European Environment Agency



Trends and projections in Europe 2026

EEA report

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This report explores the historical trends, most recent progress and projected future developments in climate change mitigation through reduced greenhouse gas (GHG) emissions, renewable energy gains and improved energy efficiency. It builds upon data reported by all 27 European Union (EU) Member States, five other European Environment Agency (EEA) member countries and nine Energy Community Contracting Parties.

A technical background document accompanies this report, providing further detail on the data sources and targets referenced throughout.

A digital version of all the figures contained in this report can be found on the EEA website.

Unless otherwise stated, the following definitions and scope apply:

- EU refers to the EU-27.
- EU GHG emissions refer to those under the scope of the European Climate Law (ECL): they include emissions from land use, land use change and forestry (LULUCF) and from international aviation and maritime transport as regulated under EU law.
- Projections reflect those submitted by countries in 2025 and 2026 under Article 18 of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.
- GHG emissions are expressed using global warming potentials from the *Fifth Assessment Report* (AR5) of the Intergovernmental Panel on Climate Change (IPCC).

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Executive summary

The EU has made substantial progress towards climate neutrality while reducing its dependence on imported fossil fuels. Over the past two decades, GHG emissions have fallen, deployment of renewable energy has accelerated and energy consumption has become more efficient.

This progress demonstrates that economic growth and emissions can be decoupled. The transition has strengthened energy security, improved air quality and reduced exposure to volatile fossil fuel markets.

Preliminary figures for 2025 mark the midpoint between the beginning of this century and the EU's 2050 climate neutrality goal. Since 1990, net GHG emissions in the EU [(1)] (including data for the LULUCF sector) have been reduced by 39%. This confirms that the EU has made significant progress driven by the transformation of its energy system, technological innovation and societal change.

Progress has accelerated since the introduction of the Emissions Trading System (ETS) in 2005. By 2025, approximated values indicate that GHG emissions and final energy consumption (FEC) had fallen by 33% and 11% respectively compared to 20 years prior. Meanwhile, EU gross value added (GVA) increased by 31%. This clearly demonstrates a substantial decoupling of emissions from economic activity.

Most of the GHG emission reductions observed since 2005 have been driven by the energy supply sector [(2)], accounting for almost 70% of the total decrease. This decrease corresponds to about 800 million tonnes of carbon dioxide equivalent ($MtCO_2e$) annually according to preliminary estimates for 2025.

This result has been achieved through significant reduction in the use of the most emission-intensive and energy-inefficient fuels — such as coal and oil — and increasing deployment of renewable energy sources (RESs). Between 2005 and 2024, the EU's total energy use from fossil fuels was down by 392 million tonnes of oil equivalent (Mtoe). This figure corresponds roughly to the total annual energy supply of Italy and Germany combined.

At the same time, preliminary 2025 figures indicate that renewables accounted for more than a quarter of FEC in the EU, compared with only one-tenth 20 years prior. A recent EEA analysis shows that adopting renewables is the best buffer against gas price volatility and that it lowered the wholesale electricity bill by EUR 29 billion between the start of 2026 and mid-April 2026 (EEA, 2026q).

Beyond supporting climate change mitigation, reducing fossil fuel consumption has cut the EU's dependence on imported fossil fuel energy by a third. Phasing out highly polluting fossil fuels — the price of which can be extremely volatile — offers significant long-term benefits:

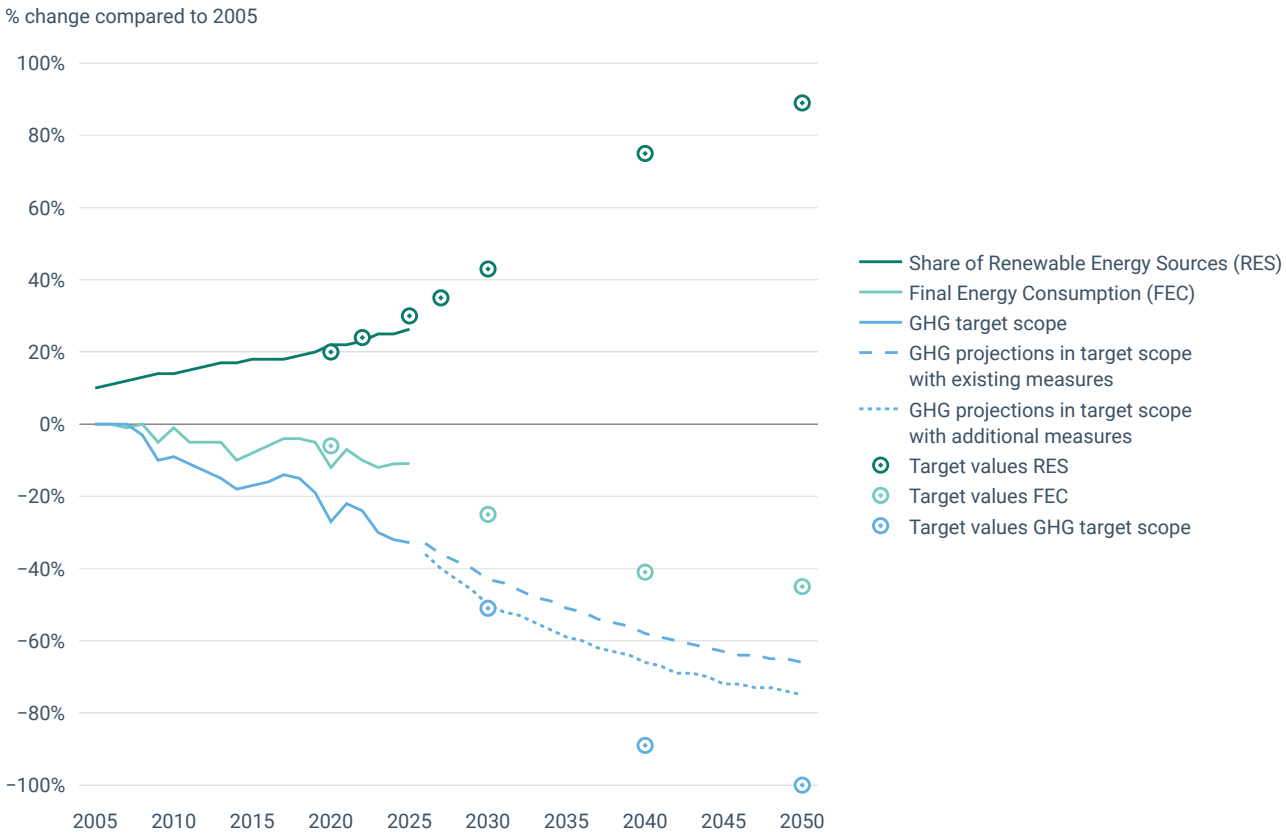
(1) Where not otherwise specified 'GHG emissions in the EU' refer to those under the ECL target scope: they include emissions from LULUCF and from international aviation and maritime transport as regulated under EU law.
(2) Here the energy supply sector corresponds to United Nations Framework Convention on Climate Change (UNFCCC) Category 1.A.1, which includes public electricity and heat production, petroleum refining and the manufacture of solid fuels, alongside other energy industries and fugitive emissions.

- cleaner air;
- less pressure on public health systems;
- greater energy security and resilience;
- lower exposure to global price shocks;
- a reduced energy import bill.

At the same time, energy security and industrial competitiveness are becoming increasingly interconnected: in a context where energy prices in the EU are relatively high and global markets are competitive, the transition presents both opportunities and challenges. These include the difficulty of maintaining industrial competitiveness and limiting impacts on vulnerable consumers.

Being at the forefront of the green transition also implies the need to foster innovation, industrial renewal and a growth in clean technology, hence offering a route towards sustainable economic development. The European Climate Law (ECL) and the Clean Industrial Deal offer a clear pathway in this direction: reducing GHG emissions and limiting the most severe impacts of climate change, while also being at the forefront of the global industrial transition needed to achieve net zero.

Figure ES.1 Progress towards 2030, 2040 and 2050 climate and energy targets in the EU-27



Notes: EU-level measures to implement the 2040 target (in ETS and non-ETS sectors) have not been adopted at the time of writing and are therefore not taken into account in the emissions projections. The new 2040 target proposal would align the EU's target with its 2050 net climate neutrality goal. The reference points for renewable energy and FEC in 2040 and 2050 represent the results of scenario S3 in the 2040 impact assessment (EC, 2024). Specific data points are accessible though the interactive graph.

Sources: EEA, 2026b, 2026c, 2026d, 2026l; Eurostat, 2026a, 2026d.

Preliminary estimates for 2025 indicate that progress is slowing at a time when climate impacts are intensifying and global competition for clean technologies is increasing. The challenge is increasingly shifting from big utility companies to households and small to medium enterprises, with sectors covered by the Effort Sharing Regulation (ESR), such as transport and buildings, showing only limited progress.

Approximated EU GHG emissions figures indicate that the pace of emission reductions has slowed down. There was a decrease of only 1.6% in 2025 compared with 2024 levels, corresponding to just 46MtCO_2e. This pace of change is insufficient when compared to the average yearly reductions of 153MtCO_2e which are needed from 2026 to 2030 (equating to average yearly reductions of more than 5%) to meet the 2030 climate target.

These developments underline the importance of implementing additional policies and measures (PaMs) in the EU and across Member States to close the gap to the necessary emission reductions to meet the EU's 2030 climate target. In fact, projections by Member States suggest that the EU can be only one percentage point away from its 2030 climate target if additional (i.e. not yet adopted or implemented) PaMs are implemented. Such additional efforts are therefore fundamental to keeping the green transition on course.

Progress remains particularly challenging in end-use sectors such as transport, agriculture and buildings. In these areas, behavioural change and household investment decisions play a key role in reducing emissions. In 2025, preliminary estimated emissions from transport and buildings increased by 0.3% and 0.8%, respectively. Meanwhile agricultural emissions decreased by just 0.4%.

As emissions have declined more rapidly in the energy sector, ESR sectors such as transport and buildings account for an increasing share of the remaining mitigation challenge to 2030. The necessary decarbonisation technologies are largely available for both sectors. However, their deployment may be hindered by affordability constraints and energy price structures that make electricity relatively more expensive than gas, thereby weakening incentives for electrification and energy savings.

This is also visible in the adoption of renewables, which has grown at a much faster pace in the electricity sector than in heating and cooling as well as transport. The latest approximated 2025 economy-wide estimate indicated that there is a 26% share of renewables in gross FEC [3]. This is still a long way off the EU ambition of 42.5% for 2030. To reach the 2030 renewables target on time, the annual growth in RES share must more than triple compared with the 2020-2025 annual average.

Preliminary data indicate that FEC and PEC increased by 0.6% and 0.8%, respectively, in 2025 compared with 2024. Approximated 2025 estimates put FEC at 906Mtoe and PEC at 1,204Mtoe. Reaching the respective EU-wide 2030 targets of 763Mtoe and 992.5Mtoe would require average annual reductions to almost double for FEC and increase by around 70% for PEC, compared with those achieved in the 2020-2025 period.

This reinforces the need for faster progress on energy efficiency and energy demand management, particularly in end-use sectors. Transport remains a particular challenge; it is the only major sector with higher FEC in 2025 compared with 2005 and accounts for 36% of FEC. Buildings continue to have substantial energy-saving

(3) Gross FEC (GFEC) is the energy used by end consumers (FEC) plus grid losses and the energy consumed by power plants. The glossary at the end of this report gives definitions for GFEC, FEC and primary energy consumption (PEC).

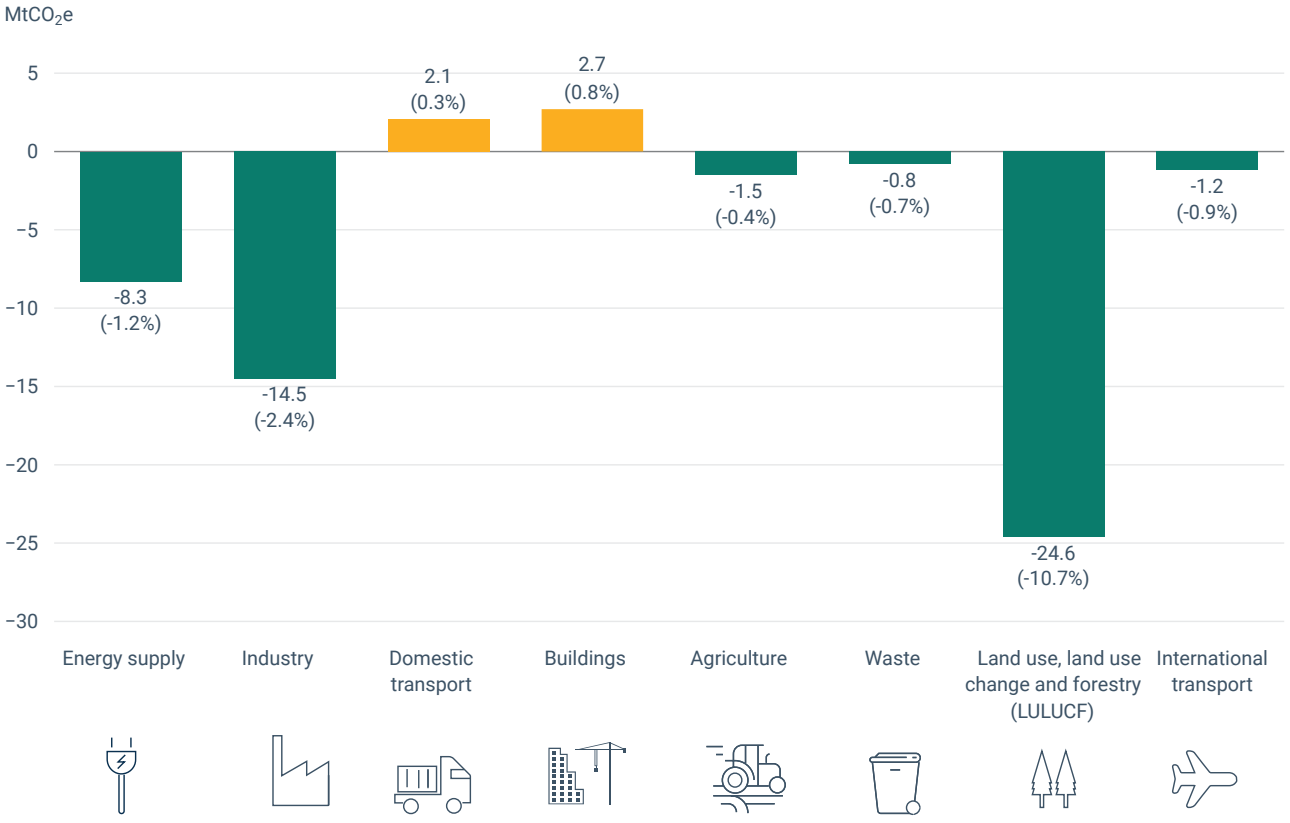
potential, accounting for around 40% of FEC. Meanwhile, renovation rates remain below those required to meet EU objectives (EEA, 2026h).

At the same time, the relatively fast transformation of the electricity sector creates an important opportunity to accelerate progress in these end-use sectors through efficient electrification. In 2025, renewables supplied around 50% of electricity, compared with 27% of heating and cooling and 12% of transport energy.

However, this progress in clean electricity has not yet been matched by a comparable shift in end-use energy demand: the EU's overall electrification rate [4] has remained at around 23% for a decade (EC, 2026b). Accelerating efficient electrification in buildings, transport and suitable industrial processes will therefore be important. So too will investments in electricity grids, storage and demand-side flexibility; these are needed to integrate growing electricity demand and renewable generation.

Unlike in recent years, the largest net reduction in GHG emissions in 2025 came from the LULUCF sector and not from the energy supply (-25 vs -8$MtCO_2e$, see Figure ES.2). The industrial sector also showed significant emission reductions of -15$MtCO_2e$ compared to 2024.

Figure ES.2 Changes in EU GHG emissions across sectors — 2025 vs 2024



Notes: The 'Energy supply' sector covers GHG emission inventory categories 1.A.1 and 1.B; 'Industry' covers Categories 1.A.2 and 2; 'Domestic transport' covers Category 1.A.3; 'Waste' covers Category 5; 'LULUCF' is reported under Category 4; 'International transport' is included under the target scope. In changes since last year's report, 'Buildings' covers Categories 1.A.4a and 1.A.4.b; 'Agriculture' covers Categories 3 and 1.A.4.c.

Source: Author's compilation based on data from EEA, 2026d, 2026l.

(4) The electrification rate corresponds to the electricity share of FEC.

GHG emission projections by Member States show that the EU 2030 climate target is within reach. However, renewed efforts are needed to fully implement existing and planned legislation. This will be critical not only to achieving climate objectives but also to strengthening Europe's competitiveness, resilience and long-term prosperity.

GHG projections — if additional PaMs reported by Member States are implemented — show, collectively, an expected net reduction of 54% by 2030 compared with 1990. This is extremely close to the ECL reduction target of 55%.

Around 6.5 percentage points of the total projected reduction relies on additional planned measures not yet enacted in legislation; this leaves only a short period for Member States to translate plans into effective action. Therefore, it is necessary to implement planned additional legislation fully at both the EU and the national level and rapidly scale up enabling conditions for the transition.

Efficient clean technologies, including heat pumps and electric vehicles, can substantially reduce energy use and GHG emissions compared with fossil-fuel alternatives. Their deployment and impact are influenced by a range of economic, regulatory and infrastructural factors.

Experience across Member States suggests that energy pricing structures, support schemes and investment patterns affect the uptake of clean technologies and reduced fossil fuel use. At the same time, changes in transport systems, buildings and urban infrastructure can reinforce these effects by reducing overall energy demand and facilitating efficient choices. Such developments are associated with lower household energy costs, improved accessibility and comfort as well as reduced pressure on energy infrastructure.

Achieving climate neutrality will require not only deep emission reductions across all sectors and Member States but also a strong and resilient land carbon sink. Preliminary estimates indicate that the sink strengthened in 2025 to -256MtCO_2e, equivalent to 8% of the total gross GHG emissions from other sectors. However, the EU would need to increase net removals by a further -67MtCO_2e to reach its 2030 target level.

In comparison, the net carbon sink in 2024 was reported to be around 25MtCO_2e smaller than the preliminary value for 2025, resulting in a gap of -92MtCO_2e to the EU-wide 2030 target. Member States' projections for 2030 still indicate a significant gap to the target.

Despite recent improvements in 2024 and 2025, the EU LULUCF sink remains substantially weaker than in previous decades. This predominantly reflects a long-term decline in the capacity of forests to remove carbon from the atmosphere. This decline is caused by interrelated factors, including ageing forests, increased harvesting and climate-related disturbances such as droughts, fires and pest outbreaks.

Overall, the data suggest a need for additional action to reach the LULUCF targets. Such climate action must seek to achieve synergies with socio-economic and environmental objectives over time. The sector plays a crucial role in the future of the EU circular bioeconomy, enhancing competitiveness and increasing the EU's strategic

independence. As such, measures must address the resilience of the sector in view of climate change. They must also be combined with stronger monitoring systems to increase trust and encourage investments.

National targets as drivers of the climate transition — Member States must step up efforts to reach the 2030 targets

The EU-wide patterns reflect aggregated outcomes across Member States. However, aggregate EU progress masks substantial differences between Member States. This underlines the need for accelerated action in several countries to achieve their 2030 targets.

Gross GHG emissions (excluding LULUCF and international emissions) between 1990 and 2025 varied significantly from a reduction of 75% in Estonia to an increase of 58% in Cyprus. Even when natural sinks are included in projections for Member States, no country expects to have net negative emissions until 2049.

There are also major differences in renewable energy uptake and technology adoption across Member States. According to Eurostat's early estimates for 2025, the share of renewables in gross final energy consumption ranged from 65% in Sweden to 15% in Belgium. This range is similar to that in previous years.

Under the EU climate governance framework, Member States have two overarching binding targets for achieving net GHG emission reductions:

- They must meet national GHG emission limits under the ESR, which covers emissions from transport, buildings, agriculture, waste and small industry.
- They must achieve additional net GHG removals through their LULUCF sector.

For the ESR targets, projections which include accounting for additional measures show that 14 Member States estimate emission levels below their 2030 emission limits. Meanwhile, 13 are expecting ESR emissions above their 2030 emission limits.

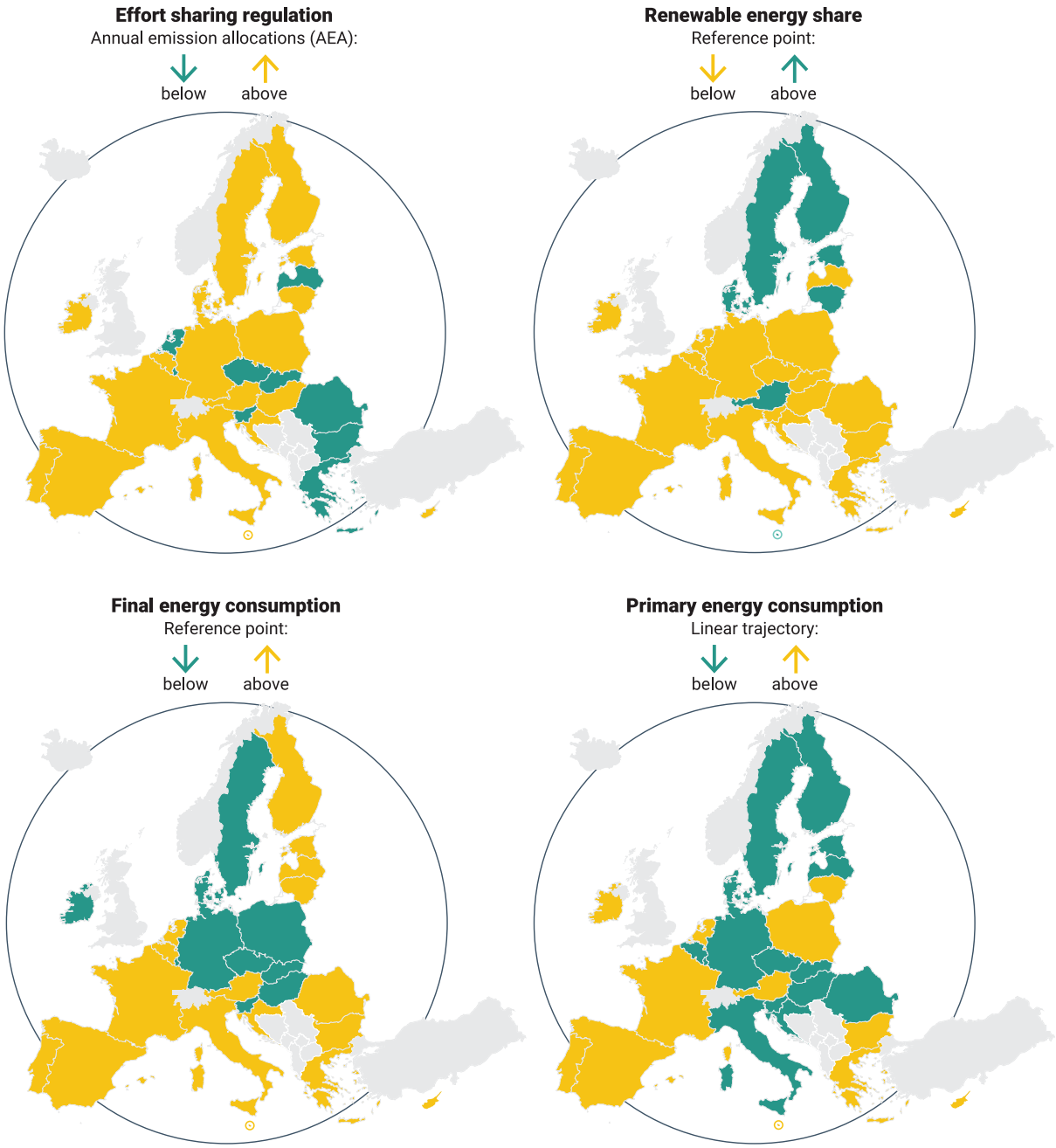
For LULUCF, 11 Member States reported more net removals in 2024 than the level required by their 2030 targets (Figure 3.4) [5]. However, 12 Member States reported that their net removals in 2024 were smaller compared to the 2016-2018 reference period, indicating a trend in the wrong direction. The six countries with the largest distance to their targets, in descending order, are Germany, Poland, Finland, Spain, Austria and Latvia. Together they represent a shortfall of 105MtCO_2e between their 2024 LULUCF balances and the levels required by their 2030 targets. Meanwhile, Cyprus, Estonia, France and Greece have increased their net removals since the 2016-2018 period, but they remain below the level required to meet their 2030 targets.

Preliminary estimates for RES shares in 2025 show that the majority of Member States are expecting lower shares than the levels set by milestones calculated in accordance with the Governance Regulation and based on their latest National Energy and Climate plans.

Based on approximated 2025 estimates, 17 Member States had FEC above their indicative trajectory towards their 2030 contribution. Meanwhile, 12 were above their linear trajectory for PEC [6].

(5) For the LULUCF sector, this report includes a progress-to-target analysis based on the latest data from the GHG inventories submitted in 2026 (time series 1990-2024) and not on the approximated GHG inventories for 2025.
(6) Please refer to the glossary for a definition of PEC, FEC and GFEC and the difference among them.

Figure ES.3 Assessing Member States' climate and energy performance



Notes: This figure illustrates Member States' climate and energy performance in 2025. For GHG emissions, it compares 2025 GHG emissions under the ESR with the annual emission allocation (AEA) for 2025. This is a first step towards the assessment of 2025 progress and does not inform about the final compliance situation, given that Member States have several flexibilities to comply under the ESR (see technical background document) . Final ESR emissions for the years 2021-2025 will be submitted to the EU in March 2027 after which they will be subjected to a comprehensive EU review.

For PEC, the figure compares the approximated 2025 national energy consumption levels with the corresponding 2025 trajectory values. PEC trajectories are derived from a linear trajectory between the 2020 indicative national energy efficiency targets and the 2030 national contributions in the updated national energy and climate plans (NECPs). FEC trajectories are based on the European Commission (EC) calculations as provided in the technical background document published alongside this report (EC and DG ENER, 2026).

For renewable energy, the figure compares Eurostat estimates of the 2025 RES share with the 2025 reference point under Article 4 of the Governance Regulation. The 2025 reference point is derived from each Member State's 2030 national renewable energy contribution communicated in its NECP; it corresponds to at least 43% of the total increase between its binding 2020 national renewable energy target and the latest 2030 renewable energy national contribution.

Source: Author's compilation based on data from Eurostat, 2026d, 2026a; EEA, 2026m; EC and DG ENER, 2026.

Trends and projections in other non-EU countries

In 2025 the Energy Community's Contracting Parties [7] submitted GHG inventory data to the EEA in line with the adapted EU Governance Regulation. This is a significant step forward in aligning the reporting across the Energy Community's members. Newly adopted NECPs show that, in aggregate, the Contracting Parties have a level of ambition for 2030 that is comparable to that of the EU.

All Contracting Parties reported emissions for the year 2024 that continue to be well below their 1990 levels. Some parties aim to continue this trajectory with a 2030 target corresponding to even higher emission reductions. Meanwhile, others project an increase in their GHG emissions until 2030.

Renewable energy targets are substantially higher than their 2024 values across all parties. The vast majority of Contracting Parties have already increased their RES shares from 2005 to 2024. However, the pace of renewable deployment needs to increase to meet the national 2030 targets across all parties.

There are five additional non-EU EEA countries (namely Iceland, Liechtenstein, Norway, Switzerland and Türkiye). For the majority of these, 2024 emissions had fallen in comparison to 1990 levels. The latest available data for Contracting Parties points towards either stable or reducing GHG emission trends.

The energy sector accounts for the largest share of total GHG emissions across non-EU EEA countries and Contracting Parties and dependence on fossil fuels remains a major challenge in several countries. The adoption of renewable energy is uneven across non-EU countries and it is least developed in the transport sector; however RES deployment shows a positive trend for the vast majority of the non-EU countries considered.

In 2024, several Contracting Parties were close to or below their 2030 FEC contributions. However, additional efforts are still needed to limit the growth in energy consumption so that it remains below the 2030 national contributions.

The distance to the 2030 PEC contributions were generally greater than for FEC. Several Contracting Parties still need to achieve notable reductions in PEC by 2030.

(7) The nine Contracting Parties are the six West Balkan Contracting Parties of Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, and Serbia, as well as the three Eastern Partnership members of the Energy Community: Georgia, the Republic of Moldova, and Ukraine.

