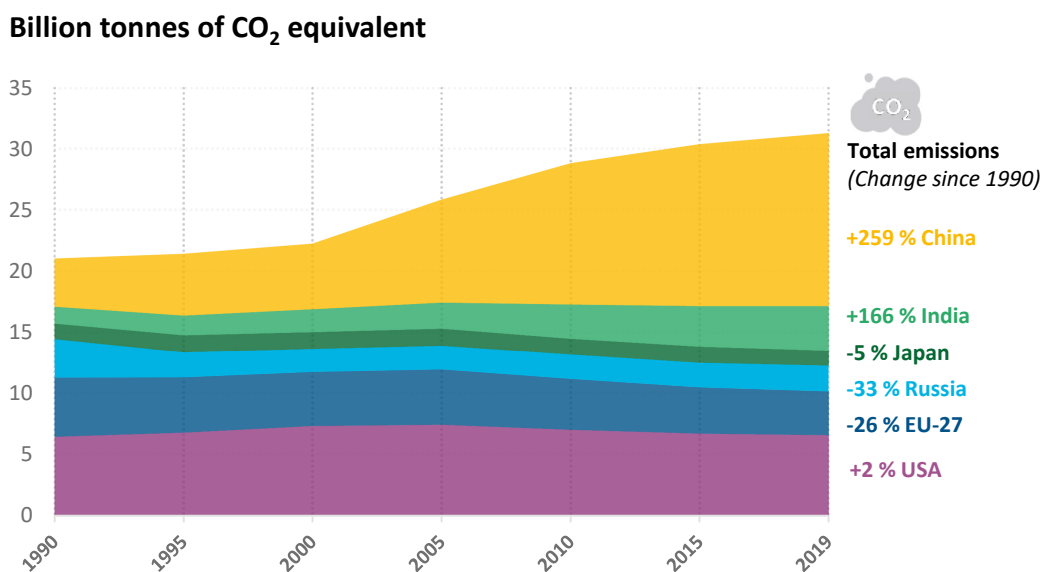
49 To reach climate neutrality, the EU aims to decouple its greenhouse gas emissions from economic growth²⁴ i.e. reducing emissions while preserving economic growth. In this section, we put the EU's achievement in terms of greenhouse gas emissions reductions into a global context by comparing it with other industrialised countries.

50 *Figure 9* shows the evolution of greenhouse gas emissions in the largest industrialised economies in the world, altogether representing more than 60 % of global emissions. While global emissions increased by 57 % from 1990 to 2019, EU-27 emissions decreased by 26 %. As a result, the EU's share of global emissions dropped from 15.3 % to 7.9 % in the same period.

²³ COM(2018) 773, "A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy", page 3.
Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality ('European Climate Law'), recitals 16-17.

²⁴ The European Green Deal, page 1, COM(2019) 640.

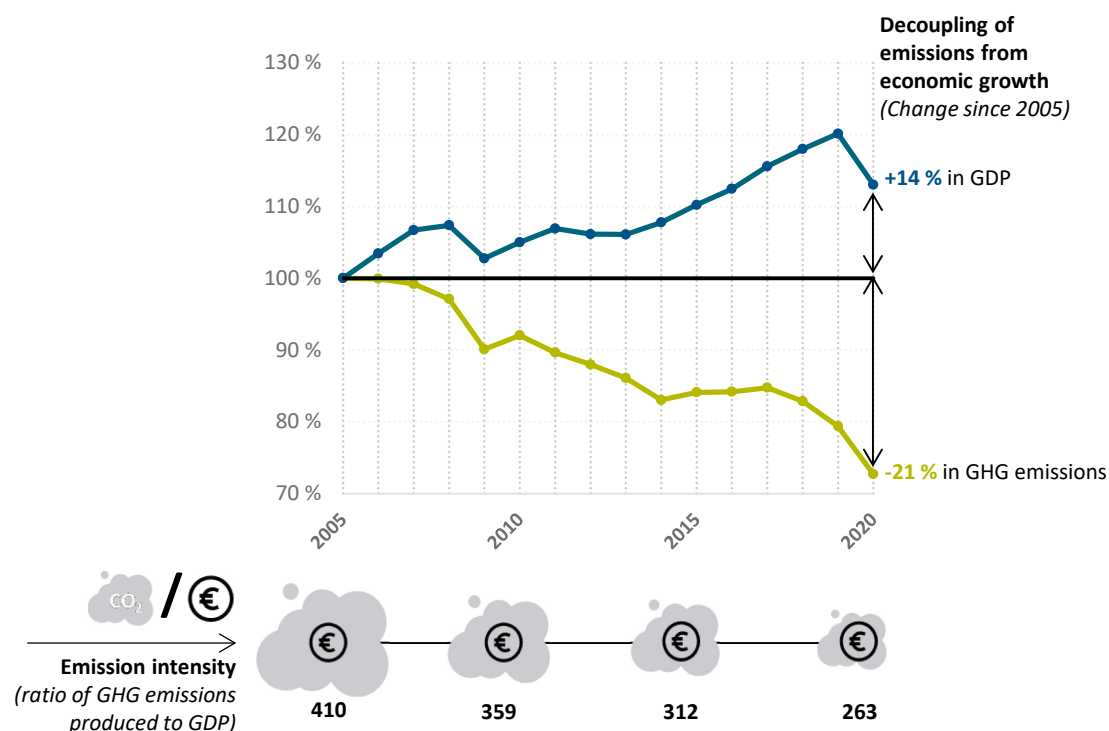
Figure 9 – Greenhouse gas emission evolution across the world in the 1990-2019 period



Source: For USA, EU, Japan and Russia: [ECA based on UNFCCC](#); for India and China: [PBL Netherlands Environmental Assessment Agency, 2021 report](#).

51 This is also due to the fact that the EU managed to decouple emissions from economic growth as shown in [Figure 10](#).

Figure 10 – Decoupling of greenhouse gas emissions from economic growth

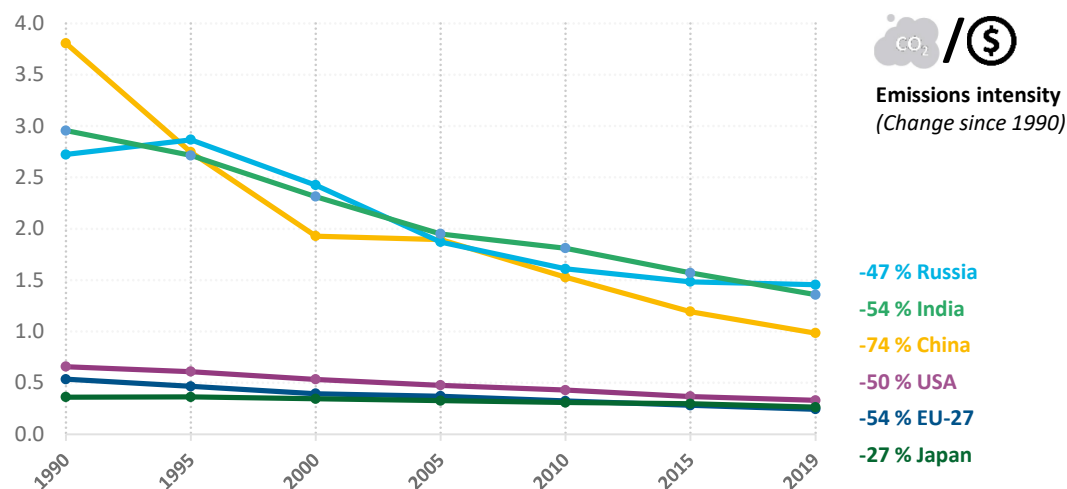


Source: ECA based on [European Environment Agency](#).

52 The EU also compares well to other major economies in terms of emissions intensity over GDP (i.e. greenhouse gas emissions/GDP), in particular compared to the USA and Japan, which started from similar emissions intensity levels in 1990 (see [Figure 11](#)).

