

EUROPEAN COMMISSION

> Brussels, 26.10.2021 COM(2021) 960 final

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Speeding up European climate action towards a green, fair and prosperous future

EU Climate Action Progress Report 2021

{COM(2021) 950 final} - {SWD(2021) 298 final}

"This is the make-or-break decade in the fight against the climate and biodiversity crises. Nine in ten Europeans agree that action should be taken to cut our emissions and make the European Union climate-neutral by 2050. The EU has set ambitious targets and the Commission's proposals show how we can get there. Securing a green and healthy future for all will require considerable effort in every sector and every Member State. Europe's transition will be fair, green and competitive."

Frans Timmermans, Executive Vice-President for the European Green Deal

1. MEETING THE EU'S INTERNATIONAL COMMITMENTS

The EU overachieved its 2020 reduction target for greenhouse gas emissions while a record drop was observed in 2020 due to the COVID-19 pandemic.

In 2020, EU-27 domestic greenhouse gas (GHG) emissions, including international aviation¹, were down by 31%² from 1990 levels and **reached their lowest level in 30 years.** If emissions and removals from the land use, land use change and forestry sector (LULUCF) are included, this results in a net emissions reduction of 34%³. The **EU has thus substantially overachieved its target under the UN Framework Convention on Climate Change** (UNFCCC) of reducing GHG emissions by 20% by 2020 compared with 1990⁴. Thanks to sustained decarbonisation efforts over the last decade this was already the case before the onset of the COVID-19 pandemic. Since the introduction of the EU Emission Trading System (EU ETS) in 2005, emissions in sectors covered (power generation, the bulk of industrial production and flights within the European Economic Area (EEA) have been cut by around 43%. This has contributed significantly to achieving the overall 2020 EU target. In sectors not covered by the ETS (such as non-ETS industry, transport, buildings, agriculture and waste) emissions were 16% lower than in 2005, i.e. the effort sharing target for 2020 (-10%) was also overachieved. According to preliminary simulated accounting under the Kyoto Protocol, annual accounted net credits from LULUCF decreased from 2013 to 2019.

Since 1990 the EU's combined GDP grew by more than 50% while the GHG emission intensity of the economy, defined as the ratio between emissions and GDP⁵, fell to 271g CO₂-eq/EUR₂₀₁₅ in 2020, less than half the 1990 level. This shows that decarbonisation and economic growth can go hand in hand as outlined in the EU's new growth strategy – the European Green Deal⁶.

Compared with 2019, GHG emissions fell by almost 10% in 2020, an **unprecedented temporary fall** in emissions due to the pandemic. Emissions from stationary installations covered by the EU ETS fell sharply by 11.4% and non-ETS emissions by 5.6%. The aviation sector experienced a record drop (-63.5%) in emissions from flights within the EEA and globally (-54%) from international aviation⁷. However, a recent study⁸ shows that aviation's non-CO₂ emissions account for more than half (66%) of the aviation Effective Radiative Forcing (in 2018). This results in a need to consider how to best address non-CO₂ effects further to contribute to the EU's climate objectives and the Paris Agreement, complementary to climate action already being taken.

¹ All departures of flights from EU airports.

² Approximated EU GHG inventory based on Member States' submissions. Gap-filling was done for BG using data from the EUTL, Eurostat, Eurocontrol, 2021 projections and previous years' data.

³ Data from Member States' 2021 projections was used to gap-fill LULUCF for DK, EE, HR, HU, LV and SI.

⁴ In addition to the target under the UNFCCC, the EU-27, together with IS and the UK, also committed to a binding emissions reduction for the second commitment period of the Kyoto Protocol (2013-2020). The target is to reduce emissions by 20%. See SWD for details.

⁵ Ratio given for illustration, statistically imprecise as GDP (national accounting) and emissions (territory) have different scopes.

⁶ COM(2019) 640 final.

⁷ ICAO, C-WP/15209, May 2021.

⁸ SWD(2020) 277 final.