1 GHG emission trends in the EU

Key messages

- EU GHG emissions were around 39% below 1990 levels in 2025. Meanwhile, gross domestic product (GDP) and population grew by more than 70% and 8% respectively in the same period. This demonstrates that sustained economic growth and deep emission reductions can go hand in hand. At the same time, climate action, energy security and competitiveness are increasingly converging objectives: reducing fossil fuel dependence is becoming a prerequisite for Europe's long-term economic resilience and industrial strength.
- The annual rate of emission reductions more than doubled after 2005. This reflects stronger EU climate policies and the introduction of carbon pricing through the ETS. Most emission reductions have come from the energy system, particularly through the rapid growth of renewables and reduced coal and oil use. This is reflected in the strong performance for emissions covered by the ETS; these have fallen much faster than those regulated under the ESR.
- While the EU remains broadly on track to achieve its 2030 climate target, emission reductions in 2024 and 2025 have slowed. Achieving the 2030 target depends on the full implementation of planned measures.
- Transport and buildings emissions remain two of the largest obstacles on the EU's path to climate neutrality; emissions in both these sectors rose in 2025.
- GHG emissions decreased in almost all Member States between 2005 and 2025. However, progress remains uneven. National trajectories increasingly reflect differences in energy system transformation, sectoral structures and the condition of natural carbon sinks. In this context, LULUCF performance is an increasingly important determinant of overall climate outcomes.
- Most Member States remained above their 2025 indicative trajectories as set out in the ESR. Looking ahead to 2030, emission reductions in the coming five years need to be as high as those achieved over the last twenty years. Additional action will be required — particularly in transport, buildings, agriculture and waste, where progress continues to lag that achieved in the power sector.

1.1 Introduction

The EU aims to become the world's first climate-neutral continent. The ECL, adopted in 2021, established legally binding targets to reduce net GHG emissions by at least 55% by 2030, compared with 1990 levels. It also set out an aim to achieve climate neutrality by 2050 at the latest.

An ECL amendment was adopted in March 2026. In this, the EU reaffirmed its commitment by introducing an additional interim target: a legally binding headline emission reduction target of 90% by 2040 relative to 1990, with a domestic target of 85% and up to 5% of international carbon credits [8].

To support these climate objectives, the EU has also set key targets on energy efficiency and the adoption of renewables. These 2030 energy targets correspond to a PEC target of 992.5Mtoe and an FEC target of 763Mtoe annually, while ensuring that at least 42.5% of energy consumption comes from renewable sources by 2030.

This report monitors the EU's progress towards these goals with the latest available GHG and energy data for 2025. Notably these data refer to the halfway point between 2000 and the 2050 climate neutrality target and a point in time five years ahead of the 2030 milestone. The report draws its conclusions by examining historical trends, assessing the latest developments in 2025 and exploring future projections.

This analysis draws primarily on detailed, granular data submitted by Member States to the EEA, in accordance with the Governance Regulation [9]. These data undergo thorough quality checks before being integrated into EU-wide datasets. In addition to data reported by Member States, the monitoring period presented in this report is complemented by relevant information from EEA member countries that are not part of the EU and from neighbouring countries that are Contracting Parties to the Energy Community [10].

In some parts of the report, both 2024 and 2025 figures are presented. Preliminary estimates for 2025 provide insights into the most recent developments but are subject to greater uncertainty. The use of estimates for both years has therefore been limited to cases where it adds analytical value. Further information on data sources and quality considerations is provided in the technical background document published alongside this report.

Historical data (1990-2024)

- GHG inventory data.
- FEC and PEC data (Eurostat).
- RES shares (Eurostat).

(8) International credits are financial instruments that represent a tonne of CO_2 removed or reduced from the atmosphere as a result of an emissions reduction or removal project.
(9) The Governance Regulation refers to Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action. It establishes the framework for integrated national energy and climate planning, reporting and monitoring of progress towards the EU's climate and energy objectives.
(10) Ministerial Council Decision 2022/02/MC-EnC, adopted on 15 December 2022, amended Decision 2021/14/MC-EnC to establish the Energy Community's 2030 climate and energy framework. It sets collective and national targets for GHG reductions, renewable energy and energy efficiency for the Contracting Parties, while applying adapted EU rules on integrated NECPs, monitoring and reporting.

Preliminary 2025 data

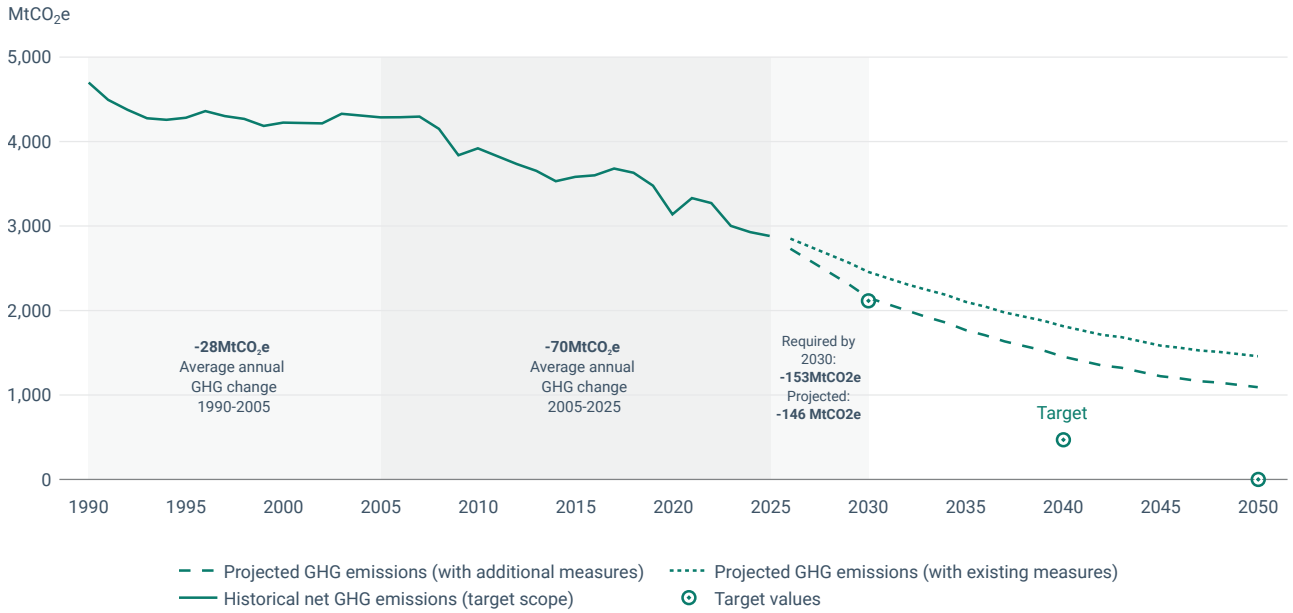
- Approximated 2025 GHG emissions reported by Member States.
- Estimated 2025 energy consumption and renewable energy data from the EEA and its European Topic Centre on Climate Change Mitigation.

Future evolutions

- 2026-2050 projected GHG emissions as reported by Member States under the Governance Regulation.
- 2030 contributions for energy consumption and renewable energy as included in Member States' NECPs.

1.2 Progress to GHG headline targets

Figure 1.1 Total GHG emissions in the target scope for ECL in the EU, 1990-2050



Notes: In this figure, the EU total net GHG emissions include all GHG emissions and removals regulated under EU law. Estimates of historical emissions from the international aviation and maritime sectors are based on data derived from the Joint Research Centre's (JRC's) Integrated Database of the European Energy System (IDEES) methodology (calculated using JRC (2024b) and EEA (2026r)).

Target values are drawn from the ECL for 2030, 2040 and 2050 (EU, 2021, 2026b) and are visualised by applying the percentage reductions to the 1990 baseline values. The ECL allows a contribution of up to 5% of high-quality international certificates in the period 2036-2040 to reach the 90% GHG emissions cut by 2040.

Data for 1990-2024 originate from EEA (2026i) and the 2025 values are from EEA (forthcoming).

The aggregated GHG emissions projections are based on data submitted by Member States in 2025 and 2026 under Article 18 of the Governance Regulation, taking into account existing and planned additional measures (the 'with existing measures' (WEM) and 'with additional measures' (WAM) scenarios). Since some EU-level measures to implement the 2040 target have not been adopted at the time of writing, such measures are not included in the WAM scenario.

View the interactive version of the chart.

Source: Author's compilation based on data from EEA 2026d, 2026l, 2026o, 2026r, 2026i.

Over the past two decades, the EU has reduced its GHG emissions at an accelerating pace. It has more than doubled its average annual emission reductions from 28MtCO_2e between 1990 and 2005 to 70MtCO_2e between 2005 and 2025. According to the latest GHG data used for this assessment, EU GHG emissions in 2025 were 39% below 1990 levels, as shown in Figure 1.1 [(11)].

During the same period, while GHG emissions fell substantially, the EU's GDP increased by more than 70% (World Bank Group, 2026). This demonstrates clear decoupling between economic growth and GHG emissions.

An acceleration in emission reductions over time is evident, especially since the introduction of the ETS in 2005. This reflects the increasing ambition of EU climate policy. However, the last two years show relatively modest annual reductions — of 74MtCO_2e in 2024 and 46MtCO_2e in 2025, the latter being equivalent to only 17% of the decrease achieved in 2023.

Looking ahead to 2030, achieving the 55% net emissions reduction target will require an average annual reduction of 153MtCO_2e [(12)]. If the reductions experienced in the last two years continue, this target appears difficult to meet.

However, aggregated projections from Member States accounting for the estimated impact of planned (but not yet legislated) measures show a more positive outlook. When these measures are accounted for, there is a projected reduction of 54% below 1990 levels (corresponding to average annual emission reductions of 146MtCO_2e). This converges closely with the 2030 target. If only existing measures (already adopted in legislation) are considered, Member States expect to achieve a 48% reduction in 2030. This corresponds to average annual reductions of 84MtCO_2e.

Beyond 2030, the gap between the path towards climate neutrality and projected emissions widens further; aggregated GHG emissions based on existing measures are projected to reach 61% below 1990 levels by 2040 and 69% by 2050. When planned measures are included, the projected reductions increase to 69% and 76%, respectively.

The projections presented in this report do not take into account the full post-2030 climate policy framework for achieving the 2040 and 2050 targets. At the time of publication, the post-2030 framework for ETS is being discussed by co-legislators following the presentation of an EC proposal in July. Proposals for emission reductions in non-ETS sectors will be presented later [(13)].

(11) These figures refer to EU GHG emissions under the ECL target scope, meaning EU GHG emissions including LULUCF and emissions from international aviation and maritime transport as regulated under EU law. If not otherwise specified, the term EU GHG emissions in this report always refers to the ECL scope.

(12) The economy-wide scope of the EU 2030 climate target includes the LULUCF sector, for which preliminary GHG inventory numbers indicate a 2025 net sink of -256MtCO_2e. It should be noted that the ECL limits the allowable contribution from the LULUCF sector to achieving the 2030 GHG target to -225MtCO_2e.

(13) Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC and Decision (EU) 2015/1814 as regards driving competitiveness and cost-effective decarbonisation (COM(2026) 616 final).

1.3 Developments in emissions

1.3.1 Main EU policy supporting GHG reductions towards the 2030 target

The EU has implemented several major climate policy tools to reduce emissions and align with the 2030 climate target to reduce emissions by 55% compared to 1990. This is part of the EU's climate ambition to become carbon neutral by 2050. The main policy instruments are discussed here.

European Emission Trading System (EU ETS)

The EU ETS1 is a carbon pricing mechanism that sets a limit (a cap) on how much GHG power generation, large industry, aviation and maritime transport (the sectors covered by the scheme) are allowed to emit each year. The cap declines annually, at a rate that is in line with EU's climate targets. The target by 2030 is a reduction of 62% for the overall EU ETS emissions compared to 2005.

Since its launch in 2005, the EU has reformed its ETS to include more gases and more sectors. Today it covers GHG emissions from stationary installations, like power plants and large industrial installations, as well as CO_2 emissions from aviation and GHG emissions from the maritime sector. Stationary emissions covered by the EU ETS make up 31% of all EU 2025 gross GHG emissions (excluding LULUCF), while international transport emissions account for an additional 4% of EU gross emissions under the ECL.

Within this GHG emissions cap, regulated entities can trade emission allowances (EUAs) as needed. One EUA is the equivalent of 1tCO_2e. Companies that reduce their emissions can sell their spare allowances, while companies that emit more must buy additional ones. In 2025, the average EUA price was EUR 73 (ICAP, 2025).

Emissions from the sectors covered by the EU ETS1 have fallen by almost half between 2005 and 2025. Most of the reduction has come from stationary installations, where emissions fell by 52% over the same period (see Table 1.1).

Table 1.1 Changes in emissions under the current scope of the EU ETS by sector, 2005-2025

	Stationary EU ETS	Maritime EU ETS	Aviation EU ETS
Change since 2005	-52%	-16%	+17%

Note: 2005 numbers were calculated to reflect the current scope of the ETS (EEA, 2026r). Throughout this report, the version of ETS data used was extracted from the ETS Union Registry Public website on the 4th of September 2026. The 2025 ETS figures may underestimate emissions from the maritime and aviation sectors under the ETS because some companies may have surrendered allowances after this date.

On 17 July 2026, the EC published a proposal to reform the EU ETS1 (EU, 2026a). The proposal would broaden its scope for stationary, aviation and maritime emissions, and aligning it to the 2040 target of a 90% reduction in emissions relative to 1990. Projections taking into account additional measures indicate an expected 62% reduction for sectors covered by the EU ETS1 by 2030, compared to 2005 levels.

From 2028, a new and separate carbon pricing system, the EU ETS2, is planned to be launched (EEA, 2026h). It will cover CO_2 emissions from fuel combustion in road transport, buildings and smaller industrial installations (not covered by EU ETS1).

Effort Sharing Regulation (ESR)

The ESR covers emissions from domestic transport, buildings, agriculture, small industry (not covered by the EU ETS1) and waste. The objective at EU-level is to reduce emissions in these sectors by 40% by 2030 compared to 2005. This translates into Member State national targets ranging from emission reductions of 10% to 50% by 2030. In 2025, emissions which were accounted for under the ESR totalled 64% of EU's gross GHG emissions under the ECL target scope.

Between 2005 and 2025 aggregated emissions covered by the ESR have declined by 21% (see Table 1.2). In the last two years, there were only minor emission reductions year on year. This was due to marginal progress in emission reductions in the building sector and increases in transport emissions.

To meet the ESR 2030 target, emission reductions need to increase 10-fold in the 2025-2030 period compared to the 2020-2025 period. This corresponds to a reduction of 484MtCO_2e (i.e. 97MtCO_2e per year) vs a historical reduction of 49MtCO_2e (i.e. 9.7MtCO_2e per year).

Table 1.2 Changes in emissions under the current scope of the ESR by sector, 2005-2025

	Total ESR	Transport ESR	Buildings ESR	Industry and energy ESR	Agriculture ESR	Waste ESR
Change since 2005	-21%	-5%	-37%	-27%	-9%	-30%

Note: The change in total ESR numbers since 2005 is calculated on 2005 base year emissions given in Commission Implementing Decision 2020/2126. The change by sector is calculated on ESR emission by sector based on GHG inventory data. Data for 2025 are based on GHG proxies (EEA, 2026d).

Current ESR and LULUCF targets expire in 2030. The EC has begun to revise national targets and flexibilities in the EU climate policy framework for after 2030. A public consultation on these targets was held in the first half of 2026 (EC, 2026c).

The land use, land-use change and forestry (LULUCF) Regulation

The LULUCF Regulation covers anthropogenic GHG emissions and removals from managed land, including forest land, cropland, grassland, wetlands, settlements and other land. It also covers changes between these land uses and carbon stored in harvested wood products (HWPs), such as wood for construction.

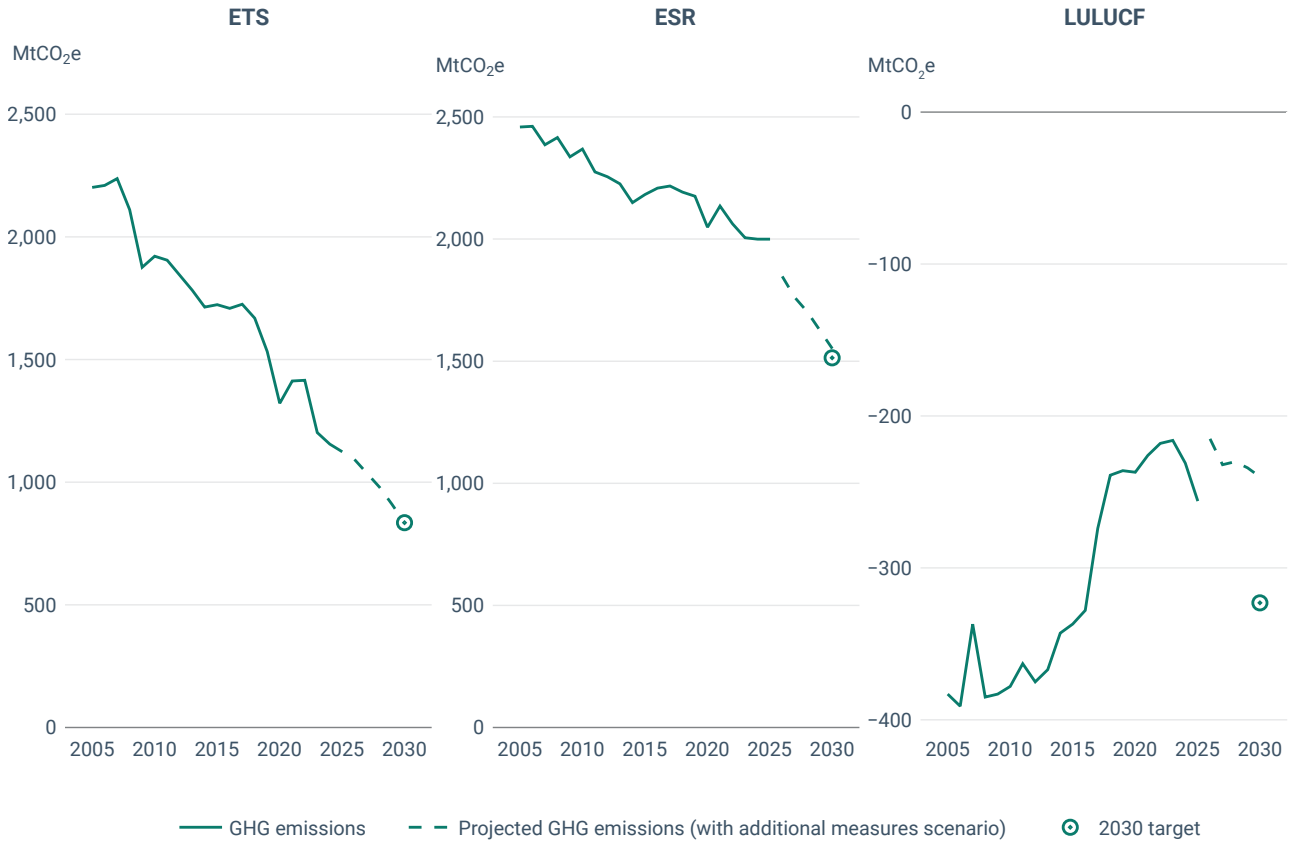
Overall, the sector currently acts as a net carbon sink at the EU level. This means that it sequesters more carbon from the atmosphere than it emits. Individual land use categories can function as both an emission source and a sink. This depends on the effects resulting both from human activities — such as management intensity or land use conversions — and natural processes — such as those related to climate variability and natural disturbances.

The ECL sets *net* climate targets, thereby integrating the LULUCF sector into EU climate governance. The contribution from LULUCF towards achieving the 2030 EU-wide target of reducing net emissions by 55% is limited to -225MtCO_2e. Actual net LULUCF removals may exceed this level.

For LULUCF net removals in 2030, the LULUCF Regulation (EU, 2018) sets an EU-wide target: an additional amount of -42MtCO_2e shall be generated in net removals as compared with the average for the reference period (2016-2018). The target is distributed among Member States through individual national targets, based on their area of managed land (EEA, 2026s).

The national 2030 targets require each Member State to increase its climate ambition and implement additional agriculture and forestry policies. Based on data reported by Member States in 2020, the EU target of generating an additional -42 MtCO_2e of net removals by 2030 was expected to result in total net removals at EU level of -310 MtCO_2e (EEA, 2026s).

Figure 1.2 **Breakdown of GHG emission trends in the sectors covered by the EU ETS, ESR and LULUCF**



Notes: The 2030 targets are derived from the legally specified targets outlined in the ETS Directive (EU, 2023c), the ESR (EU, 2023d) and the LULUCF Regulation (EU, 2023e). For ETS, the comprehensive ETS cap reduction target of 62% is applied. ETS numbers for 2005 are approximated to include the scope expansion to the aviation, maritime, other industrial sectors and additional gases (EEA, 2026r). Throughout this report, the version of ETS data used was extracted from the ETS Union Registry Public website on the 4th of September 2026. The 2025 ETS figures may underestimate emissions from the maritime and aviation sectors under the ETS because some companies may have surrendered allowances after this date.

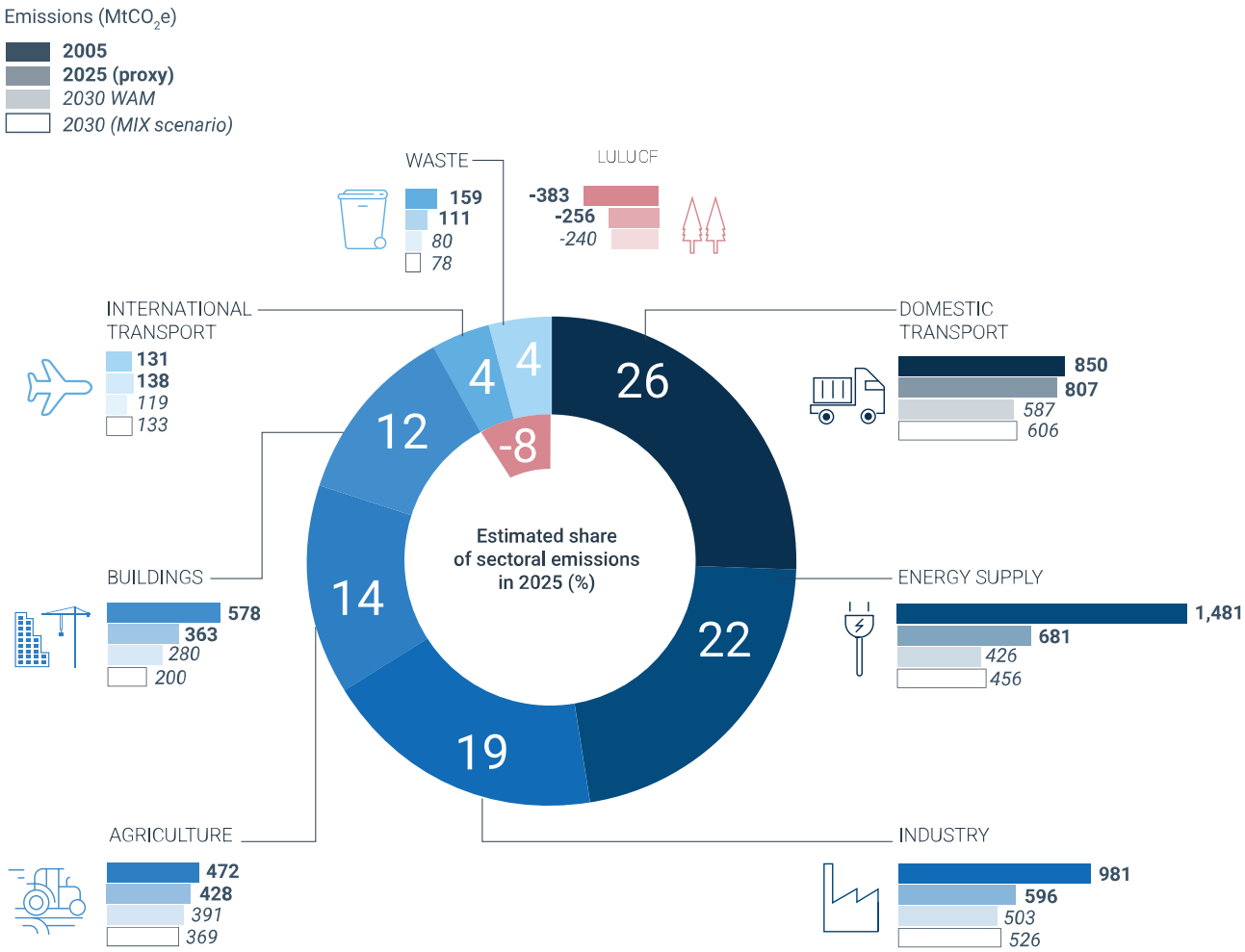
The data for the 2025 values are taken from EEA (EEA, forthcoming). The 2026-2030 data refer to the aggregated GHG emission projections submitted by Member States in 2026, based on a WAM scenario. In the LULUCF figure, the designated end point represents the sum of the baseline (2016-2018 average based on the 2026 inventory submissions) and of national targets (-42MtCO_2e).

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026d, 2026m, 2026j, 2026o, 2026l.

1.3.2 Trends and projections for GHG emissions by sector

Figure 1.3 Sectoral trends and progress towards achieving the 2030 GHG emissions target



Notes: All figures are given in $MtCO_2e$. In a change from the 2025 report, here the buildings sector aggregates the inventory Categories 1.A.4 a and 1.A.4.b, while 1.A.4.c (energy emissions in agriculture) is allocated to the agriculture sector.

The MIX scenario is a core policy scenario produced to analyse the impact of the European Green Deal; here it is used to benchmark projections. The MIX scenario assumes a carbon price for road transport and buildings and the inclusion of the maritime sector in the EU ETS (EC, 2021). Shares are computed over gross EU emissions under the ECL (hence excluding LULUCF).

Source: Author's compilation based on data from EEA, 2026d, 2026l, 2026o.

Figure 1.3 provides an overview of GHG emissions and removals per sector based on the WAM scenario for the EU-27. It compares them to the EC's indicative sectoral trajectory for 2030.

In 2025, domestic transport was the largest contributor of GHG emissions, followed by the energy supply and industry sectors. The LULUCF sector is a net sink, removing an amount equivalent to approximately 8% of total GHG emissions in the ECL target scope in 2025.

While substantive GHG emission reductions have been achieved in most sectors, additional progress is needed to reach the EC's indicative sectoral trajectories by 2030. Recent developments and the need for further emission reductions are discussed individually for each sector in the following sub-sections.

Transport

With 26% of total GHG emissions in the ECL target scope (excluding LULUCF), domestic transport was the largest GHG emitting sector in the EU in 2025. Emissions from international aviation and maritime transport covered by the target scope added another 4.4% to total transport emissions.

GHG emissions from domestic transport peaked in 2007. In 2025, these emissions were 5.1% below their 2005 level. However, they are still higher than emissions in 1990. They also increased by 0.3% between 2024 and 2025.

Emissions from international aviation and international transport have also increased substantially since 1990. In 2025, GHG emissions from international transport in the target scope were 52% above their 1990 level and 6% above their 2005 level.

In the domestic transport sector, road transport is a key emission source, accounting for approximately 95% of GHG emissions from domestic transport. Registration of electric cars in the EU has increased sharply since 2010, with the numbers of battery electric cars registered per year growing from 591 to 1.8 million vehicles in 2025. The share of all electric cars (battery electric and plug-in hybrid cars) in new registrations increased from 21% in 2024 to 27% in 2025 (EEA, 2026p).

When compared with the EC's indicative trajectory for 2030, recent GHG emissions for domestic transport show a substantial gap. In order to fill the gap between the 2025 emissions level and the indicative level for the domestic transport sector for 2030, an average annual reduction of approximately 5% is needed.

Nonetheless aggregated Member State projections for 2030 (using a WAM scenario) show a 31% reduction compared with 2005 emissions, which would go beyond the modelled sectoral contributions of 29% required in the EC scenario.

Measures reported by Member States to achieve mitigation in road transport include incentives for fuel switching and decarbonisation of private transport, enabling actions for electric mobility through charging infrastructure as well as taxation and pricing measures to shift consumer behaviour and promote low-carbon choices [(14)].

Energy supply sector

There have been important decreases in GHG emissions from the energy supply sector in recent years, driven by the decarbonisation of energy systems in the EU. In 2025, GHG emissions from this sector were 1.2% below the level of the previous year and 54% below the 2005 level. They accounted for 22% of total GHG emissions in the target scope (excluding LULUCF).

The substantial decrease in GHG emissions from the energy supply sector over the past two decades is due to a major shift in energy sources used for electricity generation. In 2005, solid fossil fuels accounted for approximately 30% of gross

(14) Once introduced, these measures can result in swift changes. This was the case in the Netherlands where sales of electric vans jumped from 10% of the market share in 2024 to 90% in 2025 — following the implementation of zero-emission zones for freight across major Dutch municipalities, accompanied by targeted incentives (EEA, 2026p).

electricity production and renewables accounted for 14%. However, the share of solid fossil fuels decreased to approximately 23% in 2024 and the share of renewables exceeded 46% in 2024 (Eurostat, 2025a).

While substantial progress has been made, GHG emissions from the energy supply sector need to decrease by approximately 7% annually (equivalent to 45MtCO_2e/y) up to 2030 in order to be in line with the EC's indicative sectoral trajectory. Aggregated Member State projections for 2030, using the WAM scenario, show a 71% reduction compared with 2005 emissions (corresponding to yearly reductions of 51MtCO_2e).

Industry

GHG emissions in the industry sector originate from the combustion of fossil fuels and from industrial processes and product use [15]. This sector accounted for 19% of total GHG emissions in the ECL target scope (excluding LULUCF) in 2025. Emissions in 2025 were 2.6% below the 2024 level and 39% below the 2005 level.