Figure 11 – Evolution of emissions intensity over GDP across the world

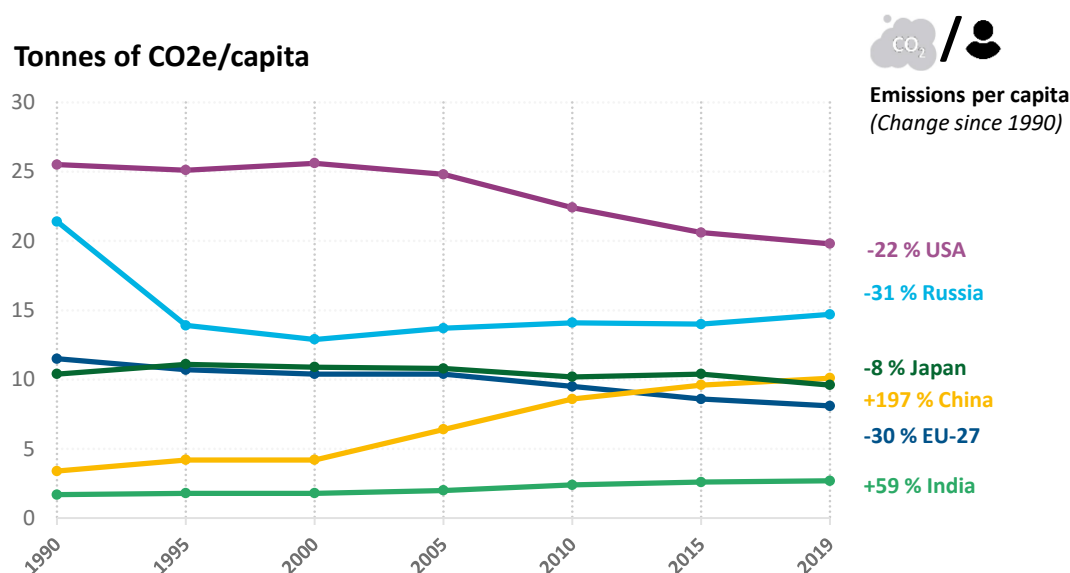
Kilograms of CO₂e/GDP



Source: ECA based on [UNFCCC](#).

53 The EU also performs well in terms of emission intensity per capita (i.e. greenhouse gas emissions per capita) - see [Figure 12](#) - in particular compared to Japan, which started from a similar emission intensity level in 1990.

Figure 12 – Evolution of emission intensity per capita across the world



Source: ECA based on UNFCCC.

Net emissions from imported goods not accounted for in greenhouse gas emissions

54 The EU decarbonised its economy faster than other large economies between 1990 and 2019. However, worldwide reporting is currently based on a “production-based” approach, whereby emissions are accounted for where products are manufactured and emissions are generated²⁵. This approach does not take into account “carbon leakage”, which refers to a situation where businesses transfer production to other countries, for instance with laxer emissions constraints²⁶.

55 If the EU used a “consumption-based” approach, whereby emissions include “carbon leakage” and are calculated on the basis of where products are consumed rather than where they are produced, EU emissions are estimated to be

²⁵ Based on the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#).

²⁶ [European Commission – Carbon Leakage](#).

around 8 % higher than the levels currently reported²⁷: an additional 300 million tonnes of CO₂. This is because the EU is a net importer of goods from the rest of the world.

56 There is so far no methodology that is applied internationally to measure and report on “carbon leakage”. One of the five member states’ authorities we interviewed, in Sweden, has proposed a national law to include, in its national greenhouse gas emissions, also those generated in non-EU countries manufacturing goods imported into Sweden (see [Box 3](#)).

Box 3

Sweden proposed a law to take account of carbon leakage when reporting on its national greenhouse gas emission target

In April 2022, the Swedish government [proposed](#) to include emissions generated abroad for imported goods in Sweden’s national target for greenhouse gas emissions. According to the Swedish Environmental Protection Agency, about 60 % of Sweden’s total greenhouse gas emissions originate from abroad.

If the Parliament adopts the proposal, Sweden will become the first country in the world to take responsibility for the carbon footprint of imported goods.

57 In 2021, as part of its Fit-for-55 package, the Commission proposed to introduce the [Carbon Border Adjustment Mechanism](#)²⁸ for a number of sectors (e.g. iron and steel and cement). This mechanism will attach the same price to the carbon content of imported goods as to those produced within the EU, requiring importers of goods manufactured outside the EU to buy Carbon Border Adjustment Mechanism certificates. Through this mechanism, the EU will start compiling data on “carbon leakage”, which could contribute to measuring emissions under a “consumption-based” approach.

Emissions from international aviation and shipping not accounted for in greenhouse gas emissions

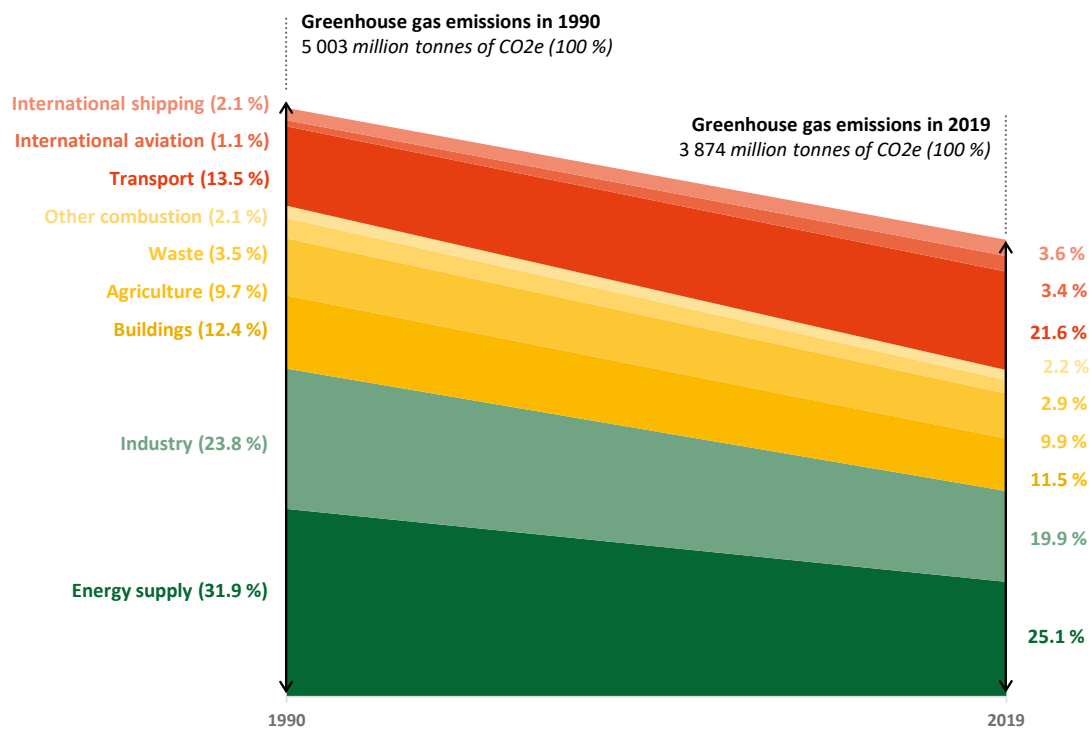
58 Current worldwide reporting also fails to include emissions from international aviation and shipping, pending a world-wide solution being agreed under the umbrella

²⁷ Commission’s Joint Research Centre and Eurostat estimation in [page 342 of the “Sustainable development in the European Union”, May 2022](#).

²⁸ Proposal for a regulation establishing a carbon border adjustment mechanism. COM(2021) 564.

of the International Civil Aviation Organization²⁹. In the EU, in 2019, these sectors generated 3.4 % and 3.6 % of total greenhouse gas emissions respectively. They are the two sectors where greenhouse gas emissions grew the most in the 1990-2019 period (see [Figure 13](#)). As an example, greenhouse gas emissions from international aviation grew by 146 %, whereas total EU greenhouse gas emissions dropped by 26 % (see [Figure 15](#)).