Despite being one of the most energy-efficient modes of transport, the maritime transport sector emitted around 3-4% of all EU CO₂ emissions in 2018-2019, with around 60% of the emissions reported from voyages to or from a port outside the EEA⁹. In 2020 the sector was also severely affected by the pandemic (-15% in CO₂ emissions year-on-year)¹⁰. Despite achievements so far, it is crucial to recall that a swift economic recovery may lead to a high and rapid increase in emissions, unless stimulus measures are geared toward the green transition. Lastly, given the unprecedented climate change impacts¹¹, we must act faster than ever before to secure a green, just and prosperous future.



Figure 1: Total EU-27 GHG emissions (including international aviation) and removals 1990-2020, targets, model-based projected emissions and removals 2020–2050¹²

⁹ Regulation (EU) 2015/757.

¹⁰ Preliminary estimations based on THETIS-MRV data.

¹¹ IPCC, first part of the Sixth Assessment Report, 2021.

¹² (1) Historical GHG emissions and removals (1990-2020) are based on European Environment Agency's 2021 GHG Inventory. (2) Projected emissions and removals (2021-2050) are based on the EU Reference Scenario 2020 ("reference"; grey lines) and the MIX Policy Scenario (orange lines) supporting the "Delivering the European Green Deal" policy initiatives. (3) GHG emissions and projections use global warming potentials of the 4th Assessment Report of the IPCC to convert non-CO₂ emissions into CO₂-equivalent emissions. (4) The 2030 target (EU Climate Law) is defined as: 'the net GHG emissions, i.e. emissions after the deduction of removals, are reduced economy-wide and domestically by at least 55 % compared to 1990 levels'. For comparability, the '2030 target' dot is represented at -55% of the net GHG emissions level in 1990.

Major step up in European climate action

In line with the Paris Agreement, the EU set the **target of climate neutrality by 2050** in December 2019. The EU also adopted the European Green Deal (EGD), its multi-sectoral roadmap for a green and just transition, in which digital technologies are playing an increasingly critical role for climate mitigation and adaptation. In December 2020 the European Council endorsed a more ambitious 2030 target of at least -55% net emissions reduction (previously -40% GHG), following the publication of the Commission's 2030 **Climate Target Plan**¹³ which proposes a more balanced path to climate neutrality. This led the EU and its Member States to submit updated **Nationally Determined Contributions** (**NDC**) to the UNFCCC in December 2020. By October 2021, 20 Member States¹⁴ submitted their **long-term strategies**¹⁵ to the EU but Member States are encouraged to consider to update and, where possible, to increase their ambition.

With the adoption and entry into force of the **European Climate Law**¹⁶ in June 2021 both the 2030 and 2050 targets became legally binding in the EU. The law also limits the contribution that carbon removals can make towards emission reductions in 2030 to ensure that there is sufficient mitigation effort. It invites sectors to prepare roadmaps towards achieving the climate neutrality objective and establishes a **European Scientific Advisory Board on Climate Change.**

To ensure that the EU policy framework is fit for its new 2030 climate target, the Commission proposed in July 2021 the most comprehensive package of climate and energy legislation¹⁷ ever. The package seeks to introduce changes gradually and to put forward a number of tools to support a transition that is socially acceptable. In terms of GHG emissions, the package proposes to tighten the existing EU ETS and to extend the carbon pricing system to the maritime transport sector. It also proposes ways to boost the use of sustainable alternative fuels in the maritime and aviation sectors. Further, it proposes to phase out free emission allowances in the aviation sector and to implement, as appropriate, the global Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) for extra-EEA flights. In addition, the package proposes a separate emissions trading system for fuels used in road transport and buildings, a higher reduction target for CO_2 emissions of new cars and vans and a faster roll-out of the alternative fuels infrastructure. For sectors that are currently not subject to EU ETS (buildings, road and domestic maritime transport, agriculture, waste and small industries), the package strengthens the binding GHG emission reduction targets for each Member State. Specific targets are also set to preserve and grow natural carbon sinks. The package also includes higher targets for the use of renewables and measures to accelerate their deployment in all end-use sectors and to foster energy system integration. It also sets higher energy efficiency targets and requires broader energy savings measures, including higher renovation rates of public buildings, proposes to tax energy sources in line with climate goals and puts forward measures to prevent carbon leakage. In

¹³ COM(2020) 562 and SWD(2020) 176 final.