A wide range of factors contributed to these reduced emissions, including increased energy efficiency, a shift in the energy mix away from solid fossil fuels and the abatement of GHG emissions from industrial processes. Broader structural changes and shifts in the composition of economic activity have also played a role. Over the long term, EU industry has generated increasing economic value while reducing GHG emissions, indicating a shift towards higher-value and less carbon-intensive production (EEA, 2026k).

There has been consistent progress in total GHG emission reductions across the different areas of the industry sector in the last 15 years. At the same time, there are stagnating trends in GHG emissions linked to production volumes. There also seems to have been limited progress in decarbonising production processes in the most GHG-emitting industrial sectors such as steel and cement. Further progress will increasingly require energy-intensive sectors to adopt transformational technologies and infrastructure (EEA, forthcoming).

In order to comply with the EC's indicative sectoral trajectory for 2030, GHG emissions from the industry sector need to continue their trend of an annual decrease of approximately 2% (corresponding to 14MtCO_2e/y) up until 2030. Aggregated Member State projections for 2030, using the WAM scenario, show a 49% reduction compared with 2005 emissions (equivalent to average annual drops of 19MtCO_2e/y).

Agriculture

GHG emissions from agriculture [16] accounted for 14% of total GHG emissions in the ECL target scope (excluding LULUCF) [17] in 2025. They had decreased by 0.4% compared to the previous year and were 9.3% below the 2005 level.

The main emission sources from agriculture include enteric fermentation from livestock, manure management and fertiliser use. Emission decreases can be

(15) This corresponds to UNFCCC Categories 1.A.2 and 2. However, where blast furnace gas is transferred to external power plants, the resulting emissions are reported under the power sector. This means that emissions from some integrated steel plants are only partly captured under industry.
(16) Here agriculture GHG emissions refer to UNFCCC Categories 3 'Agriculture' (covering enteric fermentation, manure management, rice cultivation, agricultural soils, liming and others) and 1.A.4.c which refers to emissions from energy use in agriculture, forestry and fishery.
(17) LULUCF emissions and agriculture emissions are closely linked. LULLUCF emissions/removals cover those from managed land, including forest land, cropland, grassland, wetlands, settlements and other land, as well as changes between these land uses and carbon stored in HWPs. Agriculture emissions cover emissions from livestock, manure management, fertiliser use, rice cultivation and the non-CO_2 emissions from field burning (EEA, 2024).

attributed, *inter alia*, to a decline in cattle populations and decreasing fertiliser use. The pace and drivers of change differ strongly according to whether they relate to gas, source or Member State. This reflects long-term structural changes in livestock numbers and productivity, land use and management practices as well as nitrogen inputs and the evolution of EU agricultural and environmental policies (EEA, forthcoming).

Annual decreases of approximately 3% (or 12 $MtCO_2e/y$) are needed up to 2030 in order to be in line with the EC's indicative sectoral trajectory. Aggregated Member State projections for 2030, using the WAM scenario, show a 17% reduction compared with 2005 emissions (corresponding to annual $7MtCO_2e$ cuts).

Buildings

GHG emissions from the buildings sector accounted for 12% of total GHG emissions in the ECL target scope (excluding LULUCF) in 2025. They were 37% below the 2005 level. Long-term drivers for this decrease in GHG emissions include improved energy efficiency and milder winters (JRC, 2026a). In addition to efficiency gains, the reduction in GHG emissions also reflects a shift in the fuel mix towards cleaner energy sources.

GHG emissions from the buildings sector increased by 0.8% between 2024 and 2025. Emissions from this sector show year-on-year fluctuations due to annual variations in wintertime temperatures and, hence, heating needs (see also section 2.5).

The recent increase in GHG emissions has moved the building sector further away from the EC's indicative 2030 sectoral trajectory. Setting the EU on track would require average annual emission reductions of around 9% (equivalent to reductions of $33MtCO_2e/y$) between 2025 and 2030. This would be a significant departure from the current trend.

Aggregated Member State projections under the WAM scenario indicate a 52% reduction compared with 2005 levels (corresponding to average annual reductions of $17MtCO_2e$) but achieving this will depend on effectively accelerating the investment needed for thermal renovation and efficient low carbon heating and cooling systems.

LULUCF

With an approximated net sink of $-256MtCO_2e$ in 2025, the LULUCF sector removed the equivalent of 8% of gross EU GHG emissions under the ECL scope (excluding LULUCF). This level indicates an increase in the net sink of 10.7% compared to 2024.

A combination of approximated and inventory data indicates that the LULUCF sink has increased over the last two years, by $15MtCO_2e$ in 2024 and a further $25MtCO_2e$ in 2025. This is a positive sign. However, there is a vast challenge ahead: the preliminary data for 2025 indicate that an additional $67MtCO_2e$ is needed to reach the 2030 target (EEA, 2026s).

The latest inventory data for the EU show the long-term trend in LULUCF remains one of declining net removals: between 2015 and 2024, the average net sink was 31% smaller compared to the decade before. This reduction has largely been driven by the reduced capacity of forests to sequester carbon from the atmosphere. This is due to a combination of interrelated factors: while forests are ageing and sequestering less carbon, harvesting has also increased. In parallel, climate change and natural disturbances have increasingly affected the forest sink (EEA, 2024).

Cropland and settlements remain the most important net sources of emissions in LULUCF. To a large extent this is due to the management of organic soils and the conversion of cropland, grassland and forest land for the expansion of settlements.

In the context of increasing effects from climate change and natural disturbances — such as wildfires, persistent droughts, windthrows and pests — the capacity of LULUCF to generate carbon removals is becoming less predictable. It will therefore be important for the sector to enhance its resilience to the existing and future effects of climate change.

Chapter 3 provides more information on the status of the LULUCF sector at the EU level and for individual Member States. It also presents options for additional action to be taken.

Box 1.1

LULUCF approximated GHG emissions

The approximated GHG inventory for LULUCF shows an increased sink of 25MtCO_2e compared to 2024, which is significant. This increase is particularly driven by a decrease of 12MtCO_2e (24%) in cropland emissions and an increase of 7.8MtCO_2e (2.4%) in removals from forest land.

The largest decrease in net emissions from LULUCF was reported by Germany with an overall -54% change between 2024 and 2025. This was largely driven by the increase of removals from forest land of 21MtCO_2e and a decrease of emissions of 11MtCO_2e from cropland.

For forest land, emissions from the increased use of biomass are expected to exceed removals from harvesting in 2025. This change is being driven by interrelated factors, including an estimated recovery of forest biomass, a decline in biomass harvests and an increase in carbon storage in deadwood and mineral soils. For cropland, the main reason for the reduction in 2025 was a decrease in net emissions from mineral soils.

The 2025 approximated GHG inventories for LULUCF include some uncertainty; GHG inventory data (2027 submission) for 2025 may provide different values. Seven Member States have reported the same value for 2025 as for the latest GHG inventory data for 2024.

Direct and indirect emissions grouped by demand sector

Box 1.2

A different emissions allocation approach

GHG emissions are reported in GHG inventories under source categories defined by IPCC guidelines. These follow a transparent and largely standardised structure. This reporting framework groups emissions by sector — primarily according to the location where they occur. However, in addition to this sector-based approach, it is also useful to assess certain energy-related emissions when they are allocated according to end users.

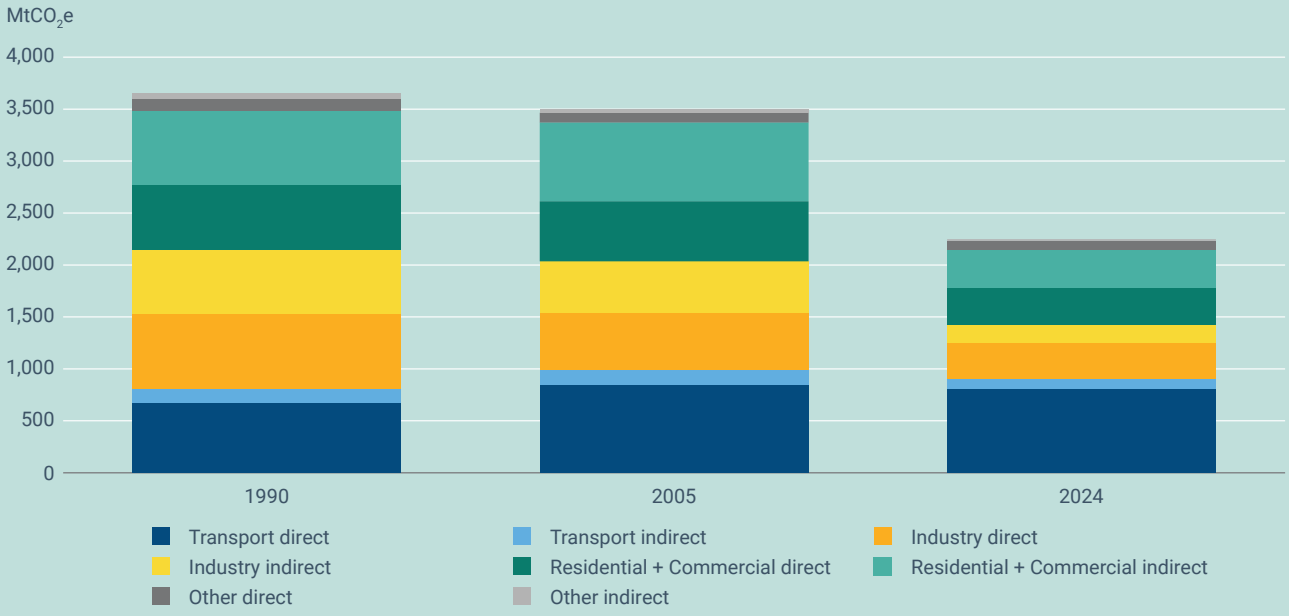
Figure 1.4 shows the evolution of total end-user emissions from 1990 to 2024, expressed as the sum of direct and indirect emissions:

- Direct emissions correspond to those reported in GHG inventory categories.
- Indirect emissions are those reallocated from the energy supply sector (including energy industries and fugitive emissions) based on energy use data reported in energy statistics for each end-user sector.

Together, these end-user emissions account for approximately 75% of total GHG emissions in the EU-27. Between 1990 and 2024, total end-user emissions decreased by 38.5%. The largest reductions occurred in the industry sector (61.7%), followed by the residential sector (50.9%). In contrast, transport sector emissions increased by 12.7% during the same period.

When indirect emissions are reattributed, the industry sector becomes more prominent in the total distribution. Nevertheless, its indirect emissions decreased by 74% over this period, resulting in the transport sector becoming the largest contributor to total end-use emissions in 2024.

Figure 1.4 **Direct and indirect GHG emissions allocated to end-use sectors in the EU-27**



Note: View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2012, 2026l.

1.3.3 GHG emission developments in Member States

To meet the EU-wide climate targets, Member States must reduce their emissions across all areas covered by the EU ETS, ESR and LULUCF Regulation, in addition, LULUCF removals need to be intensified. The relevance of each sector and each country's ability to reduce emissions within it varies significantly by Member State.

Figure 1.5 shows the changes in emissions covered by each instrument by Member State. It also shows the overall changes in total net GHG emissions (including LULUCF) from 2005 to 2025. The changes in total net GHG emissions differ substantially between countries. For example, while Sweden reduced its net emissions by 192%, Latvia's net GHG emissions increased by 196%. Although Sweden's net LULUCF sink decreased by 4MtCO_2e, its GHG emissions fell by a considerable larger extent, driven mainly by emission reductions of 12MtCO_2e in the ESR sectors.

Only Finland and Latvia recorded an increase in total net GHG emissions (including LULUCF). All other Member States recorded a decrease. In Finland and Latvia, the increases were caused by the fact that the net LULUCF sink has become a net source of emissions over the last 20 years. Preliminary estimates for 2025 suggest that net LULUCF emissions in Finland have increased by 44MtCO_2e and in Latvia by 9MtCO_2e since 2005.

Member States face different challenges and opportunities when it comes to reducing emissions. As such, their progress varies widely. Still every Member State has an obligation to reduce its domestic emissions to keep the EU on track to achieve its climate targets.

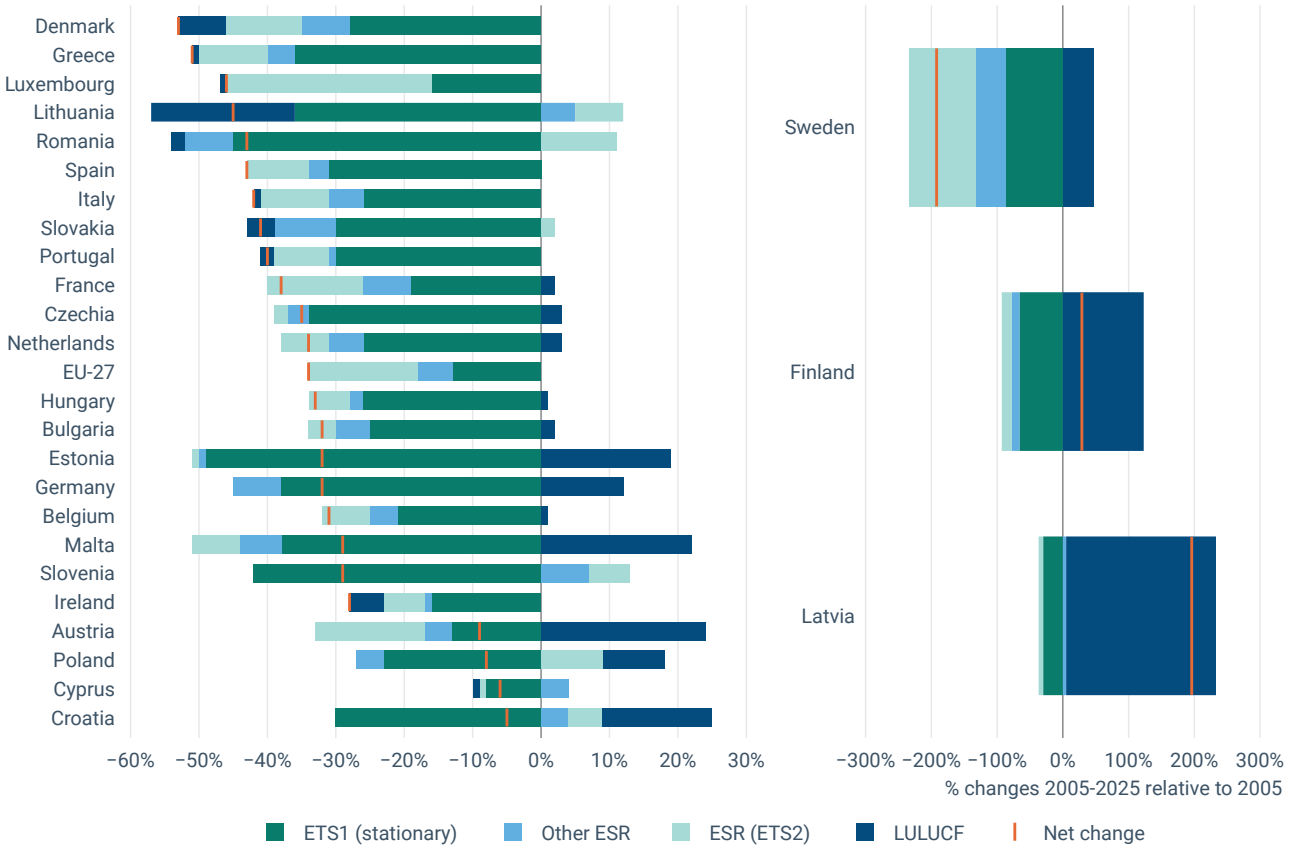
In most countries, emissions in the ESR sectors have fallen since 2005. Six of the 27 Member States recorded an increase in emissions in 2025. These ranged from a 3.6% increase in Cyprus to a 13% in Malta. In contrast, emissions covered by the EU ETS1 fell in every Member State over the same time period. Reductions ranged from 87% in Sweden to 8% in Cyprus.

ESR emissions that fall under the scope of the EU ETS2 (road transport, buildings and small industry) also decreased in most countries. However, six Member States recorded an increase under the ETS2 between 2005 and the preliminary estimates in 2025. Romania and Poland where amongst the countries with the largest increases in emissions since 2005 with 10% and 9%, respectively.

Estimates suggest that ESR emissions that fall under ETS2 increased in Croatia, Lithuania, Malta, Poland, Romania and Slovakia. EU wide, road transport contributes the largest share of EU ETS2 emissions, followed by the buildings sector and the energy and industry sector, at 61%, 28% and 11% in 2025, respectively. Member States have achieved the majority of their emission reductions since 2005 which falls under the ETS2 scope in the buildings sector.

Only ten Member States have achieved growth in their net LULUCF sink since 2005. At the EU-27 level, the LULUCF sink decreased between the years 2025 (approximated GHG) and 2005 by 127MtCO_2e, with Finland, Poland and Austria contributing most with a combined total of 94MtCO_2e. The biggest increases in LULUCF sinks in absolute terms occurred in Italy, Lithuania and Denmark. Chapte 3 provides a broader analysis of developments in the LULUCF sector at the EU and Member State levels.

Figure 1.5 **Evolution of ETS1, ESR and LULUCF removals and emissions by Member State, 2005-2025**



Notes: In this figure, the absolute changes in emissions under the ESR, ETS1 and LULUCF Regulation are expressed as percentage changes relative to total net GHG emissions in 2005. This representation breaks down the overall change in total net GHG emissions between 2005 and 2025 into the contributions of each policy instrument. Other ESR emissions are energy and industry emissions not included in the EU ETS1 and EU ETS2, as well as agriculture, waste and other emissions.

For Sweden, the net change amounts to -192% and for Latvia, 196%. Both countries were close to net zero in 2005. Compared to the analysis in previous years, the net result for Sweden changed considerably due to a revision of their historical net LULUCF results in the GHG inventory. The 2025 data are based on approximated GHG inventories, which involve some uncertainty for LULUCF; final submissions for the 2025 inventory data (2027 GHG inventory submission) might deviate from these. For Austria and Croatia, the LULUCF estimate for 2025 has been gap filled by the EEA with 2024 inventory information for LULUCF.

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026g, 2026f, 2026l.

1.3.4 Progress to national ESR emission targets

The ESR sets binding national targets to reduce emissions in those sectors that are not covered by the EU ETS1. The sectors that fall under this regulation are: domestic transport (excluding CO_2 emissions from aviation), buildings, agriculture, small industry and waste. The EU-wide and the national targets are expressed as percentage reductions relative to 2005 emission levels. The EU-wide target is a 40% reduction. National reduction targets range from 10% to 50%.

Each Member State has a national emissions limit for each year in the 2021-2030 period. These are expressed as annual emission allocations (AEAs). The AEAs were allocated through legislation for each Member State and each of these years. Member States can use several flexibility mechanisms to ensure compliance with these limits.

Following the 2023 amendment of the ESR, national 2030 targets increased in ambition and stricter annual emission limits were introduced for 2023-2029. As a result, the national reduction targets were increased for all Member States, except Malta.

In 2024, emissions in the ESR sectors remained within the emission limit for 13 Member States. The other 14 Member States exceeded their emission limit by between 0.2% for Spain and 29% for Malta (all before flexibilities) [18].

The Member States exceeding their emission limit in 2024 were: Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Ireland, Italy, Lithuania, Malta, Portugal, Spain and Sweden. The Netherlands, Luxembourg and Sweden (even if Sweden's emission limit was exceeded) achieved the largest reductions relative to their 2005 base year emissions.

Iceland and Norway also agreed to implement the ESR as adopted in 2018 and have committed to binding 2030 emission reduction targets. Both, Iceland's and Norway's 2024 ESR emissions exceeded their 2024 limit.

Preliminary estimates for 2025 indicate that all Member States that failed to meet their AEAs in 2024 also failed to meet them in 2025, apart from Bulgaria. Moreover, estimates suggest that an additional five Member States failed to reach their 2025 AEAs (Austria, Belgium, Denmark, Hungary, Poland).

Only nine Member States decreased emissions beyond their emission limits while staying in line with their AEAs. These were: Bulgaria, Czechia, Greece, Latvia, Luxembourg, Netherlands, Romania, Slovakia and Slovenia (before flexibilities). At the EU level, the 2025 estimates show little change compared with 2024. Recent projections that include additional measures suggest a 38% reduction relative to 2005, narrowing the gap to the 2030 ESR target to just two percentage points.

For Iceland and Norway, preliminary 2025 estimates suggest that both countries exceeded their emission limits.

Figure 1.6 shows the 2030 ESR target compared to the emission reductions already made by 2025 alongside Member State projections. Greece is the only country that has already met its ESR target. Greece needs to cut its emissions by 23% between 2005 and 2030 and estimates show that emissions have already fallen by 30% by 2025. All other countries still need to reduce their emissions further to reach their 2030 targets. Moreover, 12 Member States still need to cut their emissions under the ESR scope by more than 20% to reach their targets.

Projections were submitted in March 2025 by all Member States. Several Member States updated their projections in March 2026 (Belgium, Denmark, Estonia, Germany, Ireland, Italy, Lithuania and Romania).

Bulgaria, Czechia, Denmark, Greece and Portugal project ESR emissions below their 2030 limits under existing policies and measures (WEM). All the other Member States project a gap between their 2030 ESR emissions under WEM and 2030 targets. Malta shows the largest gap, of 61 percentage points, followed by Ireland, with a gap of 30 percentage points.

(18) Please refer to the technical background document published alongside this report for more information.

When additional planned policies and measures are included, 14 Member States project emissions below their 2030 ESR emission limits: Bulgaria, Croatia, Czechia, Denmark, Greece, Hungary, Latvia, Luxembourg, Romania, Poland, Portugal, Slovakia, Slovenia and Spain.

Figure 1.6 **Projected emission reductions in the ESR sectors in 2025 and 2030 compared to 2005 base year emissions and Member States' national targets**



Notes: Countries with only a light green segment shown have only submitted a WEM scenario.

View the interactive version of the chart.

Source: Author's compilation based on data from EU, 2023a, 2023c; EEA, 2026f, 2026o.

2 EU-wide developments in energy systems

Key messages

- The transition away from fossil fuels is the key driver of GHG emission reductions in the EU. Since 1990, the EU has reduced its yearly emissions from coal-combustion alone by 1.1GtCO_2e on average.
- In 2025, there was significant progress in the decarbonisation of the energy system despite adverse meteorological conditions and increased energy demand in the transport sector.
- Approximated energy data indicate that in 2025 the share of renewable energy in EU GFEC was 26%. Large efforts are therefore needed to reach the EU's 2030 renewable energy target of a minimum of 42.5%. Progress has been uneven across the sectors, with approximated 2025 data indicating that the EU RES share is as high as 50% in the electricity sector, vis-à-vis 27% in heating and cooling and only 12% in the transport sector.
- Energy consumption declined between 2005 and 2025. FEC decreased by 11% and PEC by 20%. However approximated data for 2025 show an increase in both, by 0.6% for FEC and 0.8% for PEC. These figures correspond to 2025 totals of 906 and 1,204Mtoe, respectively.
- Energy efficiency improvements will need to be substantially scaled up to meet the 2030 targets for both PEC and FEC. The pace of FEC reductions will have to increase from an annual average of 10Mtoe for the 2020-2025 period to 29Mtoe per year from 2026 to 2030. Yet, 2024 and approximated 2025 figures point to yearly increases rather than decreases in FEC. This highlights the need for strengthened action to achieve the 2030 targets.
- Progress in reducing FEC has also been uneven across sectors, with transport partly offsetting reductions achieved elsewhere. Between 2005 and 2025, FEC fell by 23% in industry and 15% in households, tertiary and other sectors. However, it increased by 5% in transport, based on approximated figures.
- Most Member States remain above their 2030 national FEC and PEC contributions in 2024 despite widespread reductions since 2005.

2.1 Deployment of renewable energy and implications for GHG emissions

The EU continues to increase its use of renewable energy (Figure 2.1). This has contributed to the substantial GHG emission reductions achieved. The EU-wide share of renewable energy in GFEC rose from 10.2% in 2005 to an approximated 26.3% in 2025.

Based on the national contributions set out in the Member States' NECPs, this share is expected to reach 41% by 2030. That would be 1.5 percentage points short of the minimum EU-wide target of 42.5% for that year (EU, 2023d) and 4 percentage points away from the aspirational 45% EU-target (EU, 2023d).

In terms of energy efficiency, the preliminary EU's PEC in 2025 amounted to 1,204Mtoe. Meanwhile, approximated FEC stood at 906Mtoe. Both figures indicate that a significant gap must be bridged to meet the 2030 energy efficiency targets.

Figure 2.1 Progress towards achieving 2030 targets in the EU-27



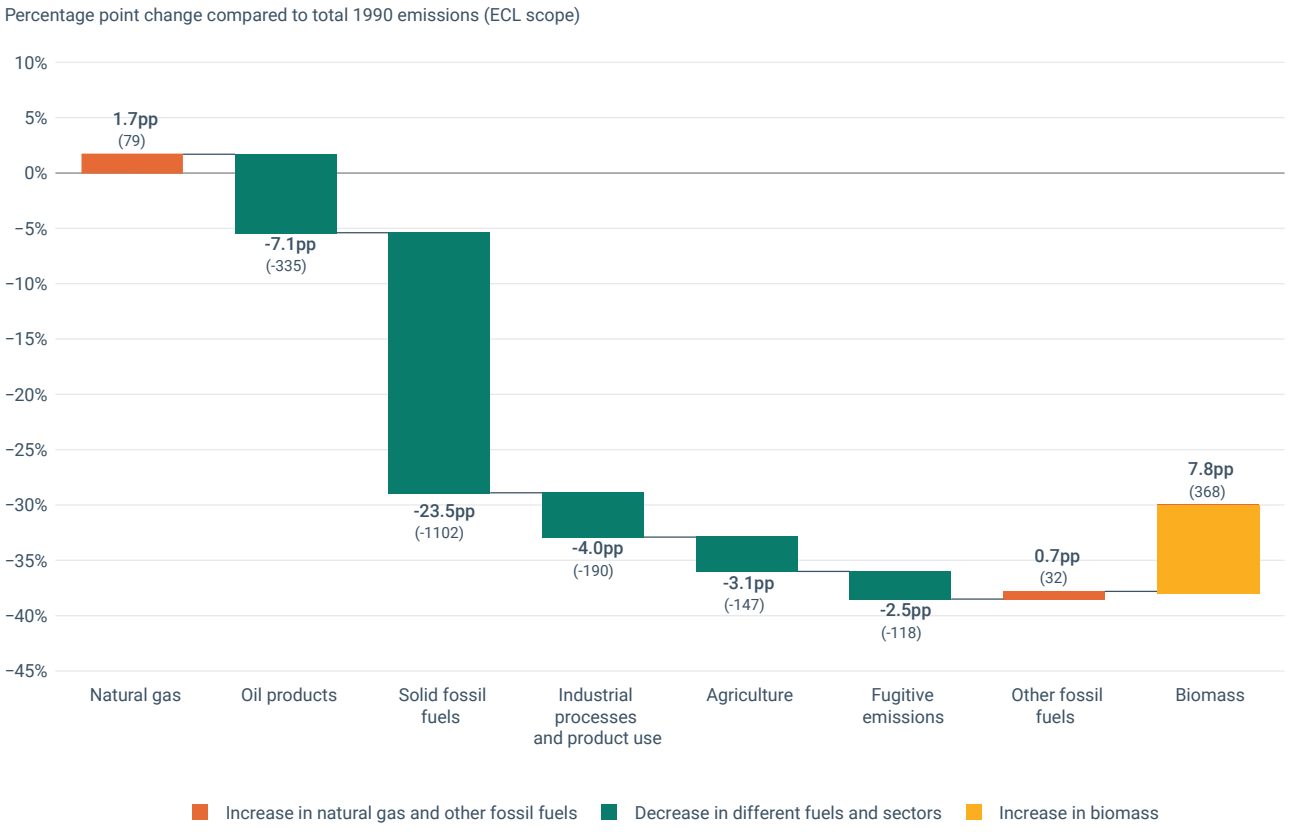
Notes: GHG emissions include those from the LULUCF sector and international transport, consistent with the scope of the ECL. The 2030 contributions for renewable energy, PEC and FEC are drawn from the EC's assessment of the final updated NECPs submitted by Member States in 2024 and 2025 (EC, 2025b). The assessment estimates that the combined renewable energy contribution of all Member States is estimated to reach a 41% RES share in 2030. The combined contribution for FEC amounts to 794Mtoe. With the latest updates of NECPs from Belgium and Estonia, the combined contribution for PEC amounts to 1,047Mtoe. The 2030 GHG emission reduction target, derived from the ECL, applies a net 55% reduction to the calculated 1990 baseline values. Under the ECL, the LULUCF contribution to the target is capped at a removal of 225Mt. If removals surpass this level in 2030, the result would be a slightly higher overall reduction than the 55% target.

View the interactive version of the chart.

Sources: Author's compilation based on data from EEA, 2026d, 2026l, 2026o, 2026a, forthcoming, forthcoming c, forthcoming d, forthcoming e; Eurostat, 2026b.