Figure 13 – Breakdown of EU greenhouse gas emissions by sector in 1990 and 2019

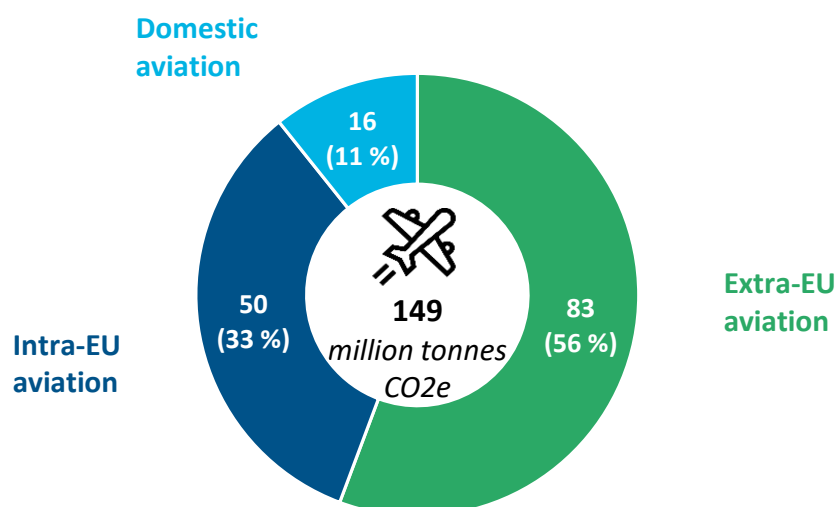


Source: ECA based on the 2022 greenhouse gas emissions inventory published by the [European Environment Agency](#).

59 While greenhouse gas emissions from domestic aviation (flights within a member state) were included in the 2020 EU greenhouse gas emissions target, emissions from international aviation (both intra-EU and extra-EU flights) were excluded. These represent almost 90 % of greenhouse gas emissions from the aviation sector (see [Figure 14](#)).

²⁹ European Commission – Reducing emissions from aviation.

Figure 14 – Breakdown of greenhouse gas emissions in the aviation sector



Source: ECA based on [European Environment Agency](#).

60 In 2021 the EU made a first step in accounting for the emissions from international aviation and shipping, by including greenhouse gas emissions from intra-EU aviation and shipping in the 2030 EU target (-55 %). Extra-EU emissions in both sectors are still not captured by this target. In the aviation sector, extra-EU emissions represent 56 % of emissions (see [Figure 14](#)).

Commission has a good overview of sectoral contribution to targets, but lacks key information on cost-effectiveness of reaching the targets

61 For the EU to be able to draw lessons from the achievement of the 2020 climate and energy targets, the Commission should – based on the input of member states - identify the sectors and policies that proved successful in achieving these targets, building on information reported under the applicable legislation³⁰. Particular focus should be put on identifying policies allowing the EU to achieve its targets in a cost-

³⁰ [European Climate Law](#) (Regulation (EU) No 2021/1119), recital 36 and Article 6. [Governance Regulation](#) (Regulation (EU) No 2018/1999), Articles 18-21 and 29-32. [Regulation \(EU\) No 525/2013](#) on monitoring and reporting of greenhouse gas emissions and other information relevant to climate change.

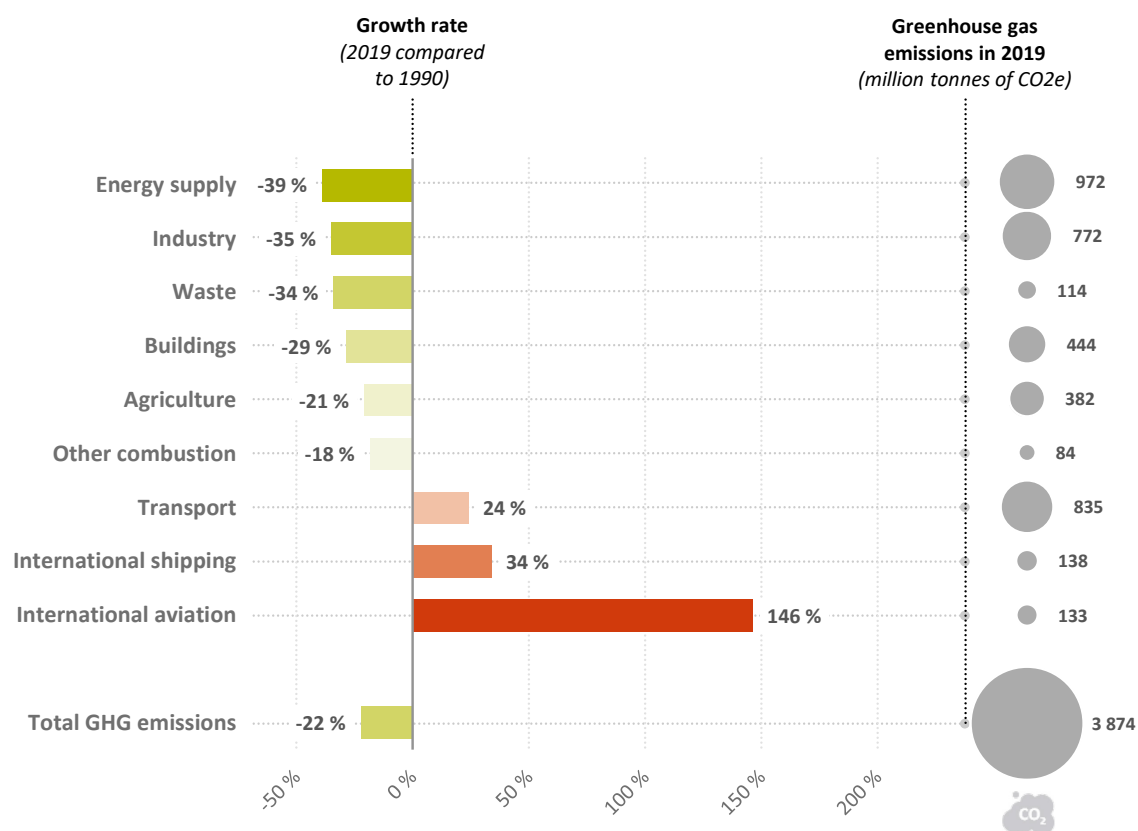
effective manner³¹. On the basis of this assessment, the Commission should take initiatives to facilitate the achievement of the more ambitious 2030 targets.

The Commission has identified which sectors successfully contribute to the targets

62 The Commission has a good overview of how the different sectors contribute to the three headline targets, through a reporting system managed by Eurostat and the European Environment Agency (EEA) based on member states' data. [Figure 15](#) shows the evolution of greenhouse gas emissions per sector in the EU from 1990 to 2019, the year before the COVID-19 pandemic.

³¹ [European Climate Law](#) (Regulation (EU) No 2021/1119), recital 4.
[Commission communication on Fit for 55: delivering the EU's 2030 Climate Target on the way to climate neutrality](#) (COM(2021) 550 final), page 2.
[Impact assessment accompanying the Package of Implementation measures for the EU's objectives on climate change and renewable energy for 2020](#), (SEC(2008) 85 C6-0041/080, page 3.

Figure 15 – Greenhouse gas emission evolution in the EU by sector (1990-2019)

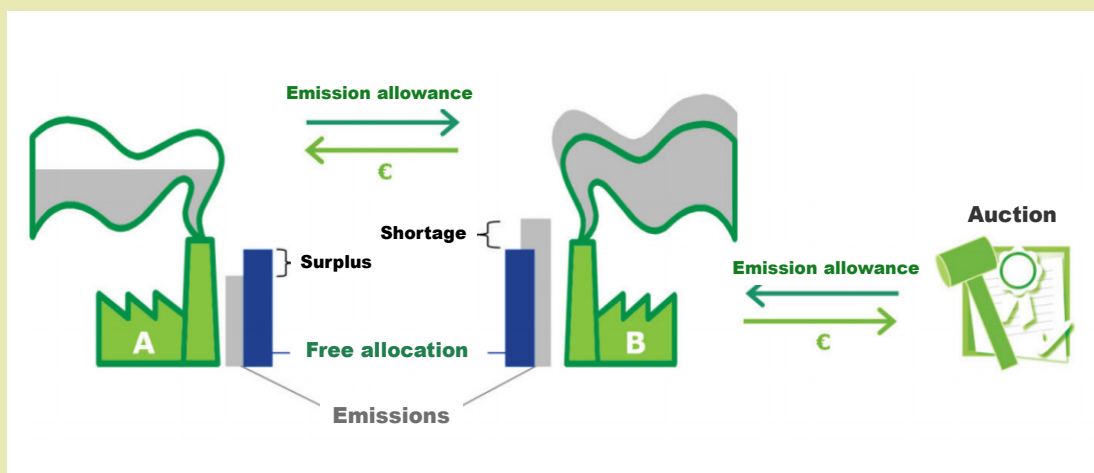


Source: ECA based on [European Environment Agency](#).

63 The overall reduction in EU greenhouse gas emissions was mostly driven by the sectors covered by the ETS, i.e. energy supply and industry. Not all greenhouse gas emissions from the industry sector are covered by the EU ETS, which addresses mainly heavy industries (e.g. iron and steel, cement, chemicals). [Box 4](#) explains how the EU ETS works and successfully contributes to cutting emissions.

Box 4 – The EU Emissions Trading System (ETS)

The EU ETS works as a “cap-and-trade” system, in which operators (around 10 000 power stations and manufacturing plants) must forfeit one emissions allowance per tonne of greenhouse gas they emit. These operators may receive allowances for free or obtain them through auctions. Each year the total number of available allowances is reduced, providing a “cap”.



Source: ECA adapted from the [European Commission's EU ETS Handbook, 2015](#).

In our previous [special report 18/2020](#), we found that, when requiring operators to pay for their allowances through auctions, the ETS respects the “polluter pays” principle and provides an incentive for operators to cut emissions.

64 The other sectors not covered by the ETS contributed less to the overall reduction in greenhouse gas emissions, or even increased their emissions. In particular, from 1990 until 2019, greenhouse gas emissions rose significantly in transport (by 24 %), international shipping (by 34 %) and international aviation (by 146 %). These three sectors, which accounted for 16.6 % of EU greenhouse gas emissions in 1990, accounted for 28.5 % in 2019 (see [Figure 13](#)).

65 Building on the successful ETS, the Commission has proposed to reinforce it in the “[Fit for 55 package](#)”. Under the proposal, the ETS will be extended to include shipping, and a parallel ETS will be created for road transport and buildings.

The Commission and member states have sparse information on the cost and effects of actions to reach the targets

66 Ensuring that the EU's policies allow it to achieve its targets in a cost-effective manner requires an overview of the cost and effects (in terms of greenhouse gas emissions reductions) of the policies put in place. The sub-sections below report on the information available on the EU, national and private funding for the 2020 and 2030 targets.

2020 targets

67 As regards the **EU funding**, in a previous special report³², we reported that the Commission overstated the amount of funds from the EU budget spent on climate action. It estimated it at 20 %, while our audit established the figure to be around 13 %. Furthermore, in previous special reports we noted that the Commission generally has no information on the contribution of individual EU spending programmes to the EU's climate and energy targets³³.

68 As regards **national funding**, we found that the Commission has sparse information on the member states' policies aimed at achieving their climate targets. The Commission obtains this information through the "[EEA database on greenhouse gas policies and measures in Europe](#)" reporting. Since 2015, every two years member states must report on their national greenhouse gas policies and measures, following a detailed template set by the Commission³⁴ (see [Annex V](#)). This includes key data on projected and realised cost and greenhouse gas emissions reductions, when information is available.

³² [ECA special report 09/2022](#).

³³ [ECA special report 21/2012](#), Recommendation 2.
[ECA special report 06/2014](#), paragraph 54 and Recommendation 1.
[ECA special report 05/2018](#), paragraph 91 and Recommendation 4.
[ECA special report 08/2019](#), paragraph 89 and Recommendation 6.
[ECA special report 18/2019](#), paragraphs 59-65 and Recommendation 2.
[ECA special report 11/2020](#), Recommendation 1b, paragraph 93 and Recommendation 3.
[ECA special report 16/2021](#), Recommendation 1, paragraph 95 and Recommendation 3.
[ECA special report 02/2022](#), paragraphs 107-120 and 137-139.

³⁴ [Commission implementing Regulation \(EU\) No 749/2014 on information reported by Member States](#), Article 22 and Annex XI.

69 We analysed this database in October 2022 and found the following:

- o member states reported 2 053 policies and measures, of which 1 391 (68 %) had been implemented.
- o data on costs only existed for six policies and measures. Data on effects in terms of greenhouse gas emission reductions only existed for 474 policies and measures (i.e. 34 % of the 1 391 that had been implemented).

70 According to the [2021 EEA report](#), the level of quantitative information reported is low because member states do not use common evaluation approaches and methodologies, find it difficult to separate the effects of individual policies from others, and are only rarely interested in communicating the actual effects of past actions. The five member states we interviewed explained they did not manage to provide all the data requested, as they considered it too detailed. It also sometimes overlapped with other requests, such as reporting under individual directives, and statistical reporting to Eurostat and to the UNFCCC. According to this report, the fact that the [EEA guidelines for reporting on greenhouse gas policies and measures](#) did not include methods for assessing the costs and effects of the policies and measures reported is an additional explanatory factor for the low level of information.

71 Since 2018, the Commission has produced guidance to address this problem³⁵. However, the Commission informed us that in practice member states consider reporting information on cost and effect to be voluntary and are not in favour of making it a mandatory requirement.

72 At our request, four (Germany, Italy, Poland and Sweden) of the five member states' authorities we interviewed provided data on the actual cost and effects of the policies in place to reach the 2020 targets, which shows that some data on costs and effects exists at member states' level. However, member states were only able to provide data covering one third of the greenhouse gas emissions reductions that they had achieved by 2020. Ireland had no data on the cost and effects of its policies put in place to reach the 2020 targets.

³⁵ [Overview of policy evaluation guidelines.](#)

73 As regards **private funding**, neither the Commission nor the authorities interviewed in the five member states could provide data on the amount of private funds mobilised to reach the 2020 targets, or estimate the reduction in greenhouse gas emissions achieved as a result of private action.

2030 targets

74 The need to better estimate and track the costs and effects of the policies to achieve more ambitious 2030 targets was reflected in the National Energy and Climate Plans (NECPs), which member states were required to submit in 2019/2020 (see paragraph **09**). When outlining the policies to put in place for the 2021-2030 period to achieve the targets, member states were required to include much more detailed information than in the previous period on the expected costs and effects of policies³⁶:

- the **expected national targets**;
- the **investment gap** which needs to be filled, in order to achieve their national targets;
- the **source and amount of budget** required to fill the investment gaps, to provide guidance to market players and mobilise private investments; and
- the **main policies and measures** to fill the investment gaps not covered by private sectors, specifying their indicative timeline and expected contribution to reducing greenhouse gas emissions.

75 As regards the **expected national targets** as quantified by member states in their NECPs, the Commission concluded that the cumulative ambition of the 27 member states was sufficient to reach the EU greenhouse gas emissions and renewable energy share targets. At the same time, the Commission concluded that the collective ambition of the 27 member states towards the 2030 energy efficiency target was insufficient:

³⁶ Articles 9 and 17 of Regulation (EU) 2018/1999 on the [Governance of the Energy Union and Climate Action](#).

[Commission communication “United in delivering the Energy Union and Climate Action – Setting the foundations for a successful clean energy transition”](#), COM(2019) 285 final, pages 7-12.

it amounts to a reduction of 29.7 % for primary energy consumption, 2.8 percentage points below the EU's target of 32.5 % for 2030³⁷.

76 As regards **investment gaps**, in our previous report on sustainable finance³⁸ we highlighted that information on investment needs was incomplete, inconsistent and showed large disparities. For the five NECPs we reviewed, we found that there was only a general estimate of the amount of investment needed to reach the 2030 targets and, at best, a breakdown of the investment needed in each sector of the economy. The NECPs did not specify how such estimates were calculated, which makes it impossible to assess their reliability.

77 The five NECPs we reviewed did not indicate the **source or the amount of budget** required to fill the investment gaps. It is thus not clear to what extent existing policies could meet these needs, or how much private investments should be mobilised.

78 As regards the **main policies and measures** put in place to reach the 2030 targets, we found that the five NECPs we reviewed provided different degrees of details. In most cases, they did not specify their indicative timeline and expected greenhouse gas emissions reductions.

79 On 15 December 2022, the Commission issued guidance to member states for updating their NECPs³⁹, which addresses these shortcomings. This guidance encourages member states to provide structured information on expected investments and on their financing, both from public and private sources. However, the guidance is not mandatory for member states, which entails the risk that member states will continue to provide sparse information in their plans.

³⁷ Commission Communication on “An EU-wide assessment of National Energy and Climate Plans”, COM(2020) 564.

³⁸ ECA special report 22/2021, “Sustainable Finance: More consistent EU action needed to redirect finance towards sustainable investment”, paragraph 73.