2.2 Contributions to the overall reduction in EU GHG emissions since 1990

Figure 2.2 Contributions to overall EU GHG emission reductions, 1990-2024



Notes: The figure gives contributions as % change and absolute values in $MtCO_2e$. The emission reductions linked to fossil fuels cover energy-related GHG emissions from energy industries (1.A.1), manufacturing and construction (1.A.2), transport (1.A.3) and buildings and agriculture (under 1.A.4). Other emissions and removals under the target scope include those from waste management, LULUCF and emissions from international aviation and maritime shipping. CO_2 emissions from biomass — reported by Member States as memo items in their GHG inventories — are shown in parallel but are not counted towards total EU GHG emissions under the ECL target scope.

Source: Author's compilation based on data from EEA, 2026l.

The combustion of fossil fuels for energy use remains the main driver of climate change globally. This also holds true for the EU's GHG emissions. A broad overview of sources of GHG emissions shows that, in the 1990-2024 period, about three-quarters of total annual EU emissions were linked to fossil fuel combustion [19]. Coal accounted for one-third of total EU emissions in 1990 vis-à-vis just 14% in 2024.

Since 1990, the EU has reduced its yearly emissions from coal combustion by $1.1GtCO_2e$; this is roughly equivalent to the 2024 GHG emissions of a country like Japan. Avoided emissions from coal combustion make coal the largest single contributor to the overall reduction in GHG emissions. It has contributed more than 23 percentage points of the overall 38% emission reductions the EU has achieved between 1990 and 2024.

(19) Similarly, over the same period of time about three-quarters of the total emission reductions were due to the decline in fossil fuel emissions.

The use of oil products, which were also responsible for about a third of emissions in 1990, continued to grow until 2008. This was followed by a steady decline that was driven by decreased demand in the energy and industry sector [20]. By 2024, oil-combustion-related emissions were about 335MtCO_2e lower than in 1990. That total almost corresponds to the EU's total agricultural emissions in 2024.

Fugitive emissions also decreased by 118MtCO_2e, contributing a 2.5 percentage points reduction over the period 1990-2024 [21].

Fugitive emissions from the energy sector have declined substantially since 1990, largely because underground coal mining activity has decreased. Emissions from oil and gas systems have also been reduced as domestic production has declined and infrastructure improved. Improvements include better pipeline networks, replacement of older distribution pipes and reduced losses from gas distribution systems (EEA, 2022).

Part of the reduction in coal and oil use was offset by the increased consumption of natural gas, which grew by 79MtCO_2e annual emissions between 1990 and 2024.

With fossil fuels emissions on a stable decreasing trend, it is increasingly important to reduce emissions from industrial processes, agriculture and other emission sources.

In addition to fossil fuels, biomass combustion has become a significant source of energy supply in the EU (dominant within renewable heat and present in the power mix). CO_2e emissions from combusting biomass for energy are reported as zero in the energy sector in the GHG inventories — according to the IPCC guidelines — and excluded from national totals. This is because associated carbon (related to biomass growth and harvesting) is accounted for in the LULUCF sector.

However, countries (including EU Member States) still report the CO_2e from biomass combustion as a 'memo' item. These reported data show that biomass use has increased substantially over the past decades: CO_2e emissions from biomass in 2024 were 368Mt higher than in 1990 [22].

GHG emissions outside the energy sector have also decreased significantly in the EU. For example, emissions of nitrous oxide (N_2O) and methane (CH_4) have fallen due to a smaller agricultural livestock population. Equally, there are now lower emissions from solid waste disposal and the production of adipic and nitric acid (EEA, 2026a).

Besides N_2O and CH_4, fluorinated gases contribute to non-CO_2 emissions. Emissions of these gases peaked in 2014 and have fallen steadily since then (more information is available in the EEA indicator, 'Hydrofluorocarbon phase out in Europe').

(20) This was partially offset by an increase in demand from the transport sector.

(21) In the energy sector, fugitive methane emissions mainly arise from the extraction, processing and transport of fossil fuels. Key sources include methane released during coal mining and handling as well as leakages or venting across oil and natural gas systems — including production sites, transmission infrastructure and distribution networks. Smaller contributions to fugitive methane emissions also come from fuel combustion in households, particularly where biomass is used for residential heating.

(22) EU policies, such as the Renewable Energy Directive (RED), promote sustainable biomass sourcing, enhanced monitoring of emissions and stricter land use regulations to ensure that biomass use does not compromise environmental integrity. Only biomass resources that comply with EU sustainability criteria can be counted towards national renewable energy targets.

Box 2.1

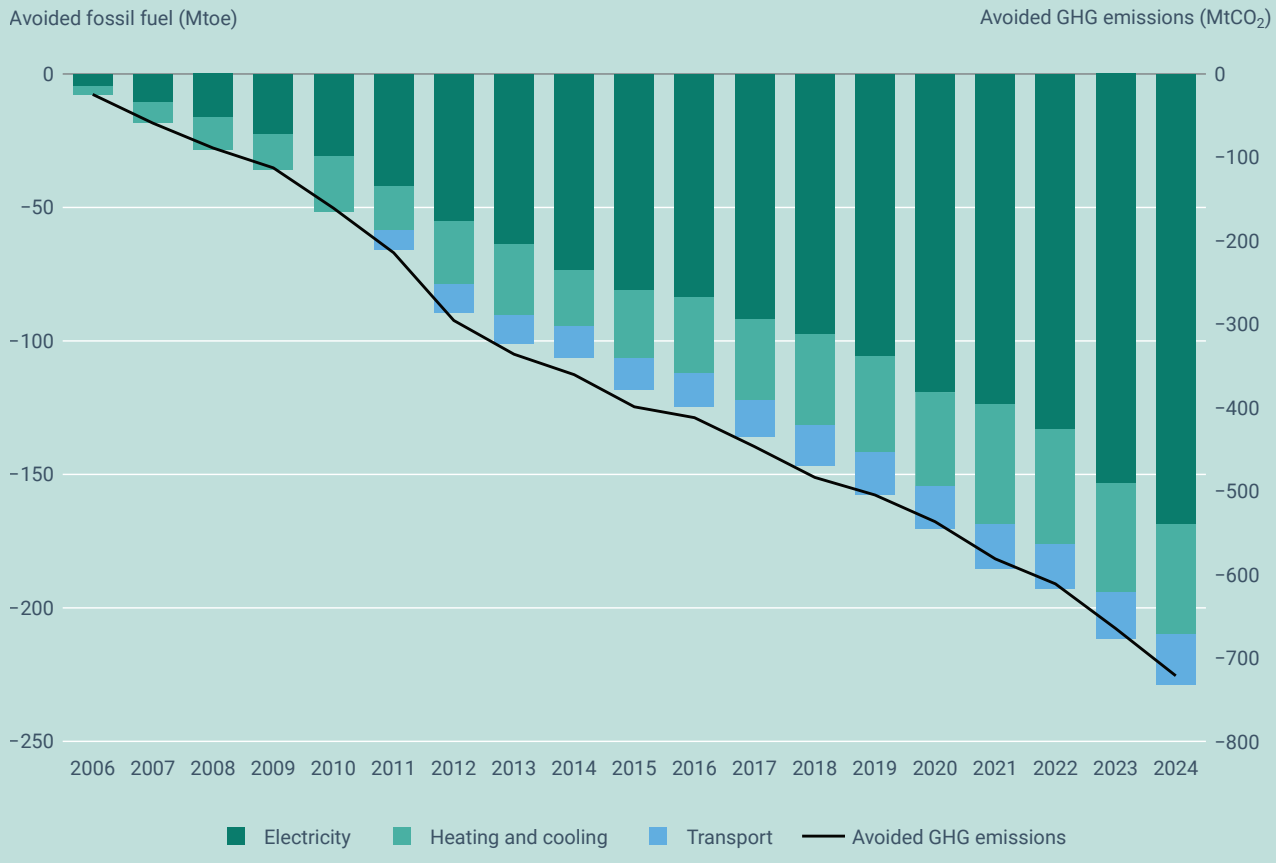
Impact of renewable energy deployment on avoided GHG emissions and avoided fossil fuel costs

In 2024, the use of renewable energy resulted in 229Mtoe less consumption of fossil fuels, mainly in the electricity sector (Figure 2.3). This corresponds to 721MtCO_2 less GHG emissions, predominantly from avoided use of fossil, gaseous and solid fuels. Without this deployment of renewable energy, emissions under the ETS from stationary installations could have been about 50% higher.

At the same time, increased use of renewable energy and reduced fossil fuel use also lower energy costs and reduce the EU's dependence on fuel-exporting countries. With full implementation of the affordable energy plan (EC, 2025e), the EC estimates that the EU's fossil fuel import bill will decrease each year, reaching annual savings of EUR 130 billion by 2030 (0.65% of GDP) and EUR 260 billion by 2040.

This shows that climate action plays an important role in the achievement of other key policy objectives.

Figure 2.3 **Effects of the use of renewable energy on avoiding fuel consumption and GHG emissions**



Notes: Ktoe, kilotonnes of oil equivalent.

View the interactive version of the chart.

Source: EEA, 2025b.

2.3 Progress to targets for renewable energy

The EU's 2030 target for renewable energy is to achieve a minimum share of 42.5%, with the aim of reaching 45%. To reach this objective, all EU Member States included details in their NECPs of their individual contributions to the EU's overall 2030 renewable energy target. These contributions were expressed as a share of GFEC (RES share).

In May 2025, the EC assessed the final updated NECPs of 24 Member States that had submitted their plans by that date [23]. It estimated that their combined RES contributions will deliver a 41% EU-wide RES share in 2030 (EC, 2025a).

Table 2 provides an overview of preliminary estimates of RES shares for 2025 along with estimates for 2030 RES shares based on NECPs [24]. These estimates are based on the formula set out in the Governance Regulation. Preliminary estimates for 2025 indicate a total RES share of 26.3% for the EU, with national RES shares ranging from 15% in Belgium to 65% in Sweden.

The 2030 RES shares contributions reported in Member States' final updated NECPs range from 22% (Belgium) to 67% (Sweden). Seven Member States (Bulgaria, Estonia, Greece, Italy, Lithuania, Poland and Spain) reported higher 2030 RES contributions than those calculated using the formula set out in the Governance Regulation (EC, 2025a).

In 2025, approximated estimates from Eurostat [25] show that Sweden's RES share was the closest of all Member States to its national 2030 contribution; it was only 2 percentage points short of the target. Meanwhile, Ireland exhibited a gap of 26 percentage points between its 2025 RES share and its national target contribution for 2030.

(23) Belgium, Estonia and Poland had not submitted a final updated NECP by then. The EC used draft NECP information to make an assessment for Belgium; Estonia and Poland provided specific additional information on their national contributions.
(24) This overview includes the values reported by Belgium and Estonia in their 2025 updated NECPs. Poland submitted its final updated NECP in June 2026. However, as the EC assessment of this update is not yet available, the values for Poland are based on the 2025 EC assessment (EC, 2025b).
(25) It should be noted that approximate figures on RES shares for 2025 are subject to revision by Eurostat as early as December 2026. Therefore, the estimates in the text and in the table should be treated with caution when assessing country-level progress to the targets.

Table 2.1 **National progress to 2030 NECP RES contributions and estimates for 2025**

Member State	2024	2025 (proxy)	2030 contribution from NECP	2025 distance to 2030 contribution
		percent		percentage points
EU-27	25.2%	26.3%	41.0%	15%
Austria	43.0%	44.2%	57.0%	13%
Belgium	14.3%	14.8%	20.4%	6%
Bulgaria	23.2%	22.7%	34.9%	12%
Croatia	26.5%	28.5%	42.5%	14%
Cyprus	20.8%	20.5%	33.0%	13%
Czechia	19.2%	19.1%	30.1%	11%
Denmark	46.5%	48.2%	58.0%	10%
Estonia	42.2%	42.3%	65.0%	23%
Finland	52.1%	53.0%	62.0%	9%
France	23.2%	23.9%	35.0%	11%
Germany	22.5%	23.9%	41.0%	17%
Greece	25.4%	26.9%	43.0%	16%
Hungary	18.3%	19.6%	30.0%	10%
Ireland	16.1%	17.2%	43.0%	26%
Italy	19.4%	20.5%	39.4%	19%
Latvia	45.5%	46.3%	61.0%	15%
Lithuania	35.4%	38.5%	55.0%	17%
Luxembourg	14.7%	20.2%	37.0%	17%
Malta	17.2%	18.4%	24.5%	6%
Netherlands	20.2%	22.7%	39.0%	16%
Poland	17.8%	18.7%	32.6%	14%
Portugal	36.3%	36.7%	51.0%	14%
Romania	25.4%	25.6%	38.3%	13%
Slovakia	18.1%	16.3%	25.0%	9%
Slovenia	25.0%	25.4%	33.0%	8%
Spain	25.4%	26.0%	47.9%	22%
Sweden	62.8%	65.4%	67.0%	2%

Notes: The contributions for Belgium and Estonia are taken from assessments of their NECPs, submitted after the EU-wide assessment by the EC (2026a, 2025d).

Source: Author's compilation based on data from Eurostat, 2026a; EEA, forthcoming e.

A comparison of RES shares reported for 2024 and preliminary estimates of RES shares for 2025 shows that 23 Member States increased their RES shares between 2024 and 2025. The largest increase was observed in Luxembourg with an increase of 5 percentage points. Meanwhile, in Slovakia the RES share is expected to have decreased by 2 percentage points compared with 2024.

2.4 Sectoral-level adoption of RES

In recent years, the deployment of RESs was greatest in the electricity sector, in comparison with the heating and cooling or transport sectors. Thanks to significant increases in solar and wind power, the electricity sector (RES-E) now accounts for the largest share of renewables.

At the EU level, renewables in the electricity sector have increased from 16% in 2005 to an estimated 50% in 2025, with an average annual growth rate of 2 percentage points. In 2025, at the Member State level, RES-E shares ranged from 11% in Malta to 91% in Austria. Austria's most prominent renewable electricity source in 2025 was hydropower; this generated 52% of its renewable electricity, followed by 14% of electricity generated by solar and 11% by wind. Lithuania and Greece experienced the biggest increases in 2025 compared to 2024, with RES-E growing by almost 11 percentage points for Lithuania and 10 percentage points for Greece.

Furthermore, electrification is becoming a main pathway for decarbonising heating and transport. The increasing relevance of heat pumps and electric vehicles is outlined further below.

According to approximate energy data, the RES share in heating and cooling (RES-HC) grew from 12% in 2005 to 27% in 2025. This equates to average annual growth of 0.8 percentage points per year, mirroring the trend for total RES. At the Member State level, the lowest level of RES-HC adoption was observed in Ireland (8%) and the largest share in Sweden (69%).

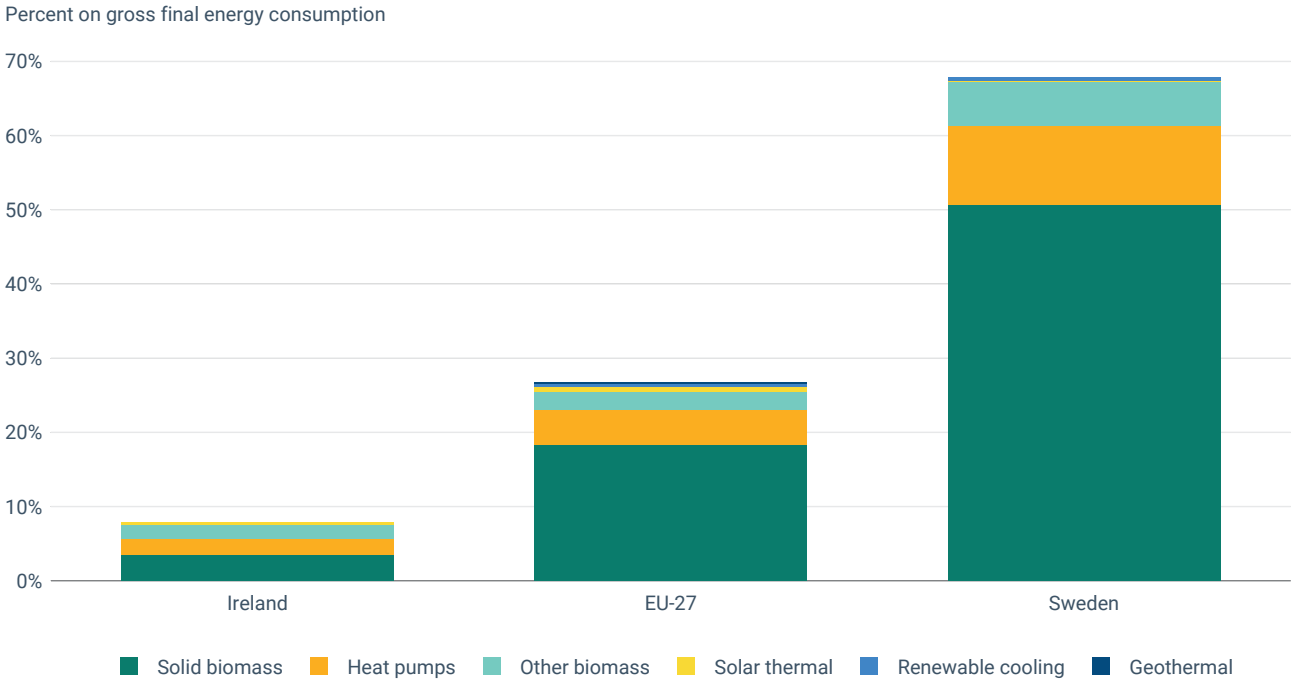
Figure 2.4 shows the contribution to renewable heating and cooling by source for Ireland, the EU-27 and Sweden in 2024. Solid biomass contributes substantially to renewable heating and cooling in all three cases. Sweden also shows the highest share of heat pumps; they are responsible for 11% of total heating and cooling FEC, compared to a 6% total across the EU and 2% in Ireland.

The residential electricity-gas price ratio [26] in the first six months of 2025 was 1.3 in Sweden — the lowest across all EU countries — versus 2.7 in Ireland. The market share for heat pumps (i.e. heat pump sales as a portion of all heat pump and boiler sales) was 94% in Sweden (in 2023) versus 29% in Ireland (in 2024) (JRC, 2026b).

At the EU level, the contribution of heat pumps to renewable heating and cooling increased 47% between 2020 and 2024. This highlights the importance of electrification strategies to decarbonise end uses such as heating.

(26) The electricity-gas price ratio is the unit price (e.g. €/kWh) of electricity divided by the unit price of natural gas. The ratio shows how much more expensive electricity is compared to gas, and it is a key factor in deciding whether electrification technologies (such as heat pumps) are cost-effective.

Figure 2.4 Contribution to RES-HC share by source in 2024



Notes: IE, Ireland; SE, Sweden.

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, 2026e.

The shares of RES in transport (RES-T) increased from 2% in 2005 to 12% in 2025. This equates to an average annual increase of 0.5 percentage points. According to approximated energy data for 2025, Croatia had the lowest share of RES-T (at 2%), while Sweden had a RES-T share of 35%.

In 2024, Sweden's largest share of renewable transport stemmed from compliant biofuels (833ktoe), followed by renewable electricity in rail transport (192ktoe) and road transport (147ktoe) (Eurostat, 2026a) (Table 2.2). According to energy approximated figures for 2025, Sweden also experienced the biggest increase in RES-T across the EU with a jump of around 9 percentage points compared to 2024.

Table 2.2 Approximated RES share in GFEC in 2025

Member State	2025		
	RES Electicity	RES Heating and cooling	RES Transport
	percent		
EU-27	50.0%	27.4%	12.1%
Austria	90.8%	40.8%	16.2%
Belgium	34.3%	11.8%	13.6%
Bulgaria	34.4%	34.5%	7.8%
Croatia	58.8%	35.0%	2.0%
Cyprus	27.5%	42.1%	6.8%
Czechia	19.2%	30.9%	5.1%
Denmark	77.7%	58.1%	16.3%
Estonia	41.1%	68.9%	7.1%
Finland	56.6%	63.9%	24.2%
France	33.1%	31.7%	10.5%
Germany	57.9%	19.0%	13.5%
Greece	60.9%	33.2%	4.0%
Hungary	28.3%	24.1%	8.0%
Ireland	41.7%	8.4%	9.7%
Italy	43.5%	19.7%	13.0%
Latvia	57.6%	63.3%	8.3%
Lithuania	59.9%	51.5%	9.6%
Luxembourg	23.3%	23.0%	11.0%
Malta	11.2%	63.9%	11.8%
Netherlands	54.7%	12.4%	22.0%
Poland	32.5%	21.6%	6.3%
Portugal	65.6%	47.5%	13.6%
Romania	49.9%	27.8%	8.7%
Slovakia	24.1%	19.7%	5.8%
Slovenia	45.6%	33.6%	7.9%
Spain	60.7%	21.3%	10.5%
Sweden	89.2%	69.3%	34.9%

Notes: This table shows the RES share used in the EU-27 and its Member States across the electricity, heating and cooling, transportation and overall energy use sectors. These percentages are presented as a share of GFEC across the different sectors.

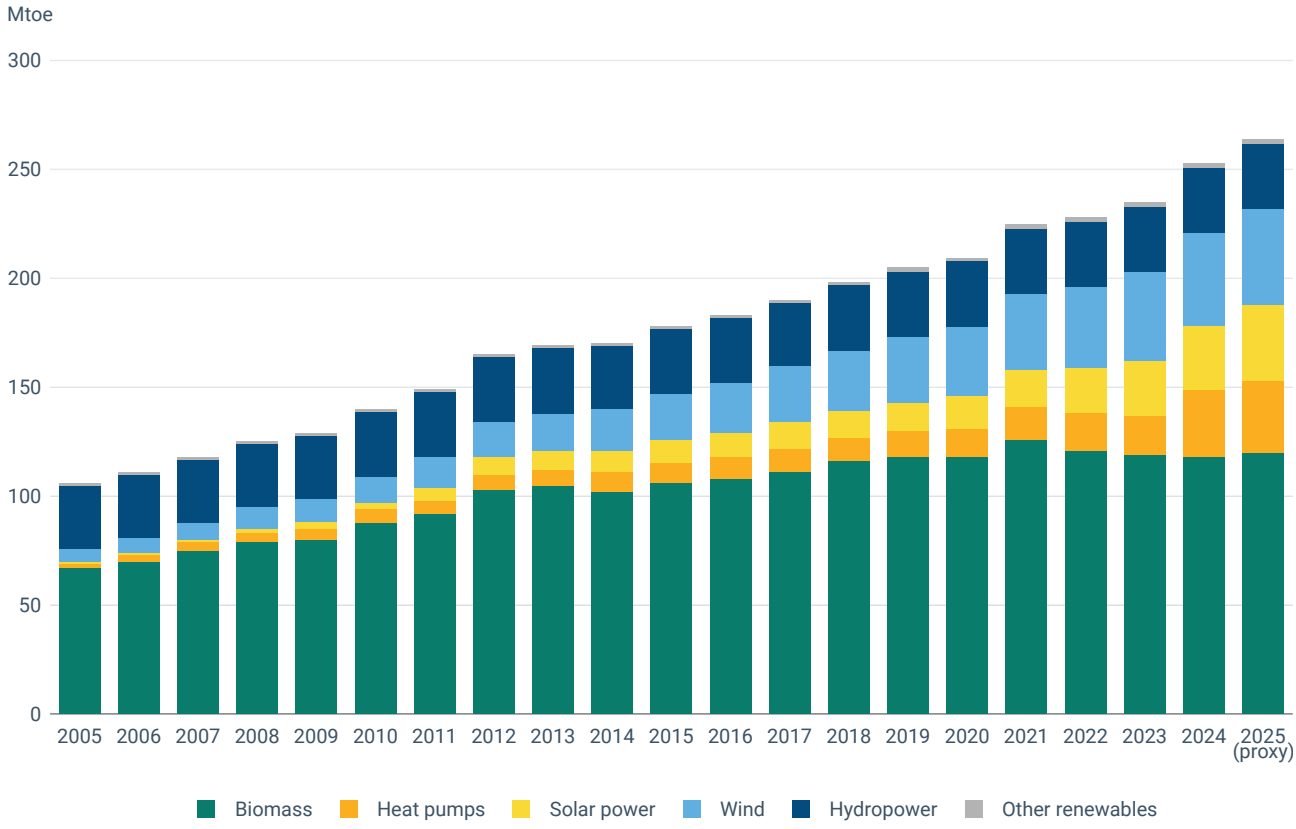
Source: Author's compilation based on data from Eurostat, 2026a; EEA, forthcoming.

In absolute terms, at the EU level, total renewable energy in GFEC has increased more than 2.5-fold between 2005 and 2024 (Figure 2.5).

The largest growth during that period was recorded for solar power, which increased 39-fold, followed by heat pumps (13-fold) and wind power (seven-fold). In 2005, none of these sources accounted for more than 5% of the total EU renewable GFEC, while biomass already accounted for 64%. By 2025, 46% of renewable energy consumption was fuelled by biomass; its use had increased by 8Mtoe from 2024.

The share of wind rose from 5% in 2005 to 17% in 2025. This means that wind is the second-largest source of renewable energy in the EU. Solar power represented 13% of renewable GFEC, while heat pumps and hydro accounted for 12%.

Figure 2.5 **Renewable GFEC in the EU-27 by technology, 2005-2024**

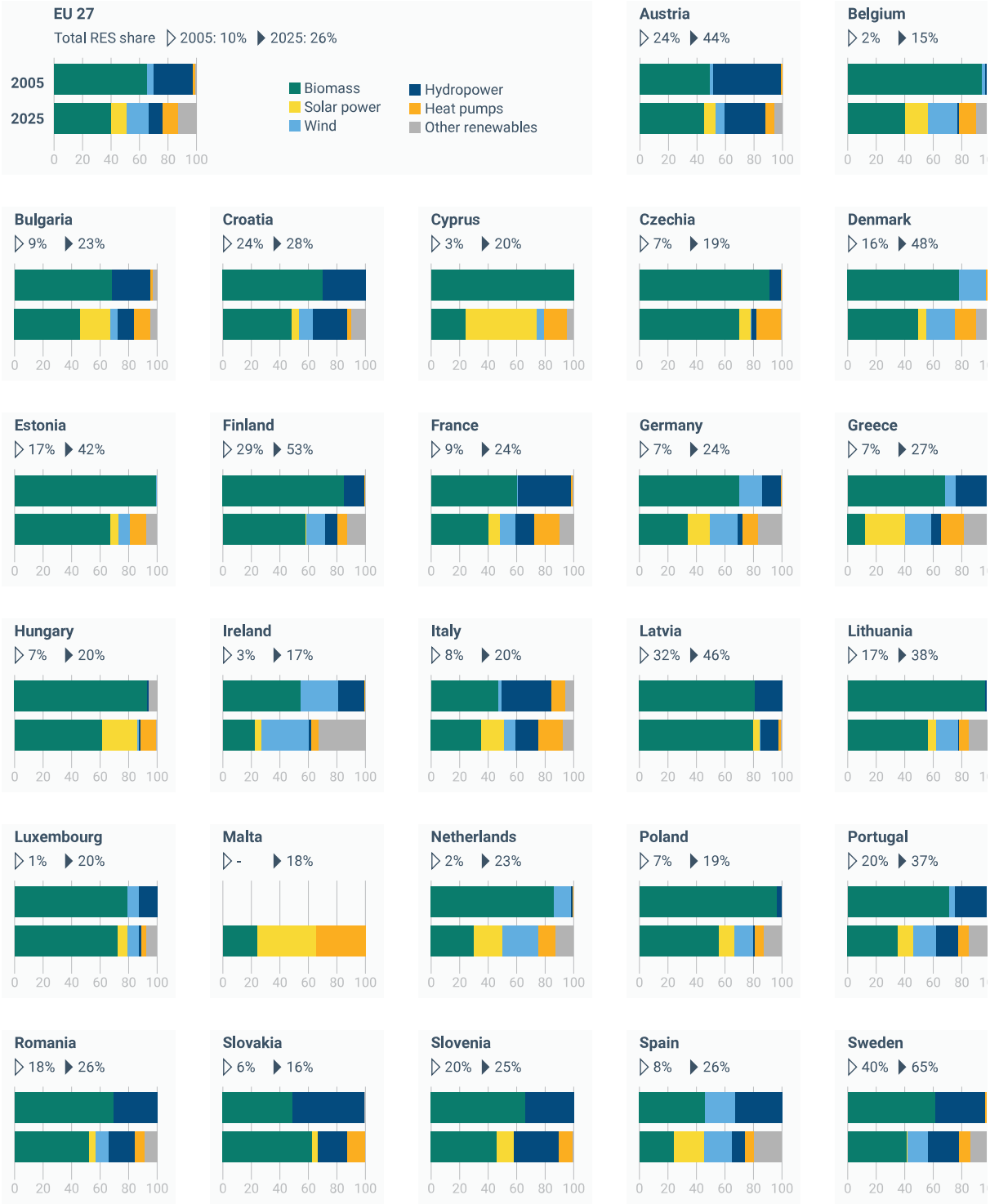


Note: View the interactive version of the chart.

Source: Author's compilation based on data from EEA, *2025a*; Eurostat, *2026a*.

Biomass was the most prominent source of renewable energy in 23 of the Member States. In Cyprus, Greece and Malta, solar power was the most important source of renewable energy in 2025. In Ireland wind was the most prominent RES in 2025 (Figure 2.6).