³⁹ Commission Notice C(2022) 9264 on the [Guidance to Member States for the update of the 2021-2030 national energy and climate plans](#).

80 By 15 March 2023 member states had to report on the implementation of the NECPs for the first time, based on a Commission implementing regulation⁴⁰, published on 25 November 2022. The Commission publishes the status of member states' reporting on its [website](#). This regulation requires member states to report on realised cost and effects of the policies put in place. However, parts of this reporting remain voluntary. This may result in member states providing sparse information, as it is the case for the EEA database (see paragraph [69](#)).

Little indication so far that more ambitious EU targets will translate into sufficient action

81 The Commission noted that the NECPs are not sufficiently ambitious to reach the 2030 energy efficiency target (paragraph [75](#)) and do not provide sufficient details to make it possible to assess whether they represent a sound basis for reaching the 2030 targets (see [Annex IV](#)). Furthermore, we found that the NECPs only provide vague information on investment gaps and sources of financing to fill them (see paragraphs [74-75](#)). In our [special report 22/2021](#) on sustainable finance, we conclude that more EU action is needed to redirect private and public finance towards sustainable investments.

82 The Commission proposes to further increase the level of the 2030 targets in the context of the 2021 [Fit-for-55 package](#) and the 2022 [REPowerEU Plan](#) proposal (see paragraphs [06](#) and [07](#)). In our [Opinion 04/2022](#) on the REPowerEU Plan proposal, the issue of a possible lack of financing emerged again; we noted that it was unclear whether the funds available would be in proportion to REPowerEU's ambitious objectives and corresponding investment needs.

⁴⁰ Commission Implementing Regulation (EU) 2022/2299 laying down rules as regards the structure, format, technical details and process for the integrated national energy and climate progress reports, Article 7 and Annex IX.

83 We also found that the [impact assessment underlying the Fit-for-55 package](#) involved several assumptions concerning member states, such as the full implementation of existing policies and the full achievement of the expected effects of existing policies. It also pointed to the need of further technological advances in energy and transport, including rapid electrification, carbon capture and storage. Evidence from our previous reports show that such assumptions often do not fully materialize as planned⁴¹.

84 The scenario analyses underlying the impact assessment furthermore did not sufficiently consider known issues such as the energy dependency from Russia⁴², or the projected decrease in the availability of critical raw materials⁴³, essential to the technological development of renewables, batteries and electrification modelled in the scenarios.

85 Finally, the latest data on 2021 greenhouse gas emissions, renewable energy share and energy efficiency (see paragraphs [23-26](#)) indicate a major rebound effect after the COVID-19 pandemic, which represents a further challenge in reaching the revised 2030 targets.

⁴¹ ECA special report 06/2014, paragraph 53.
 ECA special report 24/2018, paragraphs 108 and 112.
 ECA special report 08/2019, paragraph 80.
 ECA special report 18/2019, paragraph 75.
 ECA special report 11/2020, paragraph 93.
 ECA special report 05/2021, paragraphs 71-74.
 ECA special report 16/2021, paragraph 95.
 ECA special report 02/2022, paragraphs 137-139.

⁴² Commission Communication on “European Energy Security Strategy”, [COM\(2014\) 330](#).

⁴³ JRC’s [Raw Materials Information System](#) analyses.

Conclusions and recommendations

86 We found that **the EU had achieved the three headline climate and energy targets** (greenhouse gas emissions, renewable energy share and energy efficiency) for 2020. However, this was also due to the contribution of external factors, such as the COVID-19 pandemic and unexpected GDP fluctuations. The Commission has only a **partial overview of the actions that proved successful in achieving the targets**. The targets for 2030 are more ambitious than those for 2020, and we found **little indication so far that this ambition will translate into sufficient action**.

87 The Commission monitored the progress of the EU towards achieving its **headline targets**. It did not, however, assess the extent to which this progress was a result of the policies rather than external factors, such as the financial crisis in 2009 and the exact contribution of the COVID-19 pandemic in 2020. We found that, while the greenhouse gas emissions and renewable energy share targets would most likely have been achieved without the economic decline caused by COVID-19, the pandemic played a significant role in the achievement of the energy efficiency target (paragraphs [19-26](#)).

88 The EU broke down the 2020 EU targets into **national targets**. While the majority of member states made their expected contributions, some did not:

- Seven member states did not achieve their indicative targets on energy efficiency (paragraph [26](#));
- Three member states did not reach their binding greenhouse gas emissions targets solely based on their climate action, and had to buy emissions allocations from other member states that over-achieved their targets or to use international credits (paragraphs [41-44](#));
- Six member states did not reach their binding renewable energy share targets solely based on their climate action, but did so by buying shares from other member states that over-achieved their targets, except France, which by April 2023 had not bought the missing shares to reach its target (paragraphs [45-47](#)).

89 The Commission publishes information on the quantities of greenhouse gas emissions or renewable energy shares transferred between member states, but not on their price. This lack of transparency on the way member states reach their national binding targets through flexibilities makes it difficult for citizens and stakeholders to determine whether the EU achieves its overall targets in a cost-effective way (paragraphs [40-47](#)).

90 Another important factor which, beyond the member states' actions, influenced the achievement of the national targets was the fact that the GDP of several member states did not grow as expected, mainly because of the financial crisis in 2009. Some member states reached their targets just a few years after they were set. Intensity indicators could be useful in assessing the drivers of progress towards the climate and energy targets, especially when GDP does not grow as forecast. However, we found that the Commission did not use the existing reporting on intensity indicators to analyse the drivers of progress and recommend improvements in climate and energy action, when assessing member states' performance (paragraphs 27-35).

Recommendation 1 – Provide more transparency on the performance of the EU and its member states on climate and energy action

To provide more transparency on the performance of the EU and its member states on climate and energy action, the Commission should:

- (a) use available reporting on greenhouse gas emissions per unit of GDP and per capita to assess the drivers of member states' progress and to engage with member states with the aim at improving the performance of their climate and energy action, when needed;

Target implementation date: December 2024

- (b) assess and report on the EU and member states' progress towards the targets, by distinguishing the impact of policies in place from the impact of external factors;

Target implementation date: March 2026

- (c) implement measures to allow for greater transparency regarding the price of greenhouse gas emissions and individual renewable energy share transfers.

Target implementation date: December 2024

91 The EU has committed itself to being a **global leader** in the transition towards climate neutrality. We found that the EU compares well to other industrialised countries, in terms of greenhouse gas emissions reduction. However, accounting for emissions does not include those produced as a result of trade. Including these would increase the EU greenhouse gas emissions by about 8 %. Furthermore, the Commission also fails to include all emissions from international aviation and shipping in

its greenhouse gas target (respectively 3.4 % and 3.6 %), as it currently only includes those from intra-EU aviation and shipping (paragraphs [49-60](#)).

Recommendation 2 – Account for all greenhouse gas emissions caused by the EU

To account for all greenhouse gas emissions caused by the EU, the Commission should:

- (a) Assess the possibility of using the data it will collect through the Carbon Border Adjustment Mechanism to complement its reporting on EU progress towards the EU's 2030 greenhouse gas emission reduction target with reporting on emissions associated with imported goods to the EU; and
- (b) assess the feasibility of including in its 2050 target for climate neutrality the EU's share of emissions from international aviation and shipping.

Target implementation date: December 2026

92 The Commission has only a partial overview of the actions that proved successful in achieving the 2020 and 2030 targets. It has identified which of the sectors are successful - i.e. those sectors covered by the emissions trading scheme - and consistently made proposals to reinforce the emissions trading scheme in the “Fit for 55 package” (paragraphs [61-65](#)).

93 Since 2015, member states have provided the Commission with more information on the policies they have in place to achieve the targets, first through the European Environment Agency database (2020 targets), then also through the member states' National Energy and Climate Plans (2030 targets). Despite this, the Commission still lacks information on the costs and effects of actions (paragraphs [66-80](#)).

94 Looking ahead to the **2030 targets**, a particular concern is that the 2016 EU wide estimates on financing needs have not been followed up by similar assessments at the national level in the National Energy and Climate Plans, together with an analysis of the financing sources to fill the gaps. There is thus no information that sufficient financing will be made available to reach the 2030 targets, in particular from the private sector. The Commission also reported that member states have a lack of collective ambition towards achieving the 2030 energy efficiency target, which had already proven to be the hardest to achieve by 2020 (see paragraphs [66-80](#)).

95 The Commission made proposals to further raise the 2030 targets in its 2021 Fit-for-55 proposal and in the 2022 REPowerEU proposal. This will put further pressure on the level of financing needed, as well as the collective ambition of the member states. The latter may prove particularly challenging to achieve (see paragraphs [81-85](#)), in a context where:

- the impact assessment of the Fit-for-55 package involved several assumptions concerning progress by member states (e.g. full implementation of existing policies). Evidence from our previous reports show that such assumptions often do not fully materialize as planned;
- its underlying analyses prior to 2021 did not take into account sufficiently known issues, such as energy dependency on Russia, or the estimated decrease in the availability of critical raw materials, essential to the technological development of renewables;
- the latest data on 2021 greenhouse gas emissions, renewable energy share and energy efficiency indicates a major rebound effect after the COVID-19 pandemic.

Recommendation 3 – Support member states’ commitment to achieving the 2030 targets

To support member states’ commitment to achieving the 2030 targets, the Commission should:

- (a) work together with member states to include in the updated National Energy and Climate Plans consistent information on the expected cost and effects of policies for achieving the targets, as well as on investment needs and funding sources to fill those needs.

Target implementation date: December 2024

- (b) assess the feasibility of enhancing the current system of transfers of greenhouse gas emissions and renewable energy shares between member states, including the option of closer aligning the price of transfers with market prices.

Target implementation date: December 2025

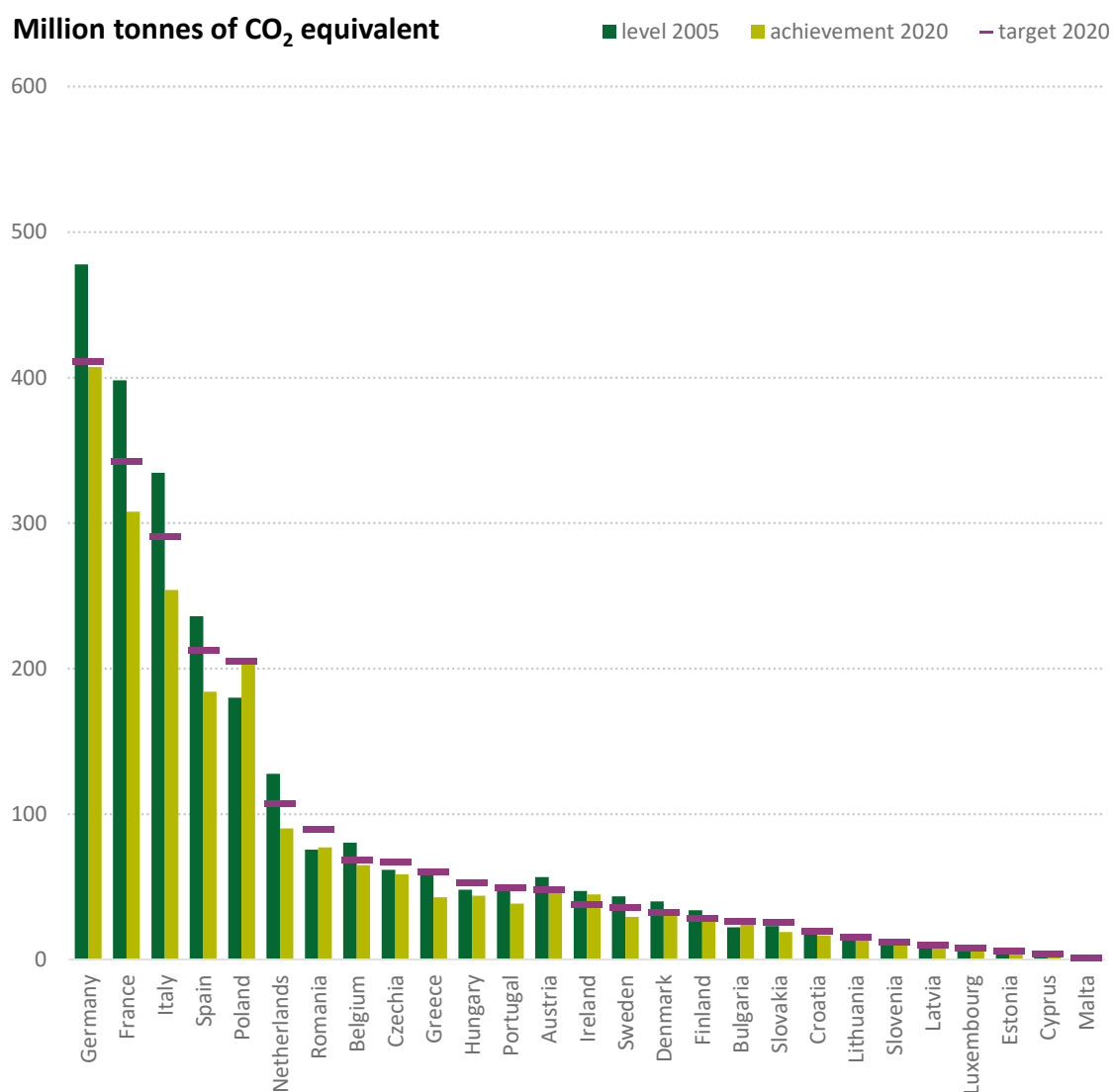
This Report was adopted by Chamber I, headed by Mrs Joëlle Elvinger, Member of the Court of Auditors, in Luxembourg at its meeting of 10 May 2023.

For the Court of Auditors

Tony Murphy
President

Annexes

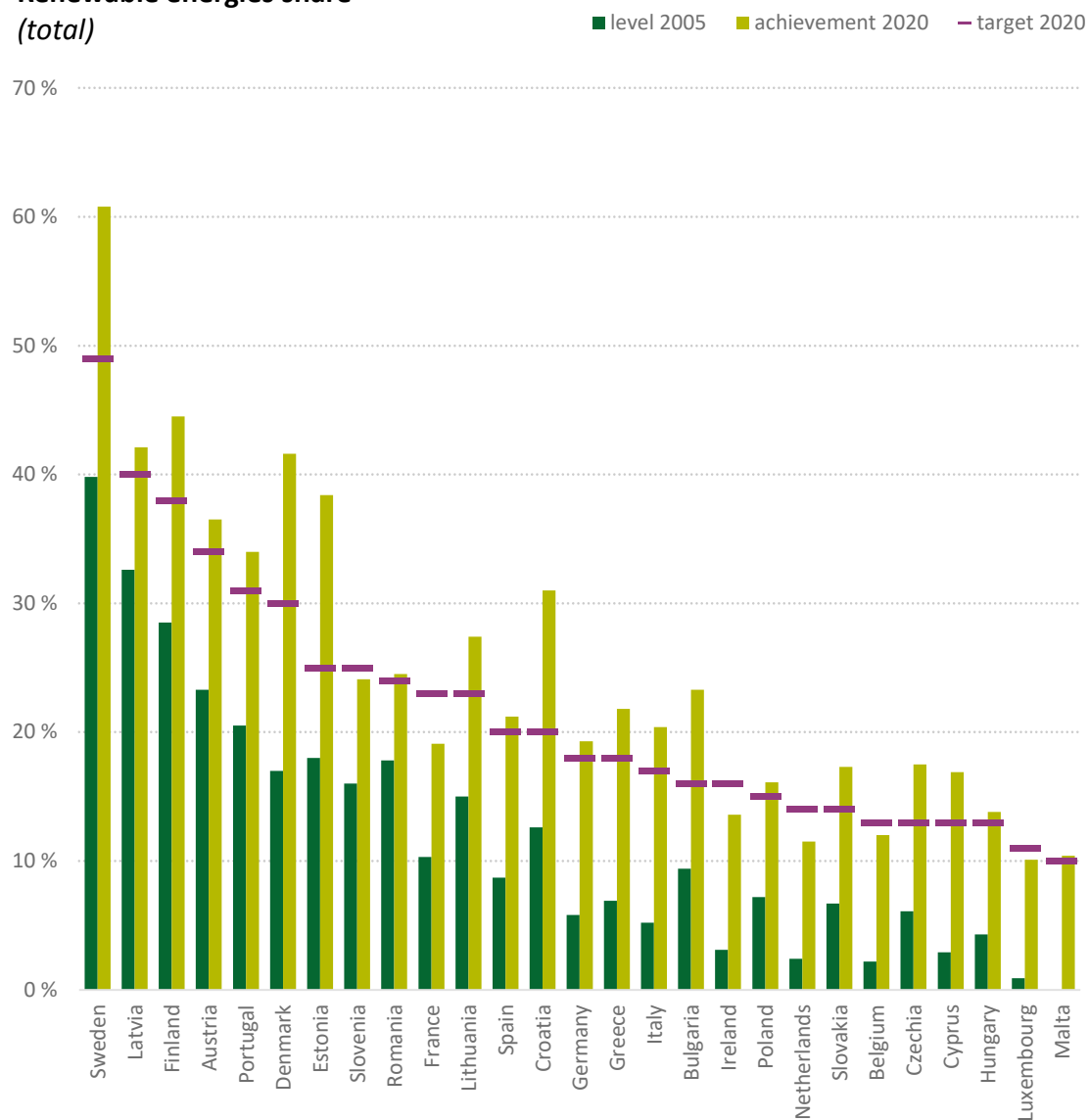
Annex I – National achievements of 2020 greenhouse gas emission target per member state