Figure 2.6 **Renewable GFEC in the EU Member States by technology in 2005 and 2025**



Notes: In the graph, the 'biomass' category includes solid biomass, biogas, bioliquids, biodiesel, biofuels, biogasoline and renewable municipal waste. 'Solar' refers to concentrated solar power, solar photovoltaic and solar thermal energy. 'Hydropower' covers normalised hydropower, excluding pumped storage. 'Wind' refers to normalised onshore and offshore wind energy. 'Heat pumps' represents renewable energy generated from heat pumps. 'Other renewables' includes tidal, wave and ocean energy, as well as geothermal electricity. All categories were aggregated from the SHARES Details data files, indicating net inland consumption, taking both imports and exports into consideration.
The bars stack up to 100% gross renewable energy consumption. The horizontal triangles inform about the total RES Share.

Source: Author's compilation based on data from EEA, 2025a; Eurostat, 2026a.

2.5 2025 GHG emission reductions in a particularly challenging year — the importance of renewables

EU GHG emissions in 2025 decreased by 1.6% on a year-on-year basis. This signals a slowdown in emission reductions compared to the previous five-year average of 3.6%. However, the relatively small reduction needs to be contextualised since it was a particularly challenging year.

In 2025, heating degree days — an indicator of energy demand for heating buildings — increased by around 4% across the EU compared with 2024 (see Eurostat). Although 2025 remained exceptionally warm relative to the historical average, it was colder than the particularly mild year of 2024. The resulting increase in heating demand likely contributed to the 0.8% year-on-year rise in GHG emissions from buildings.

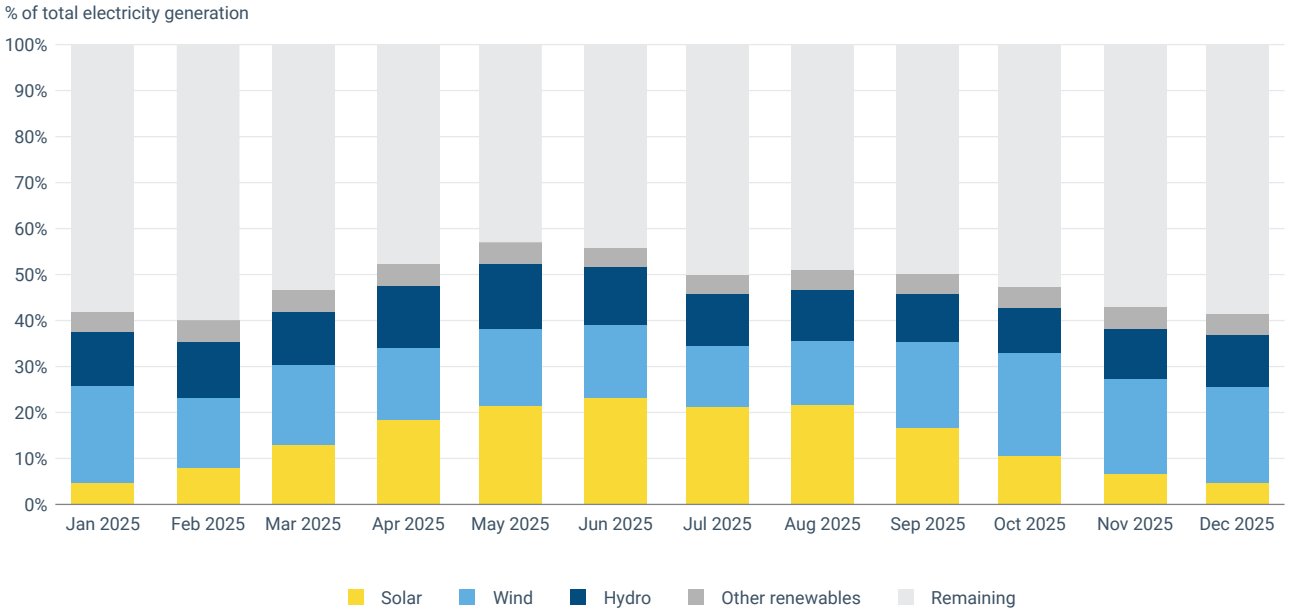
Heating degree days increased more than the EU average in 2025 in all five most populous EU Member States except France. Poland and Germany recorded the largest increases, at 13% and 11%, respectively. The growing share of renewable energy in heating and cooling — which rose from 12% in 2005 to 27% in 2025 — helped to limit an associated increase in GHG emissions.

During the first six months of 2025 lower-than-average wind speeds impacted wind power generation particularly in France, Germany and Spain (according to Det Norske Veritas), with lower power generation year-on-year by 12 terawatt hours (TWh) (or 2%). Reduced snowfall over the winter combined with temperatures above the seasonal average during spring and summer 2025 also caused hydrological drought conditions (according to the European Drought Observatory), affecting hydropower production across Europe (-43TWh and -12% vs 2024 levels).

However, the negative wind and hydro anomalies [27] were largely offset by above-average solar irradiance (according to Det Norske Veritas), propping up photovoltaic electricity generation (+59TWh or 19%). This shows, once again, the complementary nature of RESs (Figure 2.7).

(27) The frequency of prolonged wind droughts is likely to increase in a warming climate, threatening global wind power security (Qu et al., 2025).

Figure 2.7 **Monthly share of electricity generation from selected renewable energy technologies in the EU in 2025**



Note: View the interactive version of the chart.

Source: Author's compilation based on data from Ember, 2026.

However, increased solar power production in 2025 did not manage to offset both increased total demand for electricity (up 17TWh or 1%) and continuous coal phase out (-15TWh, -6%). Instead, gas (+33TWh, 8%) replaced hydro as a dispatchable fuel to meet demand in hours with low solar and wind production.

2.6 Developments in energy efficiency

The revised Energy Efficiency Directive (EED) (EU/2023/1791) sets a binding EU-wide target for FEC of no more than 763Mtoe and an indicative EU-wide target for PEC of no more than 992.5Mtoe in 2030. Member States contribute to these energy efficiency targets through indicative national contributions for both FEC and PEC, accompanied by indicative trajectories.

Member States have flexibility in determining their indicative national contributions, while respecting a comprehensive list of factors and national circumstances affecting energy consumption, as set out in Article 4(3) of the EED. The common factors affecting energy efficiency efforts are reflected in the indicative formula in Annex I of the EED; this provides a common basis for calculating national contributions. Each Member State must guarantee that the ambition level for their contribution does not exceed the formula-derived value by more than 2.5%.

The updated NECPs confirm that a gap remains between Member States' collective ambition and the EU's 2030 energy efficiency targets (EC, 2025b). With the latest updated NECPs adopted in Belgium and Estonia in 2025, the aggregated national contributions imply FEC of 793Mtoe in 2030 — which equates to 4% above the binding EU target — and PEC of 1,047Mtoe — which equates to around 5% above the indicative target [28].

(28) This assessment includes the values reported by Belgium and Estonia in their 2025 updated NECPs. Poland submitted its final updated NECP in June 2026; however, as the EC assessment of this update is not yet available, the values for Poland are based on the 2025 EC assessment (EC, 2025b).

Overall, the EU has made substantial progress in reducing energy consumption. However, the current trends remain insufficient to reach the 2030 energy efficiency targets. Recent reductions in energy consumption have been uneven, with some years showing little change or even increases. This indicates that further efforts will be required over the remainder of the decade.

Progress also differs across end-use sectors. There is declining consumption in industry and households, tertiary and other sectors but this is partly offset by continued growth in transport. Transport remains a particular challenge; it is the only major sector with higher FEC in 2025 compared with 2005. The buildings sector also offers substantial scope for further energy savings as the households and services sector currently accounts for around 40% of EU FEC.

The analysis below considers FEC first, including developments across the main end-use sectors at EU-27 and Member State level. It then examines PEC, including changes according to energy source. It goes on to assess the distance between 2024 and 2025 consumption levels and Member States' 2030 national contributions.

2.6.1 Developments in FEC

In 2024, the EU-27 FEC stood at 900Mtoe, 137Mtoe (+18%) above the EU's 2030 target of 763Mtoe. Over the 20-year period from 2005 to 2024, FEC declined by 11%, equivalent to an annual average reduction of 6Mtoe or 0.6%. The 2024 level represented a slight reversal of the reduction observed in 2023, increasing by 0.8% from 893Mtoe.

Nevertheless, FEC in 2024 remained below the pre-COVID-19 level of 969Mtoe recorded in 2019. Preliminary estimates for 2025 suggest an increase of 0.6% in total FEC, corresponding to an 11% reduction compared with 2005.

From a final user perspective, as shown in Figure 2.8, developments across the three main end-user sectors — industry; transport; and households, tertiary and other sectors — show differing contributions to the overall change in FEC. Transport was the only major sector in which consumption in the EU-27 increased over the longer term; it rose by 4% between 2005 and 2024. This continues the upward trend observed since 2014, interrupted by the sharp decline in 2020 during the COVID-19 pandemic.

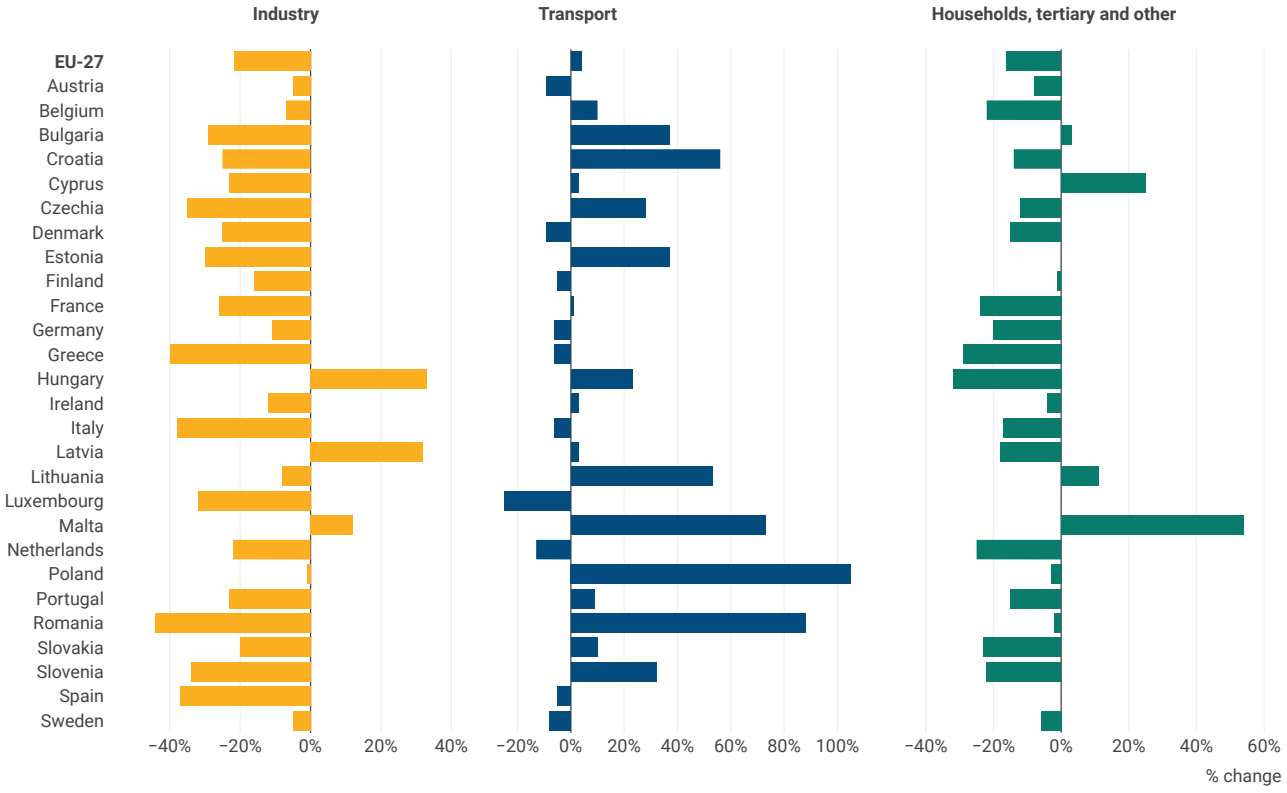
Transport consumption increased in 17 Member States between 2005 and 2024. Poland recorded the largest percentage increase, followed by Romania, Malta, Croatia and Lithuania, with their increases ranging between 53% and 105%. Between 2023 and 2024, transport consumption grew by 2% at the EU-27 level, with annual increases recorded in 19 Member States. Preliminary estimates for 2025 indicate that transport consumption has continued to increase, although at a slower rate of around 1.3% compared with 2024. In 2025, Malta experienced the highest annual growth rate, followed by Croatia and Cyprus.

By contrast, industrial FEC in the EU-27 declined by 22% between 2005 and 2024. Reductions were recorded in almost all Member States, with Hungary, Latvia and Malta being the only exceptions. Between 2023 and 2024, industrial FEC increased slightly by 0.2%. Preliminary estimates for 2025 indicate a renewed decline of 1.6% for EU-27 industrial FEC. This occurred despite increases in eight Member States, with the largest percentage increases recorded in Hungary, followed by Lithuania and Finland.

FEC in households, tertiary and other sectors — comprising households, commercial and public services, agriculture and forestry as well as fishing — also declined in the longer term, by 16% between 2005 and 2024. Consumption fell in 22 Member States over this period, while Malta recorded the largest percentage increase, at 54%. Between 2023 and 2024, FEC in these sectors remained broadly stable at the EU-27 level. Preliminary estimates for 2025 indicate an increase of 1.0%, with the highest growth observed in Hungary, followed by Austria and Cyprus.

These diverging sectoral developments have changed the composition of EU-wide FEC. Between 2005 and 2025, transport's share increased from 31% to 36%. Meanwhile, industry's share declined from 27% to 23%. In the same period, the share from households, tertiary and other sectors fell from 42% to 40%.

Figure 2.8 Sectoral FEC changes in the EU-27 and Member States, 2005-2024



Notes: This figure illustrates the 2005-2024 percentage changes in FEC in the EU-27 and Member States by end-sector. FEC is based on the definition laid out in Article 2 of the revised EED, including international aviation and excluding ambient energy. The sector 'households, tertiary and other' includes households, commercial and public services, agriculture and forestry, fishing and other sectors not elsewhere specified.

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, 2026b.

2.6.2 Developments in PEC

Compared to FEC, PEC has followed a similar — but more pronounced — long-term decline. In 2024, PEC stood at 1,194Mtoe, around 201Mtoe (+20%) above the indicative 2030 EU-wide target of 992.5Mtoe. Between 2005 and 2024, the EU-27 PEC decreased by 304Mtoe (-20%), equivalent to an average annual decline of 1.1% per year. The downward trend continued in 2024, with consumption falling by 1.2% from 1,208Mtoe in 2023.

Preliminary estimates for 2025, however, suggest a 0.8% increase to 1,204Mtoe. This corresponds to a 20% reduction compared with 2005. The stronger decline in PEC than in FEC partly reflects improvements in energy transformation and supply efficiency. However, it also points to changes in the electricity generation mix. Notably it signals the shift from fossil fuels towards renewable sources. These developments have reduced the primary energy required to meet final energy demand.

The decline in PEC at EU level between 2023 and 2024 was mainly driven by lower fossil fuel consumption. This fell by 18Mtoe (-2%). Reduced nuclear heat (-3Mtoe, -2%) also contributed to the lower PEC in that period.

The biggest annual decline was in the use of solid fossil fuels [29] which fell by 13Mtoe (-10%). Meanwhile, the use of petroleum products [30] decreased by 4Mtoe (-1%) and the use of natural gas remained broadly stable. These reductions were partly offset by continued growth in RESs; their use increased by 8Mtoe (+3%), mainly due to higher solar and hydro consumption.

As shown in Figure 2.9, between 2005 and 2024, decreased fossil fuel consumption accounted for the largest absolute reduction in PEC. It fell by 359Mtoe (-32%) between 2005 and 2024. Consequently, the share of fossil fuels in PEC declined from 76% to 65%.

The biggest reduction was for solid fossil fuel use which decreased by 59% over the same period. Meanwhile, the use of natural gas and petroleum products fell by 24% and 22%, respectively. Despite this decline, petroleum products remained the largest individual energy source in 2024, accounting for one-third of PEC.

In contrast, renewable energy consumption more than doubled. It increased by 132Mtoe (+110%) between 2005 and 2024. In this period, its share for PEC rose from 8% to 21%. Biomass remained the largest renewable energy source in 2024, accounting for 9% of PEC.

In absolute terms, biomass, wind and solar recorded the largest increases among renewable sources, increasing by 40Mtoe, 36Mtoe and 29Mtoe in 2024 compared with 2005, respectively. It is important to note that the shift from fossil-based generation to wind and solar also reduces measured PEC, since fossil fuels include thermal conversion losses whereas these renewable sources do not.

Nuclear heat also contributed to the overall reduction in PEC, declining by 82Mtoe (-35%) between 2005 and 2024. Its share of the primary energy mix fell from 16% to 13%.

(29) Solid fuels are fossil fuels covering various types of coals and solid products derived from coals.
(30) Petroleum products are products derived from crude oil (e.g. when processed in oil refineries).

Figure 2.9 PEC by source in the EU-27, 2005-2024

Type of energy	Mtoe by year ○ 2005 ● 2024	Share of the total ○ 2005 ● 2024	Change 2005-2024 Mtoe	Percentage
TOTAL	**○ 1,498 ● 1,194**	**○ 100% ● 100%**	**-304**	**-20%**
Fossil energy	**○ 1,134 ● 775**	**○ 76% ● 65%**	**-359**	**-32%**
Solid fossil fuels	○ 279 ● 114	○ 19% ● 10%	-165	-59%
Petroleum products	○ 509 ● 399	○ 34% ● 33%	-110	-22%
Natural gas	○ 346 ● 262	○ 23% ● 22%	-83	-24%
Renewable energy sources	**○ 119 ● 251**	**○ 8% ● 21%**	**+132**	**+110%**
Biomass [b]	○ 71 ● 111	○ 4.8% ● 9.3%	+40	+56%
Wind	○ 6 ● 42	○ 0.4% ● 3.5%	+36	+619%
Solar	○ 1 ● 30	○ 0.1% ● 2.5%	+29	+3,391%
Other renewable sources	○ 10 ● 29	○ 0.6% ● 2.4%	+19	+199%
Ambient heat (heat pumps) [a]	○ 1 ● 19	○ 0.0% ● 1.6%	+18	+2,928%
Hydro	○ 26 ● 32	○ 1.8% ● 2.7%	+5	+20%
Geothermal	○ 5 ● 7	○ 0.4% ● 0.6%	+1	+26%
Nuclear heat	**○ 237 ● 155**	**○ 16% ● 13%**	**-82**	**-35%**
Other	**○ 8 ● 13**	**○ 0.5% ● 1.1%**	+5	**+68%**

Notes: This figure illustrates the evolution of PEC in the EU-27 between 2005 and 2024, categorised by energy source. It shows the 2005 and 2024 levels and percentage shares by energy source as well as absolute levels and percentage changes over the period. The 'Other' category comprises non-renewable waste and electricity reported as an energy source.

(a) 'Ambient heat (heat pumps)' refers to an energy source that is excluded from the calculation of energy consumption under the EED. It therefore does not contribute to total PEC or to total RESs shown in the figure.

(b) 'Biomass' includes primary solid biofuels and biogases. Between 2005 and 2024, the composition of biomass shifted; the share of solid biofuels increased from 32% to 64%, while the share of biogases declined correspondingly.

Sources: Author's compilation based on data from Eurostat, 2026b.

2.6.3 Faster reductions needed for progress towards the 2030 energy efficiency targets

Taken together, these long-term trends show substantial progress in reducing EU energy consumption. However, the pace of reduction needs to accelerate further to meet the 2030 energy efficiency targets. At the EU level, FEC decreased by an average of 6Mtoe per year between 2005 and 2024. Over the 2020-2025 period, the average annual reduction increased further to 10Mtoe per year.

To achieve the binding EU-wide 2030 FEC target, this pace of reduction will need to accelerate further to an average of 23Mtoe per year in the 2025-2030 period. Taking into account the preliminary estimated increase in FEC in 2025, the average annual reduction required in the 2026-2030 period may need to reach 29Mtoe per year.

Meanwhile, PEC fell by an average of 16Mtoe per year between 2005 and 2024. From 2020 to 2024, the average annual reduction increased to 32Mtoe annually.

To reach the indicative EU-wide 2030 PEC target, the required pace of reduction must average 34Mtoe per year in the 2025-2030 period. Similar to FEC, the preliminary estimate suggests that the PEC level for 2025 will have increased. This points to the need for even more significant reductions from 2026 to 2030, averaging around 42Mtoe per year, to reach the 2030 target.

Looking beyond 2030, achieving the EU's longer-term climate objectives will require further reductions in energy consumption. The EC's 2040 climate target impact assessment (EC, 2024) projects that FEC will decline to around 600Mtoe by 2040 and 555Mtoe by 2050 under pathways consistent with achieving climate neutrality by 2050. These levels are modelled outcomes rather than formal energy consumption targets. They may not, for example, take into account renewed assumptions regarding energy demand from artificial intelligence, data centres and other digital infrastructure.

At the Member State level, FEC developments since 2005 have varied considerably (Figure 2.10). In 2024, FEC was lower than in 2005 in 20 Member States; the largest reductions were recorded in Greece (-22%), Luxembourg (-21%) and Netherlands (-21%). Nine countries recorded reductions greater than the EU average of 11%: Denmark, France, Germany, Greece, Italy, Luxembourg, Netherlands, Slovakia and Spain.

By contrast, FEC remained above its 2005 level in seven Member States. The largest increases were observed in Malta (+60%), Poland (+21%) and Lithuania (+20%). Bulgaria, Croatia, Cyprus and Estonia recorded more moderate increases of less than 5%. Between 2024 and 2025, 11 Member States decreased their FEC, with Bulgaria and Estonia representing the largest relative reductions at almost -5% each.

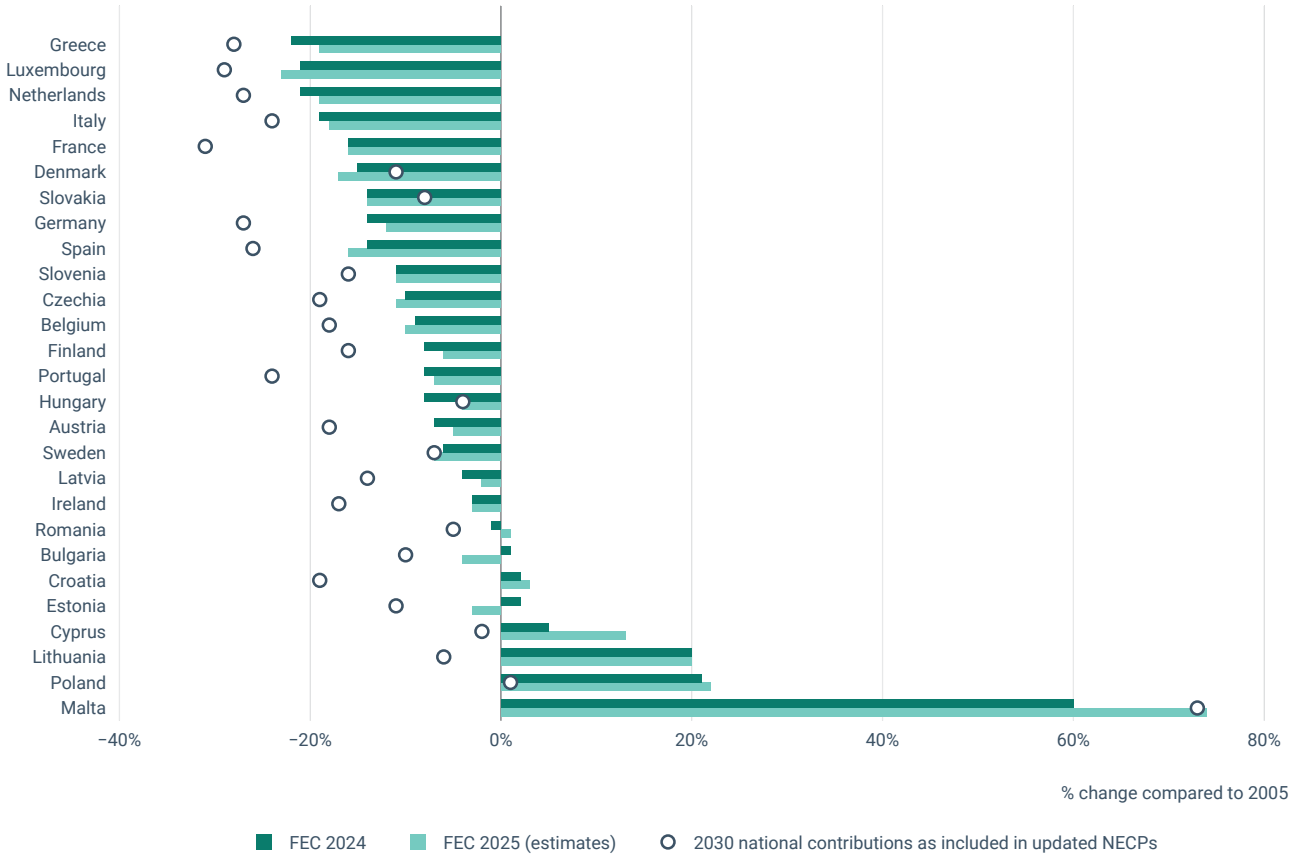
The distance to the 2030 national contributions also differs substantially across Member States. FEC in four Member States — Denmark, Hungary, Malta and Slovakia — was below their corresponding 2030 target national contribution in 2024. Meanwhile, Sweden was close to its target contribution.

These comparisons should be interpreted in the context of national target contributions, the underlying national circumstances and developments in energy consumption. Being below the 2030 level should not necessarily be interpreted as indicating that a Member State is ahead of its expected progress towards 2030. Additional efforts may still be needed to limit energy consumption growth so that it remains below the 2030 national contributions.

In most other Member States, further reductions are required. Expressed relative to 2005 levels, the largest remaining gap was observed in Lithuania, followed by Croatia, Poland, Portugal and France.

PEC decreased in 24 Member States between 2005 and 2024 (Figure 2.11). Nevertheless, substantial further reductions in PEC are required in various countries to reach their 2030 national contributions. The largest remaining gap based on 2024 PEC was observed in Cyprus, followed Ireland, Bulgaria, France and Portugal.

Figure 2.10 National progress towards 2030 national FEC contributions

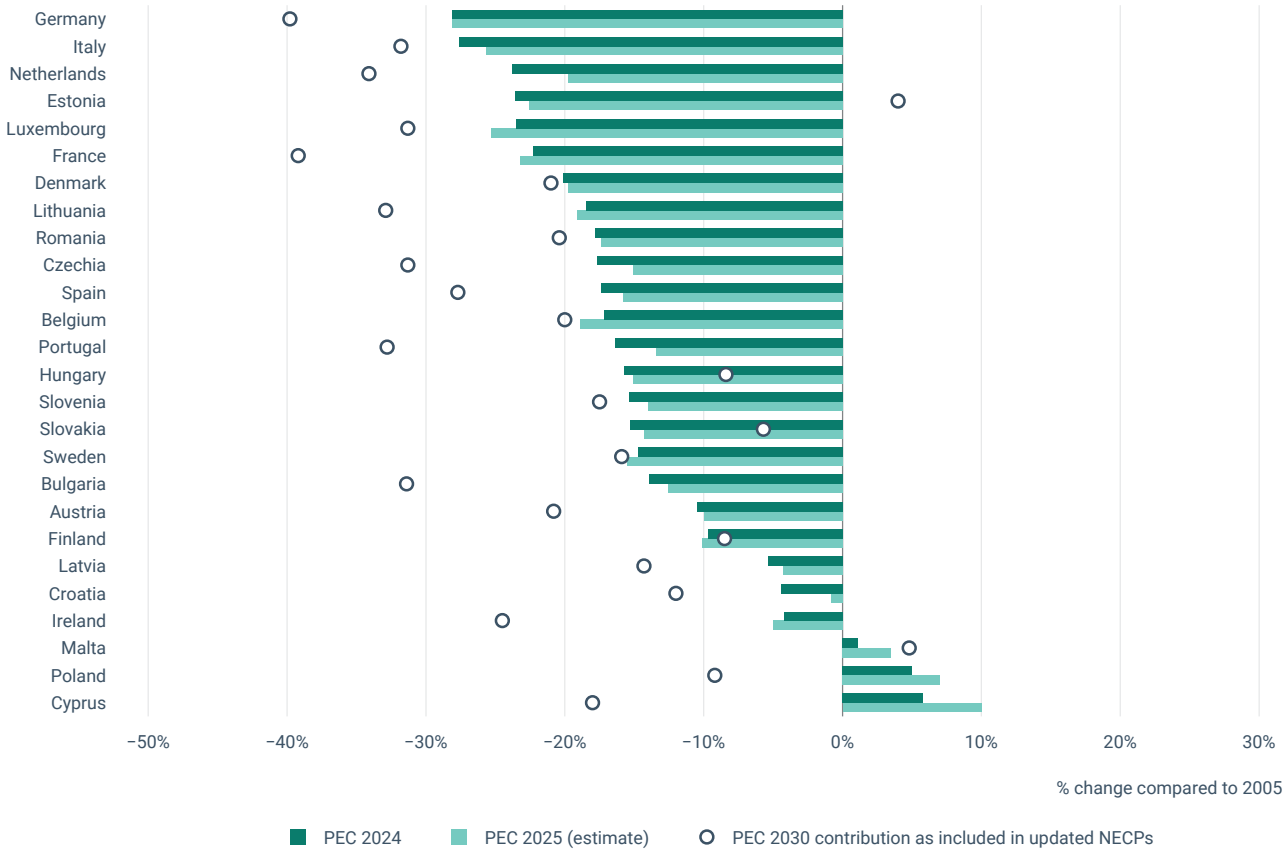


Notes: This figure depicts FEC per Member State for 2024 and 2025, incorporating the 2030 contributions outlined in their respective updated NECPs. The 2025 data are based on preliminary estimates by the EEA. The national contributions for Belgium and Estonia are taken from the assessment of their NECPs, submitted after the EU-wide assessment by the EC (2026a, 2025d).

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, 2026b; EEA, 2026b; EC, 2025b.

Figure 2.11 National progress towards 2030 national PEC contributions



Notes: This figure depicts PEC per Member State for 2024 and 2025, incorporating the 2030 contributions outlined in their respective updated NECPs. The 2025 data are based on preliminary estimates by the EEA. The national contributions for Belgium and Estonia are taken from the assessment of their NECPs, submitted after the EU-wide assessment by the EC (2026a, 2025d).

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, 2026b; EEA, 2026b; EC, 2025b.

3 Natural carbon removals in the EU – trends, targets and outlook

Key messages

- Natural carbon removals from the LULUCF sector are essential for achieving a competitive, circular and climate-neutral bioeconomy.
- Despite recent improvements in 2024 and 2025, the EU LULUCF sink remains substantially weaker than in previous decades. This reflects a long-term decline in the capacity of forests to remove carbon from the atmosphere while emissions from land conversion and soils remain high.
- The level of natural carbon removals in 2025 still indicate a significant gap of 67MtCO_2e to the 2030 target. The latest historical data from Member States also indicate a significant gap with the EU level target for 2030. Collectively, Member States' data for 2024 suggest a shortfall of 92MtCO_2e to the 2030 target, although individually, Member States show large variability in progress to the target.
- Overall, additional action is needed to increase net removals in LULUCF. Encouragingly, many options are available to achieve this, such as improved management of forests and cropland, agroforestry and rewetting of peatlands. These measures have significant potential for socio-economic and environmental co-benefits. It will be essential to target measures to increase net removals and the resilience of ecosystems simultaneously, in view of increasing effects from climate change.
- Such action can be supported through the newly established carbon removal and carbon farming (CRCF) certification framework. Improvements in monitoring and reporting inventories and projections will enable policymakers to better assess progress and design effective policies for strengthening the EU carbon sink.

3.1 Carbon removals and the role of LULUCF

In addition to rapid and substantial emission reductions in all sectors, it is essential to generate more CO_2 removals from the atmosphere. Unlike most economic sectors, the LULUCF sector can act both as a source and as a sink. This means that land-based activities can either emit GHGs or remove CO_2 from the atmosphere through biological processes and store carbon in 'carbon pools', such as biomass and soils (EEA, 2025c).

The LULUCF sector includes GHG emissions and removals resulting from human activities on managed land in six land-use categories: forest land, cropland, grassland, wetlands, settlements and other land. A seventh reporting category is HWPs, such as wood used in buildings. While the LULUCF sector predominantly addresses CO_2 emissions and removals associated with land use and land-use change, non-CO_2 emissions from agricultural practices – such as fertiliser application and livestock farming – are reported in the agriculture sector in the national GHG inventories (EEA, 2024).

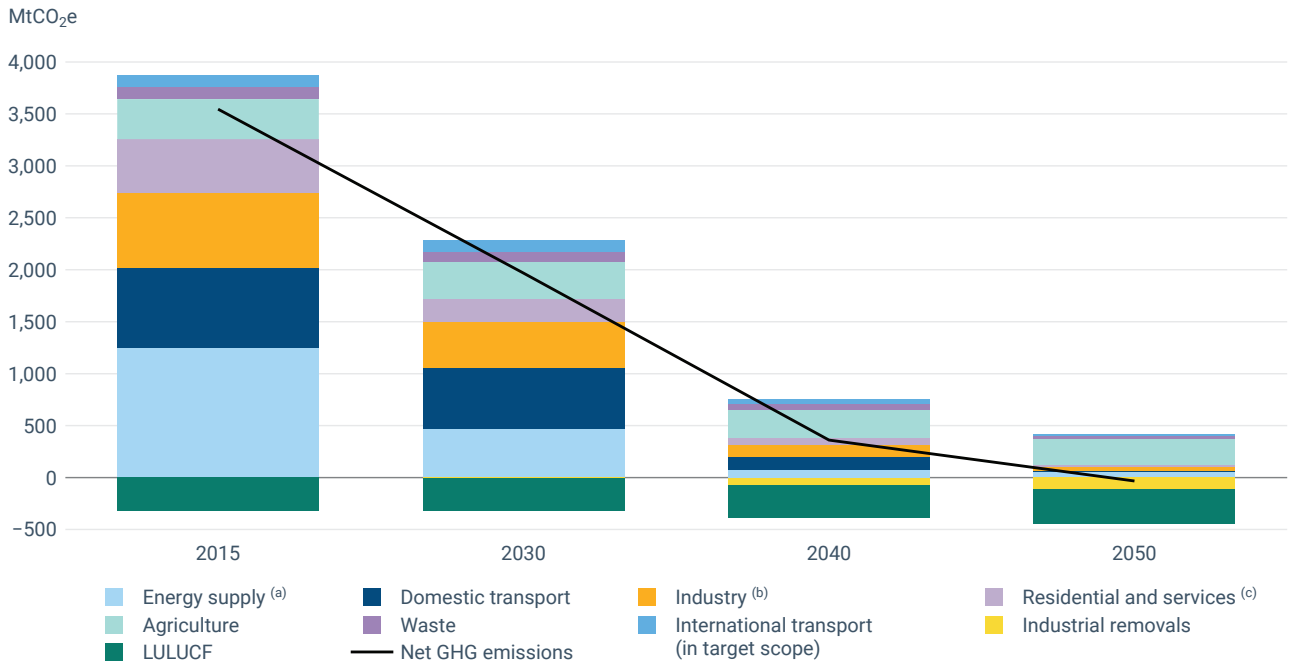
Today, the LULUCF sector is the only sector providing significant net carbon removals in the EU. It is expected to deliver the largest share of removals in the coming decades, with industrial removals playing a smaller but increasing role (EC, 2024). Figure 3.1 provides an example of the role of LULUCF in the context of emission reductions in other sectors.

Contributions from LULUCF depend on a wide range of assumptions, including:

- estimated GHG reductions from other sectors;
- deployment of and reliance on industrial removals;
- projected deployment of bioenergy;
- anthropogenic and natural drivers affecting GHG emissions and removals in LULUCF.

Commonly, scenarios show that the need for carbon removals will depend, to a significant degree, on the extent of residual (non-CO_2) emissions from agriculture. GHG emissions reported for LULUCF and agriculture partly originate from the same economic sectors, occur on the same land and are often governed by the same policy frameworks. This underlines the need to consider climate mitigation progress in these sectors jointly.

Figure 3.1 Sectoral GHG emissions scenario in the EU-27 in the period 2015-2050



Note: The figure is based on Scenario 3 of the EC's impact assessment to inform the 2040 target. BECCS, bioenergy with carbon capture and storage.

(a) Includes power, district heating, other energy sectors and BECCS;
(b) Includes energy and non-energy; excluding non-BECCS industrial removals;
(c) Includes fossil fuel combustion in the agriculture/fishery/forestry sector.

View the interactive version of the chart.

Source: Author's compilation based on data from EC, 2024.

For 2030, the LULUCF Regulation (EU, 2023d) sets an EU-level target to increase net removals in LULUCF by -42MtCO_2e compared to the average yearly net removal in the period 2016-2018. This target is distributed among Member States through national targets, based on their area of managed land. The national targets require each Member State to increase its climate ambition towards 2030 and implement additional agriculture and forestry PaMs.

Based on data reported by Member States in 2020, the EU target of generating an additional -42MtCO_2e of net removals by 2030 was expected to result in total net removals at EU level of -310MtCO_2e [31].

A key enabler will be to ensure adequate finance for land managers to change their management practices through instruments such as the common agricultural policy (CAP). As such, finance could support them to improve their management practices for forest land and cropland and apply measures such as the rewetting of drained peatlands, agroforestry and afforestation.

(31) A comprehensive explanation of the LULUCF targets and the methodology for the analysis of progress to the target in this section can be found in the technical background document accompanying this report.

The CRCF Regulation (EU, 2024) complements this approach by facilitating public- and private-sector investment in carbon farming and carbon storage in products and buildings; it establishes harmonised methodologies and rules to certify the GHG mitigation effects resulting from such activities. As such, enhancing natural removals in Europe will also depend on enhanced monitoring, reporting and verification (MRV) systems to ensure environmental integrity and ensure confidence of public- and private investors.

In this context, Section 3.2 presents the status of the LULUCF sector – both at the EU and Member State levels – and Section 3.3 provides an outlook for the sector.

3.2 Status of the LULUCF sector

3.2.1 EU — key drivers of status and trends

Historical emissions and removals

In 2024, the EU LULUCF sector provided a net carbon sink of -231MtCO_2e. This was equivalent to almost 8% of the EU's gross emissions from other sectors included in the scope of the ECL. Compared to the average of the 2016-2018 period (-280MtCO_2e in the latest EU GHG inventory), in 2024 the net sink was around 50MtCO_2e smaller and 92MtCO_2e below the EU-wide 2030 target.

The preliminary GHG data for 2025 show a significant improvement in the sink by 11% compared to 2024, to -256MtCO_2e. However, this still points to a significant gap to the 2030 target (Section 1.3.2).

Despite this improvement in 2025, the long-term trend remains one of declining net removals. Between 2015 and 2024, the average net sink was 31% smaller than the average for the preceding decade (Figure 3.2).

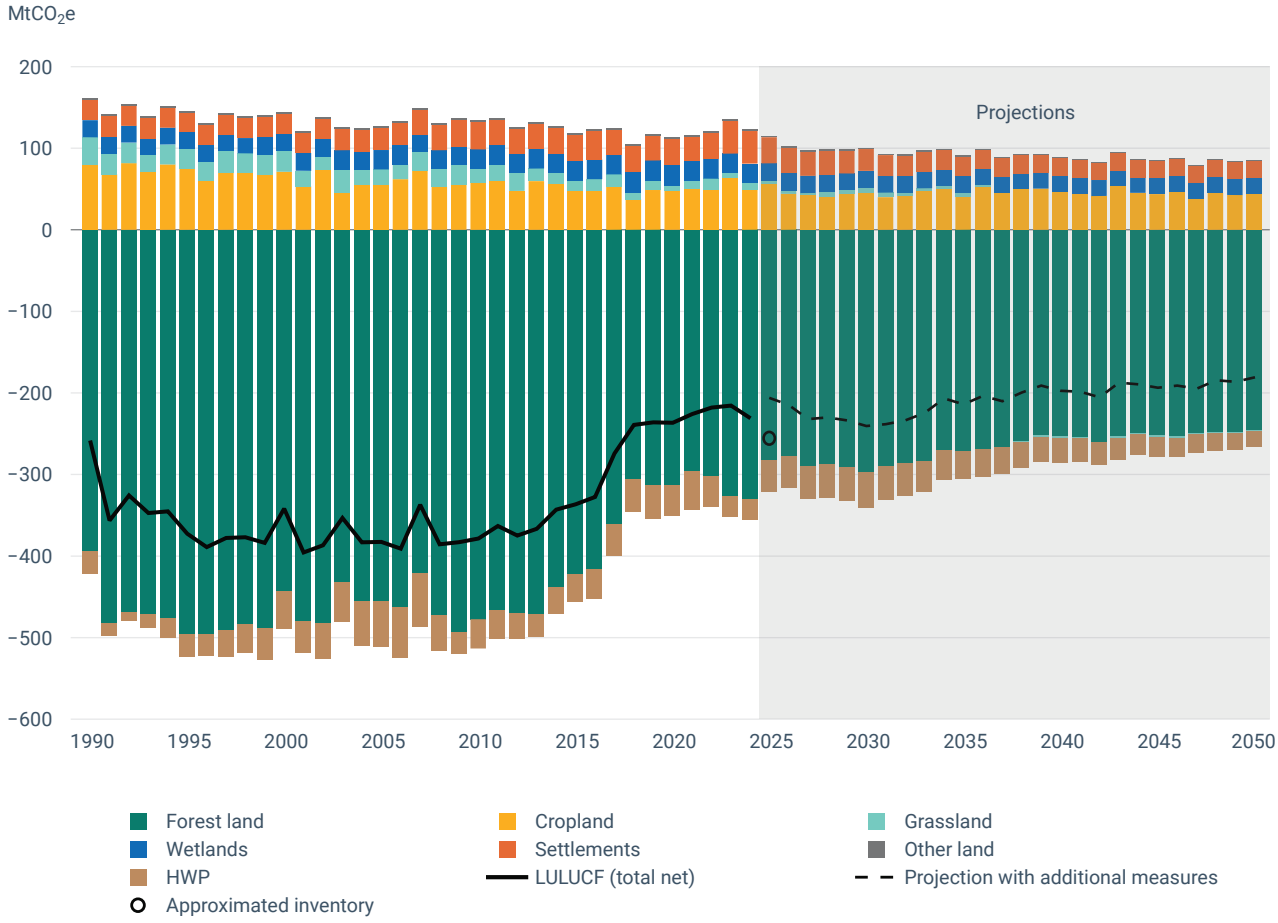
The decline of net removals in LULUCF is mainly driven by the interrelated dynamics of carbon stored in tree biomass on forest land. First, following large-scale reforestation and forest expansion after the Second World War, a large share of European forests is now ageing. While mature forest stands hold larger amounts of biomass, their net annual biomass increment [(32)] decreases, reducing the net amount of carbon that they sequester from the atmosphere.

Second, forest harvesting has increased, both due to economic and policy drivers, as well as the need for salvage logging after natural disturbances have occurred. The increased amount of carbon harvested from forests has only been partially recovered through storage in HWPs. Meanwhile, the share of biomass used for energy has increased (Figure 2.5), leading to immediate emission of biomass carbon.

Third, climate change impacts are increasingly affecting forest carbon sequestration negatively. For example, more and longer drought events are affecting forest growth and leading to increased tree mortality.

(32) Net annual biomass increment refers to the net increase in living tree biomass over a year and thus to the additional carbon stored in tree biomass.

Figure 3.2 **GHG emissions (+) and removals (-) from LULUCF, showing historical trends (1990-2024), approximated GHG inventory (2025) and projections (2025-2050) for the EU-27**



Notes: Emissions from forest management are reported under 4.A. Forest land; carbon storage in wood products is reported under 4.G. HWP. The difference between the latest historical inventory year (2024) and the first projected year (2025) is partly caused by the fact that certain Member States do not use the latest inventory data as a reference for their projection. This leads to inconsistency between the most recent reported historical inventories vis-à-vis reported projections.

Category 4.H. Other LULUCF is not displayed in the figure, as it is reported only by France and is limited in magnitude.

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026a, 2026d, 2026o.

Climate change is also amplifying the effects from natural disturbances — such as fires, droughts, storms and pest outbreaks — and is further accelerating the decay process for carbon stored in soils and dead organic matter. Natural disturbances have become more frequent and severe and can negatively affect the LULUCF sink with potentially long legacy effects.

Disturbances have become a key driver for interannual variability in LULUCF and affect the predictability of the sector in terms of GHG emissions and removals. This underscores the importance of the resilience of forest ecosystems for the role that LULUCF can play in EU climate mitigation.

Cropland and settlements remain the most significant net sources of emissions in LULUCF. For cropland, key drivers of reported emissions are the conversion of forests and grassland to cropland, and the management of organic soils, which are unevenly distributed across Member States. Emissions from settlements are predominantly caused by the conversion of cropland, grassland and forest land for the expansion of settlements.

Projected emissions and removals

Figure 3.2 also includes projections of GHG emissions and removals for LULUCF reporting categories. In the future, forest land will remain the category with the largest sink, though a further declining trend is expected after 2030. Similarly, the contribution of HWPs to net carbon removals is projected to decline. The categories cropland, wetlands and settlements are expected to remain net emitters of GHGs at a constant level, offsetting about one-third of the sink from forest land and HWPs.

Aggregated Member State projections suggest that the EU-level target for 2030 will not be reached. Collectively, by 2030 Member States expect to achieve a net LULUCF sink of -188 $MtCO_2e$ under the WEM scenario and -240$MtCO_2e$ under the WAM scenario. This points to a significant gap to the EU target.

Reported projections show limitations in terms of consistency and comparability between Member States and between historical and projected data. Methodologies used for projections vary between countries. Additionally, countries differ in the PaMs they consider in their projections, as well as in the potential drivers of future changes in area and carbon stocks. Moreover, methodologies for reporting historical GHGs can differ from those used for projections.

Such inconsistencies cause jumps between historical and projected estimates (see Figure 3.2, years 2024 and 2025). Overall, the reporting quality for projections currently limits how comparable and reliable LULUCF projections are across Member States. This highlights the need for improved reporting methodologies as well as transparent documentation. It also points to the need to interpret the results cautiously, particularly at the EU level (EEA, forthcoming, 2026s).

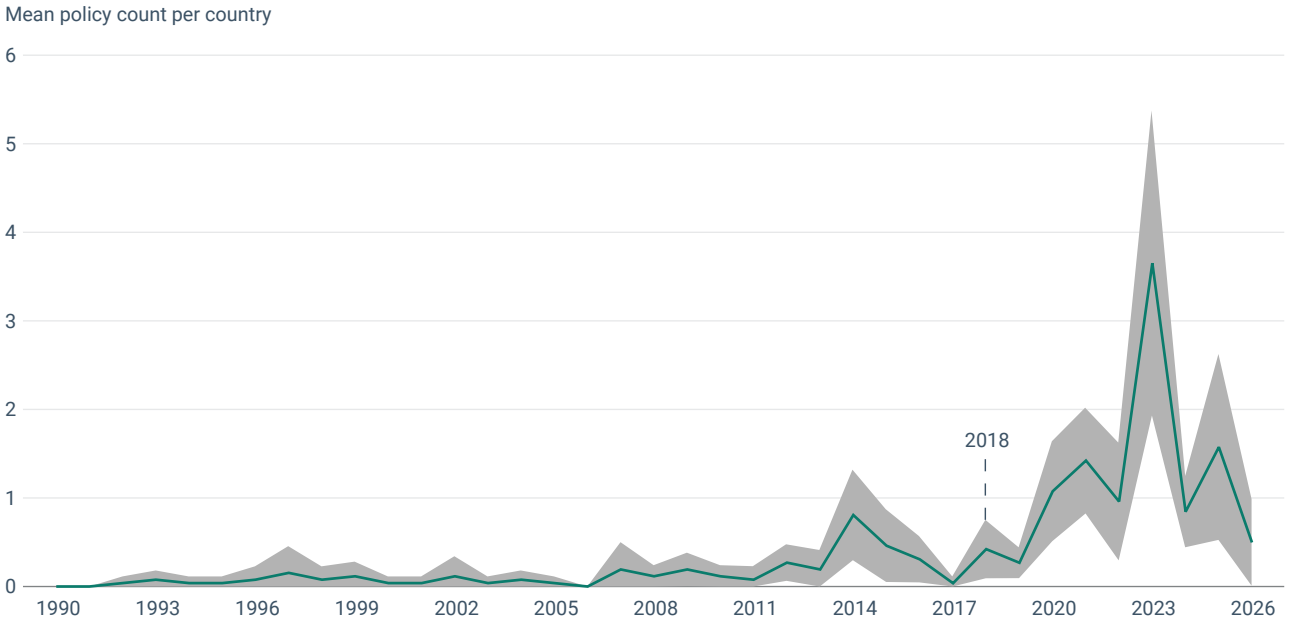
In 2025, Member States reported almost 400 PaMs that refer to the LULUCF sector or are expected to have a positive or negative impact on the sector (e.g. PaMs related to bioenergy or agriculture) (EEA, forthcoming). Looking back over the adoption of PaMs, it can be seen that after 2018, nearly nine times more policies were adopted than in the period before, with a distinct peak in 2023 (Figure 3.3). Interestingly, this coincides with the adoption of the 2018 LULUCF Regulation and its 2023 revision.

Most of the PaMs are relevant for forest land, followed by cropland and grassland. The types of instruments addressed by these policies are most often economic and regulatory, in comparison to other types such as planning, taxation or information.

In general, the level of detail and the specificity of the descriptions of PaMs vary greatly. This means that it is challenging to analyse their impacts and their contribution to projected GHG emissions and removals or to compare them across Member States. For example, only one-third of the policies were quantified by Member States in terms of their contribution to national targets.

Projections by Member States are an important tool for understanding what drives changes in land-use-related emissions and removals. They are also helpful in assessing the impact of existing measures and the need for additional ones. It is therefore important that Member States regularly update their projections, ensure that they reflect future PaMs as far as possible and that there is sufficient consistency with historical GHG estimates.

Figure 3.3 **Mean number of policies reported by EU Member States with a start year after 1990**



Notes: The dashed line indicates the year 2018. The grey area shows a 95% confidence interval. No negative policy count is possible.

View the interactive version of the chart.

Sources: EEA, 2026e, 2026n.

3.2.2 Developments in LULUCF among EU Member States

When comparing Member States' 2024 LULUCF balances (from the 2026 inventory submissions) with their 2030 targets (Figure 3.4), 11 Member States reported that their net removals are greater than the level required in their targets. However, 12 Member States reported that their net removals in 2024 were smaller compared to the 2016-2018 reference period.

The six countries with the largest distance to their targets are, in descending order, Germany, Poland, Finland, Spain, Austria and Latvia. They jointly represent a shortfall

of 105MtCO_2e (see Box 3.1 for a deeper analysis of Germany's status). Meanwhile, Cyprus, Estonia, France and Greece have increased their net removals since the 2016-2018 period, but they remain below the level required to meet their 2030 targets.

Importantly, the LULUCF sector has notoriously high interannual variability. This is due to factors such as natural disturbances. Hence, the results of this analysis may differ from year to year. Additionally, it should be noted that assessments of progress towards LULUCF targets are influenced not only by changes in emissions and removals but also by recalculations of historical inventories. To ensure consistency, when Member States improve their inventory methodologies or use new data, they have to recalculate their historical time series accordingly. This can affect both the estimated reference levels and the assessed distance to targets.

Box 3.1

The status and drivers of LULUCF in Germany

Germany's LULUCF target requires the country to generate additional removals of 3.8MtCO_2e by 2030 compared to the 2016-2018 reference of 28MtCO_2e (2026 GHG inventory submission). This would result in total net emissions from the sector of approximately 24MtCO_2e in 2030.

In 2024, the sector remained a substantial net source of emissions (58MtCO_2e), despite an improvement compared with 2023. A considerable gap of 34MtCO_2e therefore remains between Germany's current LULUCF status and their target.

A key driver of the deterioration since the reference period is the declining capacity of forests to sequester carbon. Successive droughts, storms and insect infestations between 2018 and 2022 have led to the loss of more than 500,000 hectares of forest stands (Germany, 2026). These disturbances have substantially reduced forest biomass carbon stocks and weakened the capacity of forests to remove CO_2 from the atmosphere.

Updated information from Germany's National Forest Inventory for the GHG inventory submitted in 2025 improved the understanding of recent forest developments and confirmed the strong impact of disturbance events on forest carbon balance.

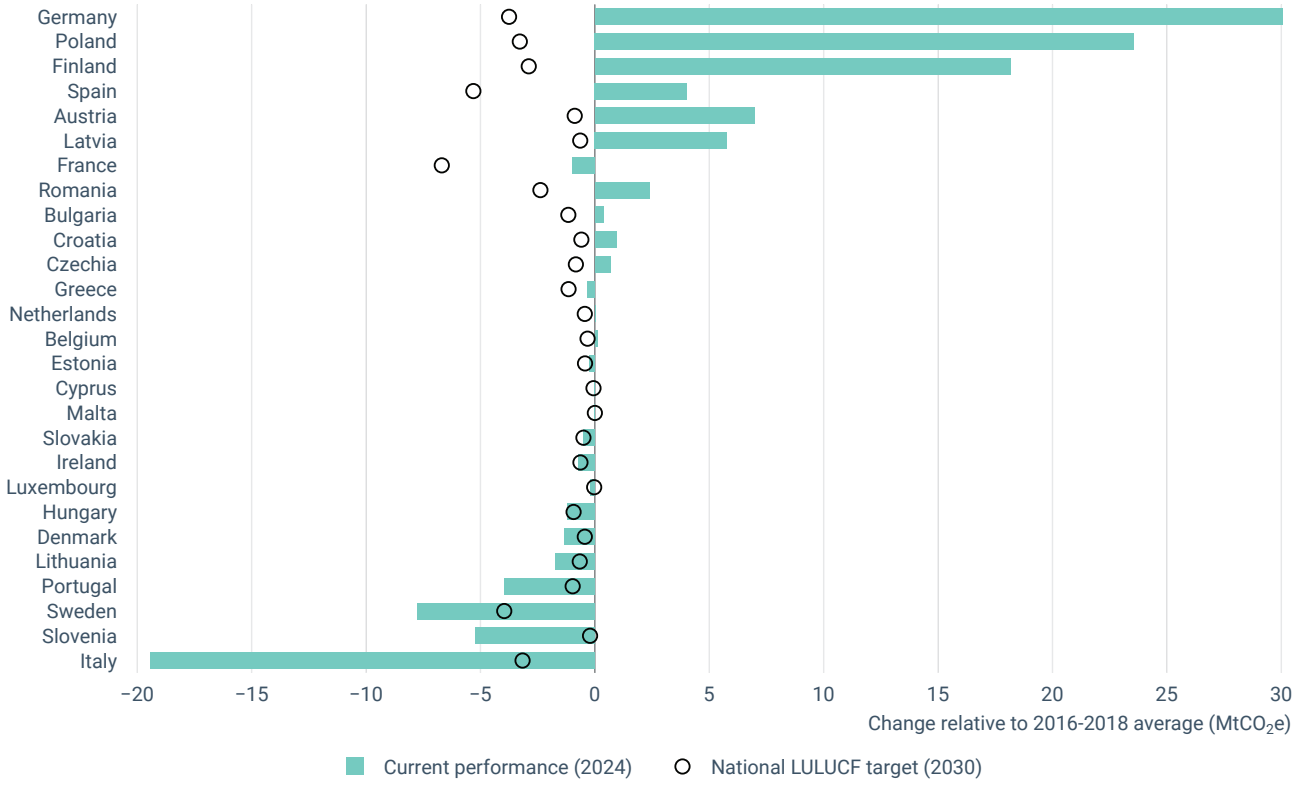
On the positive side, preliminary estimates for 2025 indicate a strong reduction in net emissions in LULUCF to around 38MtCO_2e. This reflects — among other factors — a recovery of the forest sink following years of disturbances (Box 1.1). Forest land is projected to become a net sink from 2025 onwards.

Comparing Member States' projected 2030 LULUCF status under a WAM scenario, 14 Member States may not reach their LULUCF targets in 2030 [33]. Additionally, four Member States that are currently above their targets (Hungary, Ireland, Luxembourg and Sweden) expect their LULUCF performance to decline, resulting in net removals below their target levels in 2030.

Italy, Sweden, Spain, and France reported the highest net removals in 2024 but are jointly projecting a decline of their sink by 59MtCO_2e between 2024 and 2030 in the scenario with additional measures (WAM). Italy, however, remains on track to achieve its 2030 target despite this projected decline. This is due to the fact that its net removals in 2024 already substantially exceeded its 2030 target.

(33) These targets are assessed against the 2016-2018 reference period as reported in the 2026 inventory submissions.

Figure 3.4 **Member States' net LULUCF performance in 2024 and national LULUCF targets**



Notes: In this Figure, the value of '0' represents the annual average of the 2016-2018 reference period. The dots show national LULUCF targets for 2030, expressed as additional removals relative to this reference period. The bars show the actual change in terms of net removals in 2024, relative to this reference period, according to the latest GHG inventory submissions (2026). Positive bars indicate net emissions have increased or net removals have decreased compared to the reference period, while negative values indicate net emissions have decreased or net removals have increased. The distance between the top of each bar and the corresponding dot indicates the distance to the 2030 target. Countries are ordered according to their distance from the 2030 national targets, ranging from countries with the largest shortfalls (top) to countries that have already achieved or exceeded their target (bottom).

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026f; EU, 2018.

Figure 3.5 presents net emissions and removals in the LULUCF sector across Member States and land-use categories in the year 2024, and the role of the LULUCF sector compared to gross emissions from other sectors. Although the figure represents a single year, it highlights the considerable differences in the role of the LULUCF sector across Member States. In some countries, the sector acts as a substantial net sink, while in others it provides only limited compensation or remains a net source of emissions.