Source: ECA based on data from [European Environment Agency](#).

Annex II – National achievements of 2020 renewable energy share target per member state

Renewable energies share (total)

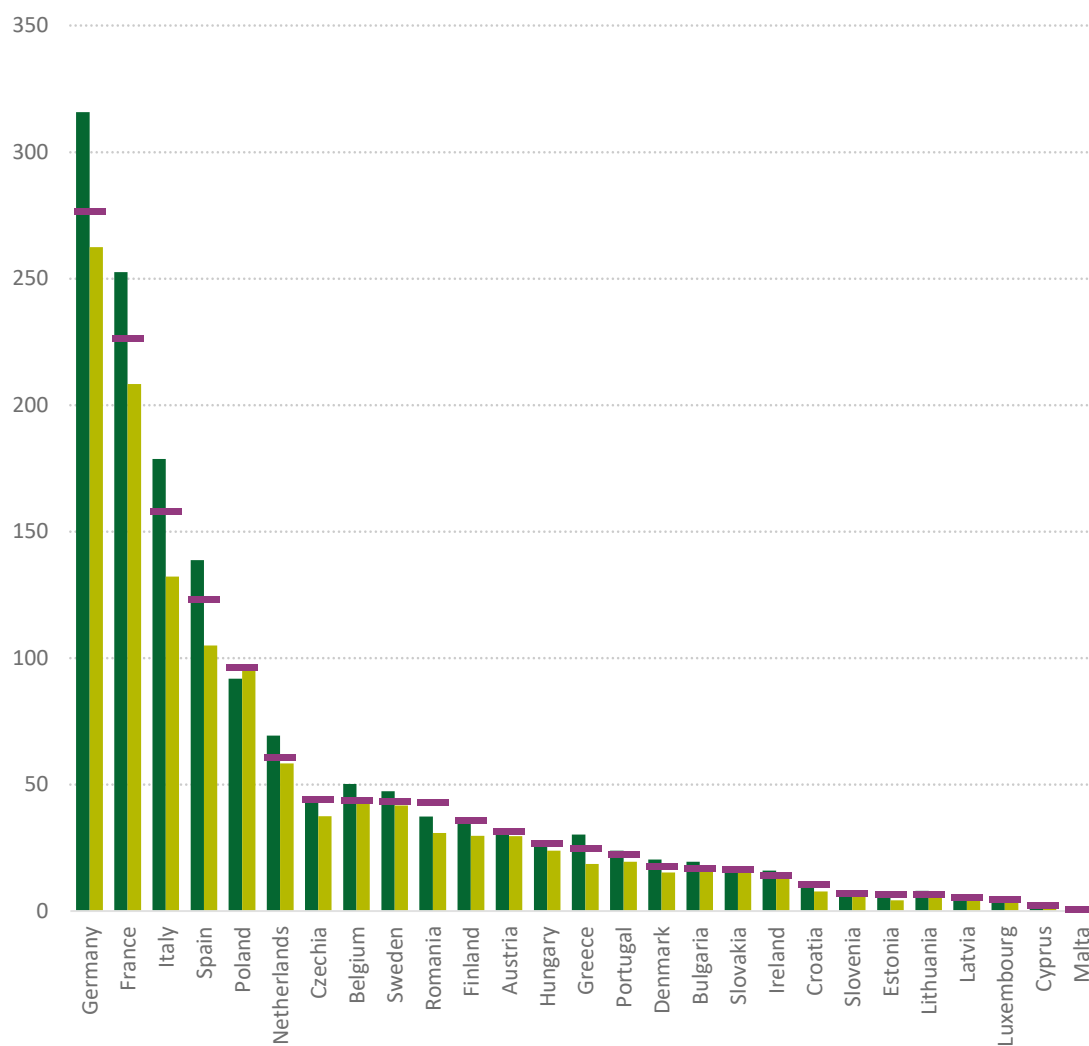


Source: ECA based on data from [Eurostat](#).

Annex III – National achievements of 2020 energy efficiency target per member state (in primary and final energy consumption)

Primary energy consumption
(million tonnes of oil equivalent)

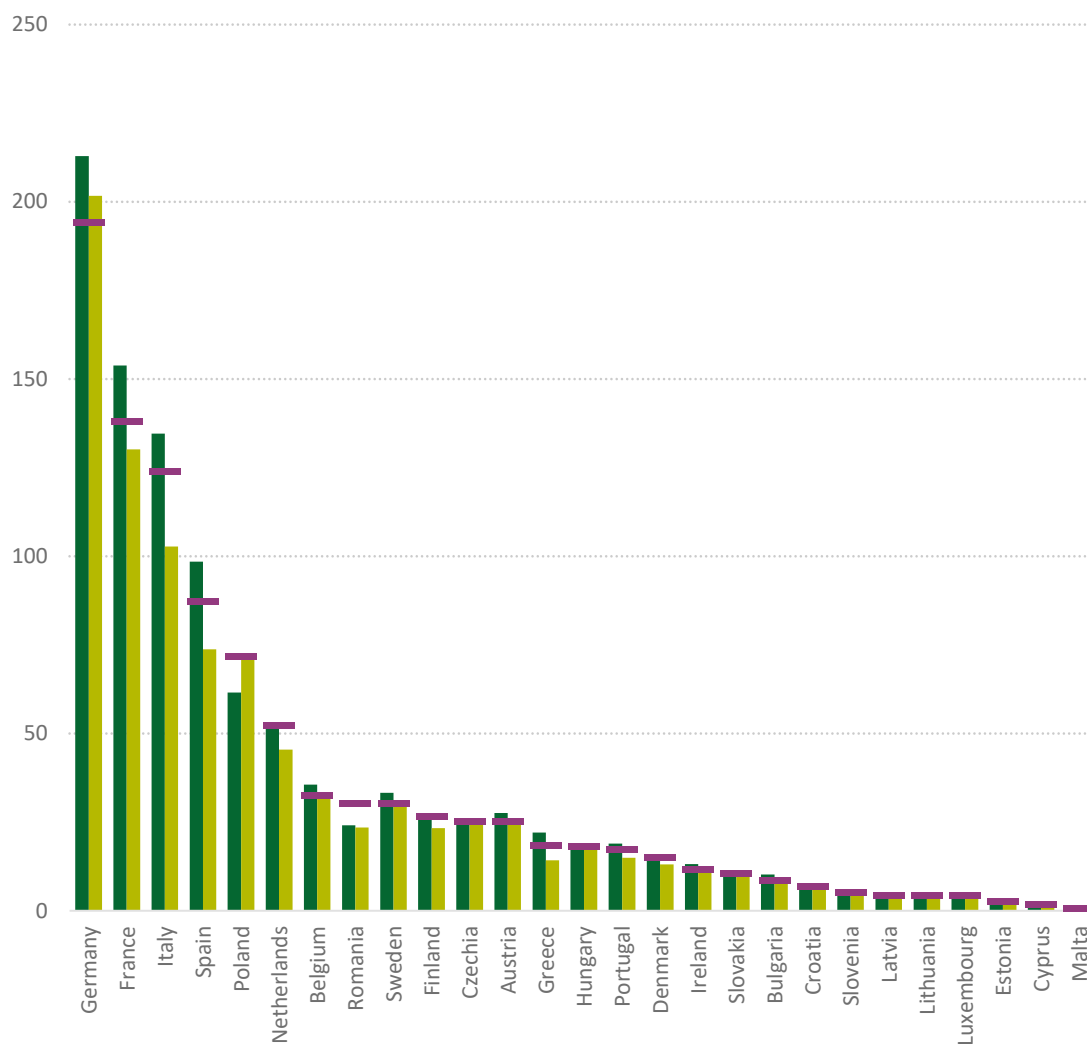
■ level 2007 ■ achievement 2020 — target 2020



Final energy consumption

(million tonnes of oil equivalent)

■ level 2007 ■ achievement 2020 — target 2020



Source: ECA based on data from [Eurostat](#).