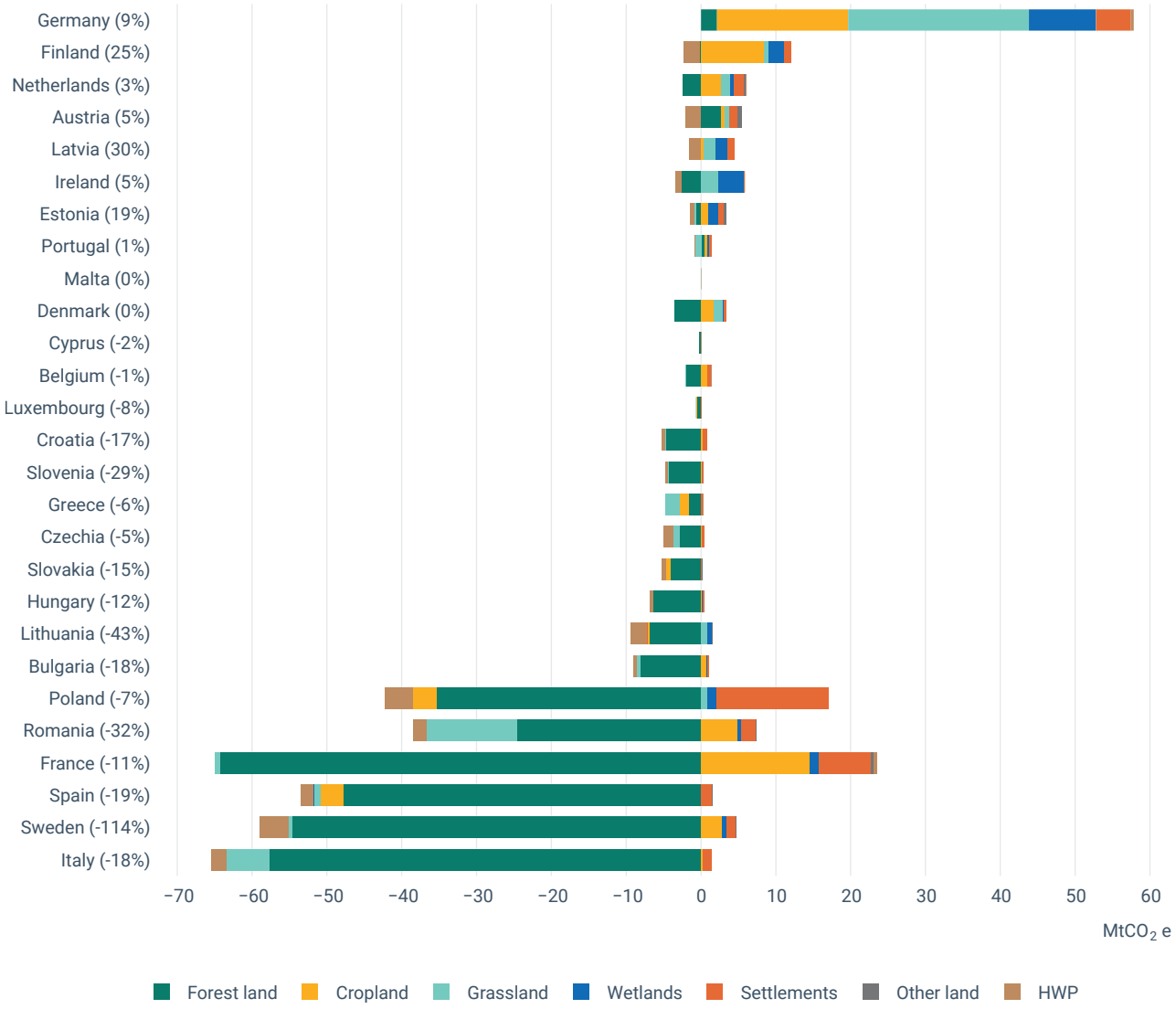
Figure 3.5 also illustrates that the contribution of individual land-use categories to the LULUCF balance varies considerably across Member States. This provides insight into the impact of the categories for national LULUCF status.

The distribution of emissions and removals across land-use categories indicates that forest land is the dominant source of net removals in most Member States. Forest land also plays a central role in explaining recent changes in Member States' LULUCF performances. Comparing average emissions and removals in 2015-2024 with those in 2005-2014, forest land was the category showing by far the largest absolute change in emissions and removals; it accounted for the largest change in 16 Member States.

Moreover, in the same period 19 Member States experienced a decline in net removals from forest land. At the same time, only eight Member States reported improvements. The decline in net removals from forest land was highly concentrated, with Finland, Germany, Sweden and France recording the largest decreases, in descending order. These countries have some of the largest forest areas in the EU and as such, these developments are important for the overall EU LULUCF balance.

Comparing the trend in cropland in the 2015-2024 period with the previous decade, 16 Member States saw increased net removals or decreased net emissions. Among all land-use categories, cropland recorded the largest improvement in terms of the net LULUCF balance in nine Member States during this period.

Figure 3.5 **Emissions (+) and removals (-) per land-use category in EU member States in 2024 and contribution of the LULUCF sector to gross emissions from other sectors**



Note: The percentages shown in brackets on the left side indicate the net LULUCF balance as a share of gross GHG emissions from sectors other than LULUCF in 2024. Negative percentages indicate that the LULUCF sector was a net sink, while positive percentages indicate that the LULUCF sector was a net source.

Category 4.H Other LULUCF is not displayed in the figure, as it is only reported by France and is limited in magnitude.

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026f.

3.3 Outlook for enhancing Europe's carbon sink

Renewed efforts and dedicated policies are required to ensure that the EU's overall LULUCF target is achieved by 2030 and to safeguard the sector's role in EU climate mitigation in the coming decades. Such policies can target a wide range of available 'carbon farming' options to reduce emissions and enhance removals in LULUCF. These can include:

- improved land- and forest management practices;
- ecosystem protection and restoration;
- increasing carbon storage in HWPs.

Although the potential for mitigation varies among the options, as well as over time and per area where implemented, applied at scale, they can jointly have a significant effect. Investments in such options are also justified by the multiple co-benefits they provide for biodiversity, water management and soil quality. They can also increase the resilience of farms and forest holdings as well as bioeconomy value chains, in view of the increasing effects of climate change. However, trade-offs can also arise, such as changes in short-term biomass yields.

Enablers — such as adequate public and private finance, cost-efficient MRV and policy coherence — are necessary to facilitate the uptake of various options.

With regard to policy coherence, the CAP offers plenty of potential. Through their CAP strategic plans (CSPs), Member States set out a range of mandatory and voluntary interventions. These include income support and rural development mechanisms, among others. The CSPs support carbon farming through measures such as agroforestry, improved soil management, grassland protection and peatland restoration.

At the same time, continued attention is needed to mitigate trade-offs between policy objectives, such as objectives of the CAP and energy policies vis à vis aiming to enhance natural sinks. This also requires creating pathways to pursue optimal environmental and socio-economic outcomes over a longer time horizon. Denmark may offer an interesting case for an integrated policy approach (Box 3.2).

Box 3.2

Denmark's tripartite agreement

Denmark's Green Tripartite Agreement (2024) provides an example of an integrated policy approach to reducing GHG emissions and enhancing removals in the land sector, while also addressing nature, biodiversity and water quality through economic incentives, land-use planning and regulatory measures. It was agreed in 2024 by the Danish government, agricultural organisations, industry, trade unions, municipalities and environmental non-governmental organisations (NGOs).

The mitigation measures presented in the agreement are expected to deliver reductions in emissions from the agriculture and LULUCF sectors of 1.8-2.6MtCO_2e or 55-65% by 2030 relative to 1990. They will also ensure compliance with the national target according to the LULUCF Regulation.

A central element is the large-scale transformation of land use in Denmark. Supported through the Green Area Fund, the agreement aims to rewet 140,000 hectares of organic soils (including marginal areas) by 2030 and establish 250,000 hectares of new forest by 2045. These measures are complemented by permanent extensification [34], wetland restoration and facilitated land purchases and land exchanges. Together, these measures are expected to strengthen carbon sinks, reduce emissions from organic soils and deliver wider environmental benefits.

The agreement also highlights the importance of robust monitoring and accounting for emissions. It also points to the need to improve GHG inventory data to better reflect mitigation measures in the land sector. In this regard, the compilation of Denmark's GHG inventory has already developed in recent years. It integrates various geographically explicit data such as those from the EU Land Parcel Information System (LPIS) (see the case study on the EEA GHG Knowledge Hub).

Following the establishment of the EU CRCF certification framework and underlying methodologies, cost-effective MRV will be essential to encourage the uptake of carbon farming to be financed through crediting mechanisms. Also, the quality of national GHG inventories and projections is crucial to assess progress towards climate targets, trends and drivers. It is equally important for evaluating the effect of PaMs over time.

In the LULUCF sector, emissions and removals must be estimated across several carbon pools that store carbon for different periods of time, including living biomass (trees and vegetation), dead wood, litter, soils and HWPs. Monitoring these changes is particularly challenging because carbon stocks can vary over large areas. Additionally, they are influenced by management practices, weather conditions and natural disturbances. Robust monitoring systems combine field measurements, national forest inventories and modelling to track changes in carbon stocks and fluxes over time.

Member States' ongoing efforts to improve GHG inventory data for LULUCF are crucial in this context (Boxes 3.2 and 3.3). Timely provision of data, the use of higher-tier methods and improved modelling approaches, alongside more complete reporting in terms of carbon pools and the use of geographically explicit data are all areas which need attention.

(34) Extensification refers to reducing the intensity of land management, for example by converting cropland to extensively managed grassland.

To improve LULUCF projections data and their use for evaluating policy effectiveness across Member States, there should be a focus on enhancing transparency and methodological approaches, especially in terms of granularity, completeness and sectoral integration (see the technical background paper published alongside this report).

Box 3.3

Ireland — improving the reporting of emissions from organic soils

Ireland addressed a gap in its LULUCF inventory after a United Nations Framework Convention on Climate Change (UNFCCC) expert review identified that CH_4 emissions from nutrient-rich organic soils in the grassland category were not being reported. In its 2024 inventory, Ireland introduced an improved methodology using new information on soil nutrient status and drainage, together with country-specific emission factors derived from research on Irish peatlands. The revision also improved the allocation of drained and rewetted organic soils between the grassland and wetlands categories.

Applying the new methodology across the time series substantially changed the reported emissions, reducing estimated grassland organic-soil emissions by around 53% (3.6-3.7MtCO_2e per year) while increasing reported wetland emissions.

The example illustrates how filling inventory gaps and improving underlying spatial and methodological information can materially change the reported LULUCF balance and provide a more reliable basis for targeting mitigation measures (see the case study on the EEA GHG Knowledge Hub).

4 Energy and climate trends and projections in other non-EU countries

Key messages

- In 2025, for the first time, and in 2026, the Energy Community Contracting Parties made inventory submissions to the EEA in line with the adapted EU Governance Regulation. This represents a significant step forward in reporting across the Energy Community framework.
- The Contracting Parties differ markedly in their historical emissions and level of ambition for emissions in 2030. Newly adopted NECPs show that, in aggregate, the Contracting Parties have a level of ambition for 2030 that is comparable to that of the EU.
- Approximated inventory data for 2025 show emissions trends which are either stable or reducing for the Contracting Parties and other non-EU EEA countries.
- The energy production sector accounts for the largest share of total GHG emissions across non-EU EEA countries and Contracting Parties; with dependence on fossil fuels remaining a major challenge in several countries.
- The deployment of renewable energy continues to expand; however, its adoption remains uneven across the region and is least developed in the transport sector.
- Contracting Parties are generally closer to their 2030 national contributions for FEC than for PEC. However, further efforts are needed for both indicators to reduce consumption or limit its growth towards 2030.

4.1 Other EEA member countries and Energy Community Contracting Parties

The previous sections primarily describe progress in EU Member States. However, membership and cooperation within the EEA and the European Environment Information and Observation Network (Eionet) also includes countries that are not members of the EU.

The non-EU countries that are members of the EEA are Iceland, Liechtenstein, Norway, Switzerland and Türkiye. Each of these countries has long-standing experience in reporting climate- and energy-related data. In this report, they are referred to as the 'other' EEA members.

The second group of non-EU countries is made up of the nine Contracting Parties of the Energy Community: Albania, Bosnia and Herzegovina, Georgia, Kosovo, Republic of Moldova, Montenegro, North Macedonia, Serbia and Ukraine (EC, 2025c). The Contracting Parties have recently started to report their climate and energy data in accordance with an adapted version of the EU Governance Regulation [35].

The Energy Community brings together these Contracting Parties to cooperate in implementing the EU acquis within neighbouring regions. Significantly, seven Contracting Parties have now adopted resolutions to complete NECPs. The remaining two (Bosnia and Herzegovina and Kosovo) are yet to adopt this commitment. The Contracting Parties' NECPs [36] provide a common framework for assessing progress towards their 2030 climate and energy objectives.

The following sections present information on GHG emissions (historical, preliminary and future), renewable energy and energy consumption for both the other EEA countries and Energy Community Contracting Parties.

4.2 GHG emission trends and ambition levels

Other EEA countries

As discussed above, membership of the EEA and cooperation with Eionet includes countries that are not members of the EU. These countries are not legally required to prepare NECPs. As such, in this section GHG emissions are discussed in relation to their nationally determined contributions (NDCs) under the Paris Agreement.

Under the Paris Agreement, each participating party is required to prepare, communicate and maintain successive NDCs that it intends to achieve. A summary of NDC commitments for other EEA countries is provided in Table 4.1. The latest commitments have varied reference indicators, target reductions, target years and base years.

Table 4.1 NDC commitments for other EEA countries

Country	Reference indicator	Latest NDC GHG target reduction	Base year
Iceland	GHG emissions under the scope of the ESR sectors	50-55% by 2035	2005
	LULUCF emissions	400-500ktCO_2e by 2035	2025
Liechtenstein	All sectors except LULUCF	At least 55% by 2030; at least 68% by 2035; net-zero emissions by 2050	1990
Norway	National total GHG emissions without LULUCF	At least 70-75% in 2035	1990
Switzerland	All sectors including LULUCF	At least 65% by 2035	1990
Türkiye	Net GHG emissions	466MtCO_2e compared to business as usual, limiting GHG emissions to 643MtCO_2e in 2035	2018

(35) Ministerial Council Decision 2022/02/MC-EnC, adopted on 15 December 2022, amended Decision 2021/14/MC-EnC to establish the Energy Community's 2030 climate and energy framework. It sets collective and national targets for GHG reductions, renewable energy and energy efficiency for the Contracting Parties, while applying adapted EU rules on integrated NECPs, monitoring and reporting.
(36) The process and state of implementation for Energy Community NECPs is available here.

The following paragraphs compare the NDC commitments with the latest available GHG emissions data (for all the other EEA countries) and projections data (for Iceland, Switzerland and Norway only).

Iceland's latest NDC, submitted in September 2025 (Table 4.1), commits the country to reducing GHG emissions under the current scope of the ESR sectors by 50-55% by 2035 (Iceland, 2025). Iceland's target under the ESR is a 29% reduction in GHGs by 2030 compared to 2005 [37].

Preliminary estimates for 2025 suggest that Iceland's ESR emissions were 10% lower than in 2005. The country's GHG emissions under the scope of the ESR sectors are currently projected to be 38% lower in 2035 than in 2005 (in the WAM scenario).

Iceland is also committed to reducing emissions in the LULUCF sector by 400-500ktCO_2e by 2035 (Iceland, 2025). Preliminary data for 2025 show annual net GHG emission reductions in the LULUCF sector of 135ktCO_2e. The 2024 data show that net GHG emissions have risen by 6% since 1990. Preliminary data for 2025 report net GHG emission reductions of 4% in comparison to 2024.

Liechtenstein's climate strategy, adopted in 2022, is reflected in its latest NDC (Table 4.1). It includes target GHG reductions for 2030, 2035 and 2050 (Liechtenstein, 2023, 2025). Of the 55% target reduction for 2030, 40% of emission reductions are to be achieved domestically. Given the importance of the energy sector, the strategy includes reducing energy-related emissions by 50% by 2030, with the goal of eliminating emissions from this sector entirely by 2050.

In 2024 Liechtenstein's net GHG emissions were 40% lower than in 1990. There are no preliminary data for 2025 or projections data available for Liechtenstein.

Norway submitted its NDC for 2035 in 2025 (Table 4.1). It aims for at least a 70-75% reduction in GHG emissions by 2035 relative to 1990 levels, excluding LULUCF (Norway, 2025). In addition, under its Climate Change Act, Norway has established a 2050 target to reduce GHG emissions by 90-95% compared with 1990 levels. Climate targets will be reviewed every five years (Norway, 2022).

In 2024 Norway's net GHG emissions were 29% lower than in 1990. Preliminary data for 2025 shows that Norway's GHG emissions (excluding LULUCF) were 13% below 1990 levels and 1% below 2024. In 2035 GHG emissions (excluding LULUCF) are projected to be 47% below 1990 levels (in a WAM scenario).

Switzerland's second NDC, submitted in 2025, covers the 2031-2035 period (Table 4.1) (Switzerland, 2025). In a 2021 update to Switzerland's first NDC (Switzerland, 2021) a target was set to achieve net zero by 2050. This remains in place. Switzerland plans to address hard-to-abate emissions through carbon capture and storage and carbon dioxide removal (CDR). After 2050, the volume of CO_2 removed through CDR is expected to exceed the remaining GHG emissions.

In 2024 Switzerland's net GHG emissions were 22% lower than in 1990. Preliminary data for 2025 show that Switzerland's net GHG emissions were 24% lower than in 1990 and 2% lower than in 2024. Total net GHG emissions are projected to be 38% lower than 1990 by 2035 in a WAM scenario.

(37) Iceland's commitment under the ESR is referenced in Decision of the EEA Joint Committee No 269/2019 of 25 October 2019.

Türkiye submitted its second NDC in 2024. It includes the aim to reduce its net GHG emissions by 466MtCO_2e by 2035 compared to a business-as-usual scenario (BAU) defined in its NDC — where 2018 serves as the base year. Further it aims to reduce GHG emissions to 643MtCO_2e by 2035 (Table 4.1). Türkiye aims to achieve net zero emissions by 2053 (Türkiye, 2023).

In 2024, Türkiye's net GHG emissions were 54MtCO_2e greater than in 2018 and over 200% greater than in 1990. This increase reflects population growth, rising energy consumption and the dynamics of a growing economy. There are no preliminary data for 2025 or projections data available for Türkiye.

Energy Community Contracting Parties

In 2025, for the first time, the Energy Community's Contracting Parties (Albania, Bosnia and Herzegovina, Georgia, Kosovo, Moldova, Montenegro, North Macedonia, Serbia and Ukraine) were required to submit inventories to the EEA, in line with the adapted EU Governance Regulation.

In 2026, eight of the nine Contracting Parties made draft GHG inventory submissions to the EEA. However, there were only four final inventory submissions (Moldova, North Macedonia, Serbia and Ukraine). Nevertheless, this represents a significant step forward in regional cooperation and in enhancing transparency in GHG reporting across the Energy Community framework.

To date, six of the nine Contracting Parties have made approximated inventory submissions (Albania, Georgia, Moldova, Montenegro, Serbia and Ukraine). The submissions demonstrate substantial effort to provide data on the main GHG sectors and gases. To assess the data fully, detailed quality checks and follow up with the Contracting Parties are now required.

This section compares trends from the latest GHG emissions data submitted to the EEA (1990 to 2025), with the targets set out in the NECPs (where available) and in Ministerial Decision 2022/02/MC-EnC [38] (Table 4.2). Differences in target scopes, base years and data availability are highlighted where they affect comparability.

The Contracting Parties differ markedly in both their historical emission trajectories and their ambitions for 2030. In 2024 all parties reported emissions that continue to be well below the 1990 levels; however, some aim to further reduce emissions by 2030, while others expect an increase in GHGs vis-à-vis their current level.

In aggregate, the Contracting Parties have a level of ambition for 2030 comparable to that in the EU. If the NECP for Bosnia and Herzegovina and that for Kosovo, which have not been submitted yet, will comply with the commitments in the Energy Community Ministerial Decision, the overall level of ambition would place the consolidated GHG emission reductions of the Contracting Parties at -61% in 2030 compared to 1990.

(38) The Energy Community's Ministerial Council is the highest decision-making body in the organisation and is charged with determining which EU regulations should be transposed by the Contracting Parties. Ministerial Council Decision 2022/02/MC-EnC (15 December 2022) (Energy Community, 2022) is an adapted version of the EU's Energy Union Governance Regulation, thus establishing 2030 targets for the Energy Community's Contracting Parties and the process to develop and report on NECPs.

Table 4.2 Total net GHG emissions in 1990 and 2024 compared to 2030 targets for Energy Community Contracting Parties

Country	1990	2024	2030 target per Decision 2022/02/MC-EnC	2030 target in NECP	Distance of 2024 inventory to 2030 target Decision 2022/02/MC-EnC	Distance of 2024 inventory to 2030 NECP target
				$MtCO_2e$		
Albania	9.8	6.2	12.0	10.2	5.8	4.0
Bosnia and Herzegovina			15.7			
Georgia	37.7		20.5	20.5		
Kosovo			9.0			
Moldova	44.2	13.4	9.1	9.1	-4.3	-4.3
Montenegro	4.8	3.5	2.4	2.4	1	-1.1
North Macedonia			2.2	2.2		
Serbia	82.2	54.9	47.8	47.8	-7.1	-7.1
Ukraine	917.7	217.1	309.0	309.0	91.9	91.9

Notes: GHG emissions for 1990 and 2024 are based on the latest data submitted to the EEA. A positive value in the two right-hand columns means that Contracting Parties' GHG emissions in 2024 were below their GHG emission targets for 2030. Data were not available for Bosnia and Herzegovina, Kosovo and North Macedonia. No 2024 data are available for Georgia. Montenegro's GHG emission target excludes LULUCF emissions and removals and so the 1990 and 2024 GHG emissions shown for Montenegro do not include LULUCF emissions and removals.

Source: Author's own compilation based on annual GHG submissions to the EEA, Ministerial Decision 2022/02/MC-EnC and NECPs.

Albania and Ukraine are the two Contracting Parties with 2030 GHG emission targets above their 2024 emission levels [39]. Georgia had emissions of 13.5$MtCO_2e$ in 2023. Its 2030 target is 20.5 $MtCO_2e$. These parties experienced particularly steep emission declines following the dissolution of the Soviet Union and of Yugoslavia (Figure 4.1). For example, between 1990 and 1994 Georgia's annual GHG emissions fell from 37.7$MtCO_2e$ to 9.4$MtCO_2e$.

Albania's 2021 NECP contains a net GHG target for 2030 of 10.2$MtCO_2e$ (including LULUCF). In 2024, Albania's net GHG emissions were 6.2$MtCO_2e$, 37% lower than in 1990 (Figure 4.1). The approximated GHG inventory indicates that emissions remained broadly stable in 2025, increasing by approximately 0.1% compared with the previous inventory year. This slight increase was mainly driven by agriculture (+1.2%) and industrial processes (+0.4%), while energy emissions decreased by 0.4%.

Bosnia and Herzegovina still needs to adopt an NECP. However, based on Decision 2022/02/MC-Enc [40] the Contracting Party is aiming for target net GHG emissions of 15.7$MtCO_2e$ in 2030, a reduction of 41.2% compared to 1990.

Georgia's 2030 target from its NECP is to achieve net GHG emissions of 20.5$MtCO_2e$. This is the same as the target set out in Decision 2022/02/MC-Enc. In 2023, Georgia had GHG emissions (excluding LULUCF) of 13.5$MtCO_2e$; this was a reduction of 71% compared to 1990 [41]. The approximated GHG inventory reports net GHG emissions

(39) Bosnia and Herzegovina did not submit a GHG inventory. Kosovo and North Macedonia fulfilled their inventory reporting obligations. However, reporting gaps mean that it is not possible to make assessments for these countries.
(40) No 2022/02/MC-EnC on amending Ministerial Council Decision No 2021/14/MC-EnC amending Annex I to the Treaty Establishing the Energy Community and incorporating Directive (EU) 2018/2001, Directive (EU) 2018/2002, Regulation (EU) 2018/1999, Delegated Regulation (EU) 2020/1044 and Implementing Regulation (EU) 2020/1208 in the Energy Community acquis communautaire.
(41) Georgia did not submit GHG inventories for the year 2024 and there was no LULUCF submission for 2023.

of 15.4MtCO_2e in 2025, with energy remaining the largest emitting sector and the LULUCF sector continuing to act as a substantial net carbon sink.

Based on Decision 2022/02/MC-Enc **Kosovo** plans to cap net annual GHG emissions at 8.95MtCO_2e by 2030. This corresponds to a 16% reduction compared to the country's 2016 GHG emission levels.

Moldova's NECP targets cap net 2030 GHG emissions at 9.1MtCO_2e. The country also aims to achieve climate neutrality by 2050 (Moldova, 2025) [(42)].

In 2024, Moldova's net GHG emissions were 13.4MtCO_2e, 70% lower than 1990 emissions levels. Approximated GHG inventory data for 2025 indicate a continued downward trend, with net emissions decreasing by around 13% compared with the previous inventory year and reaching approximately 11.6MtCO_2e.

Montenegro's NECP target aims to reduce the country's 2030 GHG emissions (excluding LULUCF) to 2.4MtCO_2e.

In 2024, Montenegro's GHG emissions (excluding LULUCF) were 4.8MtCO_2e, 28% lower than in 1990. Meanwhile, net GHG emissions (including LULUCF) were 72% lower. This underscores the importance of the LULUCF sector for the country.

When accounting for LULUCF net removals, Montenegro is projected to become a net carbon sink by 2030. The approximated GHG inventory submitted for 2025 appears consistent with a continued decline in overall emissions. It also highlights the increasing importance of the LULUCF sector in reducing the country's net GHG emissions.

North Macedonia's NECP target for net 2030 GHG emissions (including LULUCF) is 2.20MtCO_2e. This equals the target set out in Decision 2022/02/MC-Enc. One-third of the PaMs in the adopted NECP are aimed at GHG emission reductions. Projections data in the NECP show that emissions in the energy, waste, agriculture and LULUCF sectors are projected to either stabilise or decrease (using a WAM scenario) (Energy Community Secretariat, 2026).

In **Serbia's** NECP the 2030 net GHG emissions target is 47.77MtCO_2e. In 2024 Serbia's net GHG emissions totalled 54.9MtCO_2e, 33% lower than in 1990. The approximated GHG inventory reports net emissions of 56.5MtCO_2e in 2025. In Serbia, energy remains the dominant source of emissions and the LULUCF sector continues to provide net removals.

Ukraine's NECP sets out a net GHG emissions target of 309.0MtCO_2e for 2030 (Energy Community Secretariat, 2026). In 2024, Ukraine's net GHG emissions were 217.1MtCO_2e, 76% below 1990 levels. The approximated GHG inventory submitted for 2025 reports values that are unchanged compared with the latest inventory submission. Russia's war against Ukraine since 2022 has also had impacts on Ukraine's GHG emissions.

(42) Moldova's GHG emission target in its NECP has been established for the 'administratively controlled territory of the Republic of Moldova' (referred to as the 'right bank of the Dniester River').

Figure 4.1 **Total GHG emissions trends in other EEA countries and the Energy Community Contracting Parties relative to 1990**



Note: Only the Energy Community contracting parties whose data was submitted in time to undergo EEA quality assurance and quality control is displayed.

View the interactive version of the chart.

Source: Author's compilation based on data from EEA, 2026l.

4.2.1 Sectoral GHG emission shares in other EEA countries and the Energy Community Contracting Parties

In 2024, the energy supply sector accounted for the largest share of total GHG in both Norway and Türkiye. While Norway's electricity generation is mostly renewable, the energy sector's share of GHG emissions is also driven by activities related to petroleum extraction; alone these accounted for around 25% of the country's GHG emissions in 2024 (EEA, 2026l).

The energy supply sector also accounts for the largest share of total GHG emissions in many Contracting Parties, ranging from 2% in Albania to 55% in Serbia. In Serbia, power generation relies heavily on lignite (EEA, 2026l), which is emission intense.

In the other EEA countries in 2024, the industrial sector's contribution to total emissions was highest in Iceland at 45% (where it represented the country's primary source of emissions). Iceland's metal industry consumes a significant portion of the country's predominantly renewable electricity while also generating GHG emissions (EEA, 2026l). Meanwhile, the contribution of the industrial sector was lowest in Switzerland at 17%. Among the Contracting Parties the industrial sector contributed to a range of total GHG emissions, from 11% in Montenegro to 32% in Albania and Georgia.

Domestic transport emissions ranged from 18% in Türkiye to 28% in Liechtenstein in other EEA countries. For the Contracting Parties, these emissions ranged from 11% in Ukraine to 29% in Montenegro.

For the other EEA countries agricultural emissions ranged from 13% in Norway to 17% in Liechtenstein. For the Contracting Parties, agricultural emissions ranged from 7% in Montenegro to 22% in Albania. In Albania, agriculture is one of the most important economic sectors, contributing around 23% to the country's GDP and employing about 43% of the working population (EEA, 2026l).

Total GHG emissions from the waste sector are proportionately higher in the Contracting Parties. They ranged from 5% in Serbia to 15% on total GHG emissions in Georgia. In Georgia increasing urbanisation drives these municipal waste emissions and Georgia's use of landfills and unregulated dumpsites for municipal waste may explain larger shares from waste for overall GHG emissions (GIZ, 2024).

Table 4.3 Sectoral shares of total GHG emissions (excluding LULUCF) in other EEA countries and the Energy Community Contracting Parties in 2024

Country	Energy supply	Industry	Domestic transport	Buildings	Agriculture	Waste
Iceland	5%	45%	20%	0%	25%	5%
Liechtenstein	2%	18%	28%	33%	17%	1%
Norway	30%	24%	25%	4%	13%	3%
Switzerland	8%	17%	33%	22%	16%	3%
Türkiye	30%	24%	18%	11%	15%	3%
Albania	2%	32%	24%	6%	22%	14%
Bosnia Herzegovina						
Georgia	12%	32%	26%	0%	15%	15%
Kosovo						
Moldova	28%	15%	22%	12%	13%	11%
Montenegro	41%	11%	29%	1%	7%	11%
North Macedonia						
Serbia	55%	13%	14%	4%	9%	5%
Ukraine	41%	19%	11%	7%	14%	6%

Notes: The 'Energy supply' sector covers GHG emissions inventory Categories 1.A.1 and 1.B and 'Industry' covers 1.A.2 and 2. GHG emissions in the industrial sector originate from the combustion of fossil fuels and from industrial processes and product use. Data for Georgia are for 2023 as no data have yet been reported for 2024.

Source: Author's compilation based on data from EEA, 2026l.

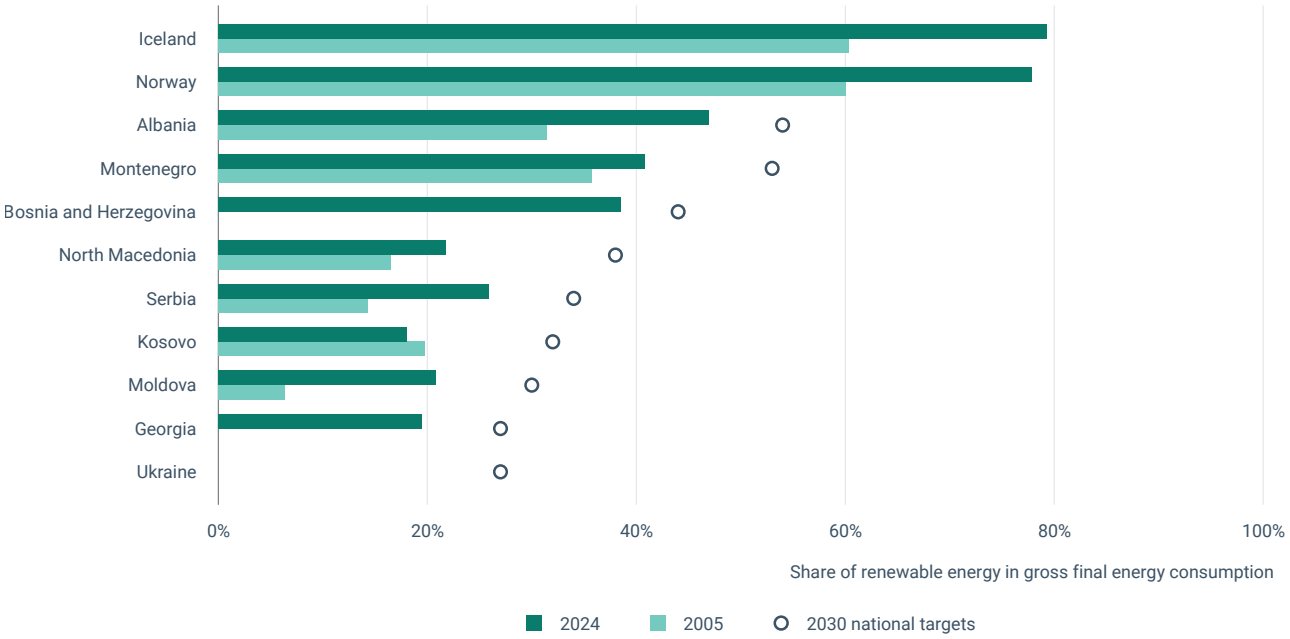
4.3 Renewable energy

Data on RESs are available from Eurostat from 2005 to 2024 for Iceland and Norway as well as for eight of the nine Energy Community Contracting Parties.

Iceland and Norway maintained high levels of renewable energy use throughout the 2005-2024 period. During the COVID-19 pandemic, RESs in both countries peaked before declining slightly in subsequent years. Starting from approximately 60% in 2005, Iceland and Norway had RES shares of 79% and 78%, respectively, in 2024.

Among the Energy Community Contracting Parties with available data, Montenegro exhibited the highest RES share up to 2020. From then onwards, Albania recorded the largest share. In 2024, RESs among the Contracting Parties ranged from around 20% in Kosovo, Moldova and North Macedonia to 47% in Albania.

Figure 4.2 **RES shares in 2005 and 2024 and targets for 2030 national contributions in other EEA countries and the Energy Community Contracting Parties**



Notes: This figure shows the RES shares in 2005 and 2024 in the other EEA countries and Energy Community Contracting Parties. No data are available for Bosnia and Herzegovina and for Georgia for 2005. For Ukraine, data are currently not available for the entire time series. For the Energy Community Contracting Parties, the figure also shows the 2030 targets for RES shares. The targets are based on the countries' adopted NECPs. As Bosnia and Herzegovina and Kosovo have not yet adopted their NECPs, their 2030 targets are based on Decision 2022/02/MC-EnC.

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, (2026a) Decision 2022/02/MC-EnC.

In their NECPs, the Contracting Parties set out renewable energy targets for 2030 which are exactly in line with or more ambitious than the targets set out an Annex I of Decision 2022/02/MC-EnC (Energy Community, 2022) [43]. The targets under the NECP range from 27.1% in Ukraine to 54.4% in Albania. In 2024, the distances to the targets ranged from 8 percentage points in Albania to 16 percentage points in North Macedonia.

Table 4.4 presents information on the RES-E, RES-HC and RES-T in 2024.

Iceland and Norway exhibited more than 100% RES share in electricity in 2024. The largest share of renewable electricity from each of them came from hydropower: 70% and 91%. (Eurostat, 2026a). Norway is a net exporter of electricity (IEA, 2026c). Iceland does not export electricity (IEA, 2026b); their shares total over 100% due to the normalisation rule for hydropower [44] (Eurostat, 2026f).

Norway and Iceland also have high RESs in transport. In Norway, the 2024 share was 34% and the largest contributors to this renewable share were compliant biofuels and renewable electricity in road transport. For Iceland, with an 11% renewable share in transport in 2024, the largest contributor was compliant biofuel (Eurostat, 2026a). For Iceland's RES-HC share of 79%, the main renewable heat source is derived from geothermal sources.

(43) Serbia's RES target under the NECP is less ambitious than under Decision 2022/02/MC-EnC; it has provided a justification for this (Energy Community Secretariat, 2026; Serbia, 2024).

(44) This rule considers the impact of annual weather and rainfall variations to provide a good baseline for accounting. The rule is laid out in Annex II DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL.

Albania is a net electricity exporter thanks to hydropower (IEA, 2026a). As such, it has a RES share for electricity generation of over 100%. Georgia and Montenegro had a RES share for electricity generation of nearly 70% in 2024. The main source in these countries was also hydropower.

The largest RES-HC shares were observed in Iceland and Montenegro in 2024. Meanwhile, all the Contracting Parties had low shares of RES-T.

Table 4.4 RES shares by sector in Iceland, Norway and the Energy Community Contracting Parties in 2024

Country	RES Electicity	RES Heating and Cooling	RES Transport
Iceland	102%	79%	11%
Norway	115%	35%	34%
Albania	105%	22%	0.2%
Bosnia Herzegovina	40%	0%	0.0%
Georgia	68%	9%	1.2%
Kosovo	9%	43%	0.0%
Moldova	14%	37%	0.1%
Montenegro	67%	68%	0.3%
North Macedonia	40%	38%	0.0%
Serbia	32%	37%	0.6%
Ukraine			

Source: Author's compilation based on data from Eurostat, 2026a.

4.4 Energy efficiency

FEC and PEC data are available for Iceland, Norway and Türkiye among the other EEA countries. As shown in Figure 4.3, there has been a marked variety in developments across the three countries since 2014.

In Türkiye, both indicators increased strongly, with FEC in 2024 46% above its 2014 level and PEC 41% higher than in 2014. Iceland also recorded increases in both FEC and PEC, by 17% and 6%, respectively. In Norway both indicators remained close to their 2014 levels, with a slight increase in FEC (+1.2%) and slight decrease (-3%) in PEC.

Between 2023 and 2024, both FEC and PEC levels increased further in Türkiye, by 6% and 5%, respectively, and in Iceland, by 2% and 3%. In Norway, FEC decreased slightly (-1.2%) and PEC moved in the opposite direction with a slight increase (+1.0%).

Information on FEC and PEC is available from Eurostat for eight of the nine Energy Community Contracting Parties, excluding Ukraine. Among the Contracting Parties, historical developments have been more variable than for the other EEA countries.

By 2024, FEC was substantially above its 2014 level in Bosnia and Herzegovina (+41%), Georgia (+38%), Montenegro (+32%), Serbia (+23%) and Kosovo (+22%). Meanwhile, a smaller increase was observed in Moldova (+8%). FEC remained broadly unchanged in North Macedonia (+0.7%) and decreased (-7%) in Albania.

PEC generally followed a similar direction, increasing most significantly in Georgia (+36%) and Kosovo (+25%), followed by Serbia (+20%), Montenegro (+18%) and

Bosnia and Herzegovina (+15%). A more moderate increase was recorded in Moldova (+4.1%), while PEC declined in Albania (-6%) and North Macedonia (-5%).

In the most recent annual developments between 2023 and 2024, FEC increased most significantly in Georgia and Montenegro, by around 8%, followed by Bosnia and Herzegovina and Moldova, by around 5%. FEC remained broadly stable or decreased slightly in Albania, Kosovo, North Macedonia and Serbia.

PEC increased particularly in Kosovo (+9%), Georgia (+5%), Moldova (+5%) and Montenegro (+4%). In contrast, PEC declined by 6% in North Macedonia and remained broadly stable in Albania, Bosnia and Herzegovina and Serbia.

As explained earlier in this chapter, the Contracting Parties have adopted NECPs which set out their 2030 energy and climate objectives and contributions. Figure 4.3 also shows the 2030 national contributions for FEC and PEC, expressed relative to 2014. For Contracting Parties without an adopted NECP, the values established under Decision 2022/02/MC-EnC are used here instead.

The level of ambition of the adopted NECP contributions differs across Contracting Parties. The NECPs for Georgia, Moldova and North Macedonia retain the 2030 FEC and PEC national contributions established by Decision 2022/02/MC-EnC. In contrast, Montenegro has set slightly more ambitious contributions. Albania has also set a slightly more ambitious FEC contribution, although its adopted NECP does not specify a corresponding PEC contribution.

Ukraine has the largest increase in ambition. Its NECP sets out a 2030 PEC contribution of 72Mtoe, down from 91Mtoe under Decision2022/02/MC-EnC. The FEC contribution specified in the NECP is 42Mtoe compared to 50Mtoe as set out in the Energy Community Decision.

Serbia presents a slightly mixed picture: its PEC contribution is slightly more ambitious than that established in the Decision, while its FEC contribution is slightly less ambitious. The deviation is explained in the adopted NECP.

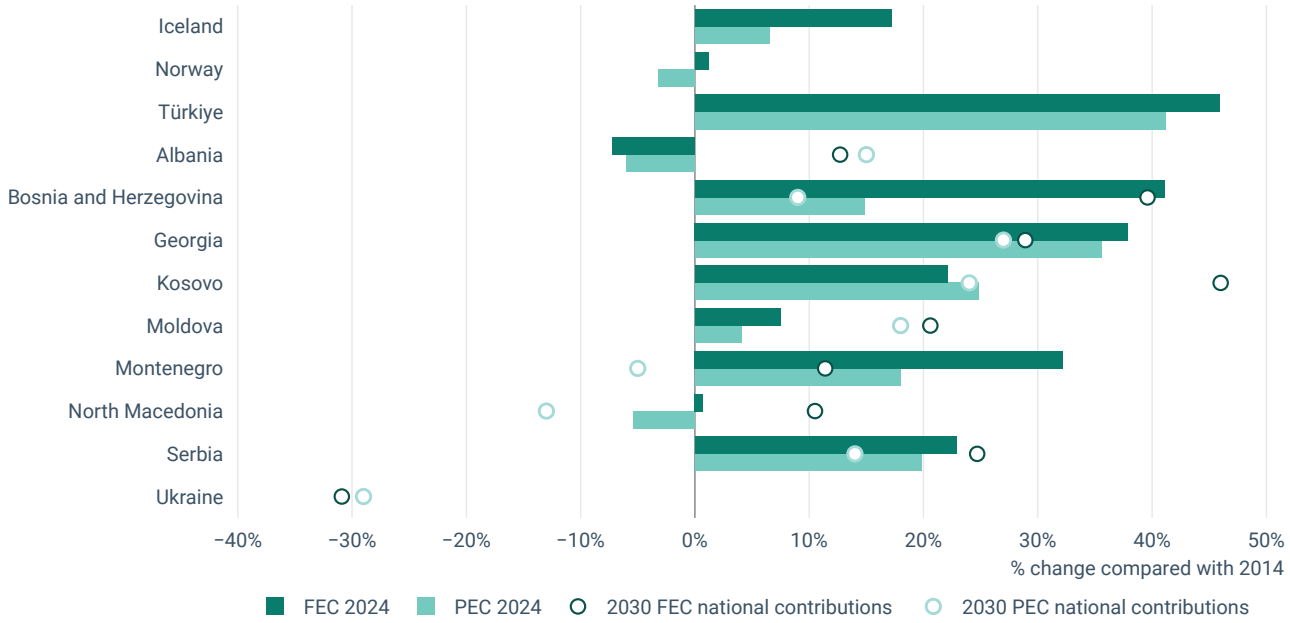
As previously stated, Bosnia and Herzegovina and Kosovo have not yet adopted their NECPs, so the levels established under Decision 2022/02/MC-EnC are the ones used in this report.

Comparing 2024 consumption with these national contributions points to differing positions across Contracting Parties. The 2024 FEC levels in Albania, Kosovo, Moldova, North Macedonia and Serbia were below their respective 2030 contribution levels. Meanwhile, Bosnia and Herzegovina was close to its 2030 contribution. By contrast, Georgia and Montenegro are above their 2030 FEC contribution levels.

These comparisons should be interpreted in light of the national contributions, underlying national circumstance and developments in the area of energy consumption. Being below the 2030 level should not necessarily be interpreted as indicating that a Contracting Party is ahead of its expected progress towards 2030. Additional efforts may still be needed to limit energy consumption growth to remain below the 2030 national contributions.

For PEC, the situation is less favourable, however. In 2024, Albania and Moldova were below their respective 2030 contribution levels, while Kosovo was close to its 2030 contribution. Bosnia and Herzegovina, Georgia, Montenegro, North Macedonia and Serbia were more clearly above their respective 2030 PEC national contributions.

Figure 4.3 **FEC and PEC in 2024 relative to 2014 and 2030 national contributions in other EEA countries and Contracting Parties**



Notes: This figure shows the percentage change in FEC and PEC in 2024 relative to 2014 in the other EEA countries and Energy Community Contracting Parties for which data are available. Calculations for FEC and PEC data follow the Eurostat methodology based on the definition set out in Article 2 of the revised EED (FEC_EED). For Ukraine, these data are not available from Eurostat. Therefore, consumption in 2014 has been sourced from Ukraine's NECP; however, data are not available for 2024.

For the Contracting Parties, the figure also shows the 2030 national contributions for FEC and PEC, expressed as a percentage change relative to 2014. The national contributions are based on the adopted NECPs. As Bosnia and Herzegovina and Kosovo have not yet adopted their NECPs, their 2030 national contributions are based on Decision 2022/02/MC-EnC. The same approach is applied for Albania's 2030 PEC national contribution, as its adopted NECP does not specify a corresponding value.

View the interactive version of the chart.

Source: Author's compilation based on data from Eurostat, 2026b; Energy Community Secretariat, 2026; Ukraine, 2026.

5 Conclusions

5.1 Substantial progress, but faster emission reductions and implementation are needed

The EU has made substantial progress in reducing GHG emissions while economic activity has continued to expand. By 2025, emissions were 38.7% below 1990 levels, while GVA was more than 70% higher.

Most reductions have come from a transformation of the energy system — particularly lower coal and oil use — improvements in efficiency and the rapid deployment of renewable energy. This transition has also reduced dependence on imported fossil fuels and delivered wider benefits for energy security, air quality and resilience.

However, progress slowed in 2024 and 2025. If emission reductions do not increase compared to the last two years, the EU risks missing its longer-term climate and energy objectives. Member States' projections indicate that the 2030 climate target is within reach but only if planned additional measures are rapidly adopted and fully implemented; existing measures alone leave a substantial gap.

The remaining mitigation challenge is increasingly concentrated in end-use sectors and varies considerably among Member States. Transport is now the EU's largest-emitting sector and the only major sector in which FEC was higher in 2025 than in 2005.

In addition, there needs to be marked acceleration in the buildings sector to expedite renovation, energy efficiency and efficient low-carbon heating and cooling.

Many Member States also remained above their emission limits before accounting for flexibilities, under the ESR in 2025. Achieving projected emission reductions will depend on the pace of implemented changes across transport, buildings, agriculture, waste and small industry.

5.2 The need for an accelerating energy transition to close the gap to the 2030 energy targets

Energy system transformation remains central to closing the gaps to energy targets. Renewable energy supplied around one-quarter of GFEC in 2025 and around half of electricity. However, the deployment of RES share for heating and cooling and for transport continues to lag.

At the same time, preliminary data show that PEC and FEC increased again in 2025. This underlines the need to scale up energy efficiency and reduce demand. Efficient electrification of buildings, transport and suitable industrial processes can translate progress in clean electricity into faster emission reductions. However, this is dependent on investment in renewables, grids, storage and demand-side flexibility keeping pace.

Looking beyond 2030, current projections remain far from the EU's 2040 target and from climate neutrality by 2050. This means that sustained action across all sectors is indispensable.

5.3 Safeguarding and enhancing the EU's natural carbon sink

Achieving climate neutrality also requires a strong and resilient land carbon sink. Although preliminary estimates indicate that the LULUCF sink strengthened in 2025, it remained well below the level required for 2030 and substantially weaker than in previous decades.

Ageing forests, increased harvesting, land conversion and effects from climate change and natural disturbances have reduced the sink's capacity and predictability. Collectively, Member State projections indicate that even with additional measures, the EU is still facing a significant gap to the sectoral 2030 target. Meanwhile, differences in methodologies and data quality continue to limit the comparability and reliability of projections.

Dedicated land-management policies should therefore combine ecosystem protection and restoration, sustainable forest and soil management, peatland rewetting and longer-lived HWPs with:

- coherent incentives;
- adequate finance;
- stronger MRV.

Such action should maximise synergies with biodiversity, water management, soil quality, rural livelihoods and climate resilience. They should also recognise that land-based removals are reversible and cannot be a substitute for deep emission reductions in other sectors.

5.4 Extending climate and energy progress beyond the EU

Developments in other EEA countries and the Energy Community Contracting Parties show growing alignment with the EU climate and energy framework. They also point to substantial diversity in national circumstances.

The first inventory submissions by the Contracting Parties under the adapted Governance Regulation mark an important step towards more consistent regional reporting. Meanwhile, the NECPs that have been adopted provide a common basis for assessing progress towards 2030. In aggregate, the ambition of the Contracting Parties is comparable to EU ambition. However, historical emissions, the ways in which targets are designed and projected trajectories differ markedly.

Energy remains the dominant source of emissions in most countries. At the same time, dependence on fossil fuels is still a major challenge and the deployment of renewables is particularly weak in transport.

Several Contracting Parties were close to or below their 2030 FEC contributions in 2024. However, additional efforts are still needed to limit the consumption growth so that it remains below the target. In contrast larger gaps generally remained for PEC and renewable energy targets. Continued cooperation could therefore focus on:

- implementing adopted plans;
- accelerating the deployment of renewables;
- accelerating efficiency improvements;
- strengthening the completeness, quality and comparability of inventories and projections.

More robust reporting will be essential for tracking progress, directing investment and supporting a credible and resilient regional transition.

5.4 Outlook beyond 2030

Looking beyond 2030, the current projections are not aligned with the EU's 2040 target or climate neutrality by 2050. The gap widens markedly after 2030, including when planned measures are taken into account. This longer-term gap should, however, be interpreted in the context of the evolving post-2030 policy framework, which is not yet reflected in these projections. Sustained action across all sectors, combined with stronger natural and industrial removals, will therefore be vital to put the EU on a credible long-term pathway.

List of acronyms and abbreviations

AEA	Annual emission allocation
AR5	Fifth Assessment Report of the Intergovernmental Panel on Climate Change
BAU	Business-as-usual scenario
BECCS	Bioenergy with carbon capture and storage
CAP	Common agricultural policy
CDR	Carbon dioxide removal
CH_4	Methane
CO_2	Carbon dioxide
CRCF Regulation	Carbon Removals and Carbon Farming Regulation
CSP	CAP strategic plan
EC	European Commission
ECL	European Climate Law
EEA	European Environment Agency
EED	Energy Efficiency Directive
Eionet	European Environment Information and Observation Network
ESR	Effort Sharing Regulation
ETS	Emissions Trading System
EU	European Union
EUA	EU allowance
EU-27	27 Member States of the European Union (post-Brexit)
FEC	Final energy consumption
GDP	Gross domestic product
GHG	Greenhouse gas
GFEC	Gross final energy consumption
$GtCO_2e$	Gigatonnes of CO_2 equivalent
GVA	Gross value added
HWP	Harvested wood product
IDEES	Integrated Database of the European Energy System
IPCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
LULUCF	Land use, land use change and forestry
MRV	Monitoring, reporting and verification
$MtCO_2e$	Million tonnes of CO_2 equivalent
Mtoe	Million tonnes of oil equivalent
NDC	Nationally determined contribution
NECP	National energy and climate plan
N_2O	Nitrous oxide
PaMs	Policies and measures
PEC	Primary energy consumption
RED	Renewable Energy Directive
RES	Renewable energy source
RES-E	Renewable energy source — Electricity
RES-HC	Renewable energy source — Heating and cooling

RES-T	Renewable energy source — Transport
tCO_2e	Tonnes of CO_2 equivalent
TWh	Terawatt hours
UNFCCC	United Nations Framework Convention on Climate Change
WAM	With additional measures
WEM	With existing measures

Glossary

Carbon sequestration: The process of increasing the carbon content of a carbon pool other than the atmosphere.

Carbon sink: Any natural or technological process, activity or mechanism that removes a GHG, an aerosol or a precursor to a GHG from the atmosphere. It includes industrial carbon removals and certain nature-based processes that remove CO_2 from the atmosphere. Carbon sinks store carbon in pools.

Carbon stock: The absolute quantity of carbon stored in a carbon pool.

Energy efficiency targets: Under the revised EED (EU) 2023/1791, the EU has a binding 2030 target for FEC and an indicative target for PEC. These EU-wide targets are translated into indicative national contributions for FEC and PEC, set by Member States in their NECPs; collectively they contribute towards achievement of the EU targets.

Final energy consumption (FEC): Based on the definition laid out in Article 2 of the revised EED, FEC means total energy consumed by end users — including international aviation but excluding ambient energy. It is the indicator used to measure progress towards the targets set by the EED. FEC measures the energy delivered to and consumed by end users — such as households, industry, transport, services and agriculture. It excludes energy used by the energy sector itself, therefore excluding energy transformation and delivery losses.

Fugitive emissions: are leaks and other irregular releases of gases or vapors from a pressurized containment—such as appliances, storage tanks, pipelines, wells, or other pieces of equipment—mostly from energy and industrial activities.

Geographically explicit data: Data that includes specific spatial information, such as geographic coordinates or mapped areas, allowing each data point to be located and analysed in relation to its position on the Earth's surface.

Gross final energy consumption (GFEC): This term refers to the figure for gross final consumption of energy used under RED when calculating the share of energy from renewable sources. Based on the definition laid out in Article 1 of the revised RED, it encompasses energy delivered for energy purposes to industry, transport, households, services and consumption of electricity and heat by the energy sector for electricity and heat production — including losses of electricity and heat in distribution and transmission.

Harvested wood products (HWPs): Any product of wood harvesting that has left a site where wood is harvested — including paper, wood used for materials or energy.

Heating degree day (HDD): is a weather-based technical construct designed to describe the need for the heating energy requirements of buildings. HDDs are derived from meteorological observations of air temperature, interpolated to regular grids at 25km resolution for Europe.

Mineral soils: Soils that are mainly made up of minerals (sand, silt, clay) and have relatively low amounts of organic matter. They typically occur under moderately well to well-drained conditions and predominate in most ecosystems except wetlands.

Ministerial Council Decision 2022/02/MC-EnC (15 December 2022): This is a decision which amended the Energy Community's governance framework by establishing 2030 targets for renewable energy, energy efficiency and GHG emissions for the Energy Community Contracting Parties; it also updated the implementation of the EU Energy Union Governance framework within the Energy Community acquis.

Natural disturbances: Events such as wildfires, storms, floods, droughts or pest outbreaks that significantly affect forest ecosystems and are beyond human control. Under the LULUCF regulation, these are disturbances the occurrence of which is beyond the control of Member States and which have effects on emissions that Member States cannot significantly limit even after they happen.

Organic soils: Soils with a high concentration of organic matter (minimum 12-20% by mass according to IPCC Guidelines), usually formed under wet or poorly drained conditions such as wetlands. Countries may apply their own national definitions, provided these are consistent with international reporting guidance. Soils not meeting these criteria are classified as mineral soils.

Primary energy consumption (PEC): Based on the definition laid out in Article 2 of the revised EED, PEC refers to gross available energy, excluding international maritime bunkers, final non-energy consumption (for example, chemical feedstocks or material inputs) and ambient energy. It is the indicator used to measure progress towards the targets set by the EED. It measures the total energy demand of a country, covering consumption in the energy sector (e.g. fossil fuels, nuclear and renewable energy). It also includes energy lost during transformation (e.g. from oil or gas to electricity) and delivery of energy as well as the final consumption by end users.

Projections: Forecasts of anthropogenic GHG emissions by sources and removals by sinks or developments of the energy system.

Salvage logging: The practice of removing trees from forest areas that have been damaged by natural disturbance (wildfires, storms, pests) to recover economic value from the timber.

With additional measures (WAM): Projections of anthropogenic GHG emissions by sources and removals by sinks or developments of the energy system that encompass the effects — in terms of GHG emission reductions — of PaMs which have been adopted and implemented to mitigate climate change or meet energy objectives, as well as PaMs which are planned for that purpose.

With existing measures (WEM): Projections of anthropogenic GHG emissions by sources and removals by sinks that encompass the effects — in terms of GHG emission reductions or developments in the energy system — of PaMs that have been adopted and implemented.

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Annex EU emissions under different target scopes

EU GHG emissions data in the report relate to the scope of the ECL. This sets targets of a net 55% reduction by 2030 and climate neutrality by 2050. This target scope includes net GHG emissions and international transport emissions regulated under EU law, namely those covered by the EU ETS:

- emissions from intra-EU aviation and flights to Iceland, Norway and the United Kingdom;
- intra-EU navigation;
- 50% of emissions from journeys between EU and non-EU ports.

For GHG emissions related to international aviation and maritime activities, inventory and projection totals (based on bunker fuel data) are converted using the JRC's IDEES methodology (JRC, 2024a, 2024b) to reflect the emissions covered by the EU ETS.

A1 presents the differences between the various scopes and the corresponding emission development trends.

Table A1 Different aggregated scopes for monitoring GHG emission trends

Scope	Domestic GHG emissions	Domestic net GHG emissions	Total GHG emissions under EU law
What emissions are covered?	Emissions from all domestic sectors such as energy, agriculture and industrial processes	Domestic GHG emissions and emissions and removals from LULUCF activities	Domestic net GHG emissions and emissions from international aviation and maritime transport as regulated under EU law
% reduction in 2025 versus 1990	-38.4%	-40.5%	-38.7%
% reduction in 2025 versus 2024	-0.7%	-1.6%	-1.6%
Projected % reduction in 2030 versus 1990 (WAM)	-53.3%	-55.9%	-54.2%

Sources: EEA, 2026f; JRC, 2025.

The estimation of historical emissions from international aviation and maritime sectors for total GHG emissions (ECL target scope) rely on data derived from the JRC IDEES methodology as documented in the JRC methodological paper. The full technical report documenting the JRC-IDEES aviation and maritime methodology is available here: https://publications.jrc.ec.europa.eu/repository/handle/JRC148005.

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