Annex IV – Extract of the Commission’s assessment of reporting of investment needs and their funding sources in five National Energy and Climate Plans we reviewed

Member State	Reporting of investment needs	Reporting of funding sources
Germany	The plan largely addresses and quantifies the energy-related investment needs stemming from additional measures, though it does not indicate the estimated overall amount of private and public funding up to 2030. Overall, the plan lacks a comprehensive overview of the source of additional investment needs reported up to 2030.	The role of public finance is mentioned in a dedicated section. However, the information provided is not quantitative, as it does not specify the proportion of each level in the overall funding. By 2030, the energy and climate fund will allocate some three-digit billion euros to climate action and the energy transition. Other support measures are mentioned, but without being described. The relationship between the different sources of investment is unclear. The role of EU funds such as the Connecting European Facility or the cohesion policy funds is mentioned. The Just Transition Fund is mentioned for regions particularly affected by structural change. The plan does not quantify the proportion of public-sector funding in this investment. Nor does it indicate the different levels of financing (national, European).
Ireland	The plan does not assess the overall investment needs, which could be fulfilled by either the public or private sector, to achieve the objectives and ambition defined under the Without Additional Measures scenario, though it stresses the need to mobilise private investment.	No indication is provided on the scale of the private investment that will need to be mobilised. It is clear that EU funding such as the Connecting Europe Facility will remain an important source of funding for Ireland. Some details are provided on specific programmes, funds or projects and their budgets, but this is done in a rather ad hoc manner and it does not cover all policies, measures or ambitions.

Member State	Reporting of investment needs	Reporting of funding sources
Italy	The plan provides substantial information on investment needs, including the incremental annual investments needs for 2017-2030 across different sectors and their expected macroeconomic impacts.	The plan estimates that between 2017 and 2030, € 183 billion in cumulative additional investment will be needed compared to the current policies scenario (equivalent to an 18 % increase) to address the objectives set out by the plan. The assessment of expenditure and funding sources presented for the national, regional or EU levels remains partial. However, the plan does not provide clear details on the methodology applied to calculate investment needs, nor does it identify risk factors, or develop a strategy to close the investment gap. Due to the lack of information at policy level it is difficult to see whether the targets might be achieved, as the policies which are evaluated are not achieving the targets. The number and type of policies might not be enough to achieve targets, particularly after 2022, when measures have yet to be budgeted and approved.
Poland	The plan considers investment needs extensively in the WAM scenario, broken down by sector, with priority investment objectives listed, and there is a sophisticated macroeconomic analysis. The investment needs are further broken down by sector.	The plan identifies priority investment areas and the funding sources, but provides limited information on market barriers and risks. Some national and other EU funding sources are mentioned e.g. the Modernisation Fund, the EU's Framework Programme for Research and Innovation and free allowances from the EU ETS. The identified investment needs are generally not matched with a funding analysis. In particular, the funding analysis for additional public financial support is not sufficiently detailed.

Member State	Reporting of investment needs	Reporting of funding sources
Sweden	The plan does not specify an overall estimated amount of investment needs. Other than for electricity production capacity and distribution infrastructure, it lacks a quantitative assessment of Sweden's investment needs to achieve its climate and energy objectives.	The plan lacks a comprehensive summary and an assessment of the multiple sources of funding at EU, national or regional level. In the section on decarbonisation, the plan describes several measures based on government funding such as the 'Climate Leap' and the 'Industrial Leap'.

Source: [Commission assessment of final NECPs](#).

Annex V – Reporting template on member states' policies and measures

PAM number	Name of policy or measure	Sector(s) affected ^(a)	GHG(s) affected ^(b)	Objective ^(c)	Quantified objective ^(d)	Short description ^(e)	Type of policy instrument ^(f)	Union policy which resulted in the implementation of the PAM		Status of implementation ^(l)	Implementation period		Projections scenario in which the PAM is included	Entities responsible for implementing the policy ⁽ⁱ⁾		Indicators used to monitor and evaluate progress over time				Reference to assessments and underpinning technical reports	General comments
							Union policy ^(g)	Other ^(h)		Start	Finish		Type	name	Description	Values ^(k)					
																[Year]	[Year]	[Year]	[Year]		

Policy or measure or groups of policies and measures	Policy impacting EU ETS or ESD emissions (both can be selected)			Ex-ante assessment												Ex-post assessment				
				GHG emissions reductions in t (kt CO ₂ -equivalent per year)			GHG emissions reductions in t+5 (kt CO ₂ -equivalent per year)			GHG emissions reductions in t+10 (kt CO ₂ -equivalent per year)			GHG emissions reductions in t+15 (kt CO ₂ -equivalent per year)			Year for which reduction applies	Average emission reduction (kt CO ₂ - equivalent per year)	Explanation of the basis for the mitigation estimates	Factors affected by PAM	
	EU ETS	ESD	LULUCF	Total	EU ETS	ESD	Total	EU ETS	ESD	Total	EU ETS	ESD	Total	EU ETS	ESD					

Policy or measure or groups of policies and measures	Projected costs and benefits						Realised costs and benefits				
	Costs in EUR per tonne CO ₂ eq reduced/sequestered	Absolute costs per year in EUR (specify year cost has been calculated for)	Description of cost estimates (Basis for cost estimate, what type of costs are included in the estimate, methodology)	Price year	Year for which calculated	Documentation/Source of cost estimation	Costs in EUR per tonne CO ₂ eq reduced/sequestered	Price year	Year for which calculated	Description of cost estimates (Basis for cost estimate, what type of costs are included)	Documentation/Source of cost estimation

Source: Commission implementing Regulation (EU) No 749/2014 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013 - Annex XI.

Acronyms and abbreviations

EEA: European Environment Agency

ETS: Emissions Trading System

GDP: Gross Domestic Product

NECPs: National Energy and Climate Plans

UNFCCC: United Nations Framework Convention on Climate Change

Replies of the Commission

<https://www.eca.europa.eu/en/publications/sr-2023-18>

Timeline

<https://www.eca.europa.eu/en/publications/sr-2023-18>

Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber I Sustainable use of natural resources, headed by ECA Member Joëlle Elvinger. The audit was led by ECA Member Joëlle Elvinger, supported by Ildiko Preiss, Head of Private Office and Paolo Pesce, Private Office Attaché; Florence Fornaroli, Principal Manager; Lorenzo Pirelli, Head of Task, Josef Edelmann, Deputy Head of Task, and Timo Lethinen, Auditor.

Marika Meisenzahl provided graphical support. Judita Frangez provided secretarial support.



From left to right: Judita Frangez, Florence Fornaroli, Josef Edelman, Lorenzo Pirelli, Joëlle Elvinger, Paolo Pesce, Ildiko Preiss, Marika Meisenzahl.

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The EU achieved its 2020 climate and energy targets, but some member states did not contribute as expected to the targets. The Commission did not assess whether the EU had reached its targets as a result of its policies rather than as a result of external factors, such as the 2009 financial crisis and the COVID-19 pandemic. The EU's 2020 and 2030 greenhouse gas emissions targets do not include emissions embodied in imported goods or emissions from international aviation and shipping. Little data is available on the cost to the EU budget, national budgets and private sector at which the EU achieved its targets. The National Energy and Climate Plans lack data on investment needs and funding sources to assess whether such plans are a sound basis to reach the 2030 targets.

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