¹⁴ AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IT, LV, LT, NL, PT, SE, SI, SK. A summary assessment table is provided in the SWD. In July 2021, LT presented an update of its initial LTS. In September 2021, Hungary adopted its final national long-term strategy confirming the goal to achieve climate neutrality by 2050. The strategy has not yet been formally submitted to the Commission. In July 2021, the government of Luxembourg adopted a draft national long-term strategy. A public consultation will be carried-out before its final adoption.

¹⁵ In accordance with Article 15 of Regulation (EU) 2018/1999 stating that MS should submit their LTS by January 2020.

¹⁶ Regulation (EU) 2021/1119.

¹⁷ COM(2021) 550 final. See SWD for more details.

July 2021, the Commission also adopted a new EU forest strategy for 2030¹⁸. This recognises the central role of forests and the entire forest-based value chain for achieving the EU's biodiversity objectives and the new GHG emissions reduction target and climate neutrality by 2050.

Given that Member States differ in their starting points and will be differently impacted by the green transition, it is **essential that this transition is just**. The strengthened emissions reduction targets for each Member State are based on their GDP per capita, with adjustments made to take into account cost-efficiency and specific national circumstances. To address distributional and social effects of the transition between and within Member States, the package also proposes to increase the size of the Modernisation Fund and to channel part of the revenues from the new ETS for road transport and buildings through the new Social Climate Fund to vulnerable households, micro-enterprises and transport users.

To adapt to the unavoidable impacts of climate change and become a climate-resilient society by 2050, the Commission adopted its **new strategy on adaptation to climate change**¹⁹ in 2021. It urges smarter, faster and more systematic adaptation to reinforce adaptive capacity and minimise vulnerability to climate impacts of Member States and the EU as a whole and to step up cooperation with partner countries around the world. In October 2021, the EU submitted its **EU Adaptation Communication** to the UNFCCC, setting out the EU's ambitions as defined by the EU Adaptation Strategy, as well as through examples of Member States' good practices²⁰.

Financing the green transition

The green transition will require unprecedented investments in innovation and new technologies in the years to come. The EU will need an estimated **€390 bn annually**^{21,22} in additional investment, compared to the period 2011-2020, to meet its 2030 emissions-reduction target, alongside the **€130 bn per year**²³ for other environmental goals. To do this, alignment of all sources of finance – public and private, national and multilateral – is required. The new Multiannual Financial Framework (MFF), Next Generation EU (NGEU), regulatory and public-private initiatives, and the July 2021 package are all proposing substantial increases of climate funding.

To help unlock private investments²⁴ the **Renewed Sustainable Finance Strategy**²⁵ was adopted in 2021. To reorient private capital, the Commission adopted the **Sustainable Finance Taxonomy Regulation**²⁶, which sets a framework for the **EU taxonomy -** a classification of environmentally sustainable economic activities for companies, investors and policymakers. Its first part focuses on climate change mitigation and adaptation in certain

¹⁸ COM(2021) 572 final.

¹⁹ COM(2021) 82 final.

²⁰ <u>https://unfccc.int/documents/307266</u>

²¹ SWD(2021) 621 final.

²² These estimates do not include investments such as reskilling and upskilling of the workforce; support for labour market transitions and restructuring; and direct income support to vulnerable households.

²³ COM(2020) 456 final.

²⁴'Sustainable finance' refers to the process of taking due account of climate, environmental and social considerations in investment decision-making, leading to increased investments in longer-term and sustainable activities.

²⁵ SWD(2021) 180 final.

²⁶ Regulation (EU) 2020/852.

sectors.²⁷ Other environmental and social dimensions will be completed in 2022. By the end of 2021, the Commission will publish a report describing the provisions required to cover economic activities that do not have a significant impact on environmental sustainability and economic activities that significantly harm environmental sustainability.²⁸ The EU continues to work with its key partners in the **International Platform on Sustainable Finance**²⁹ on how to facilitate cross-border sustainable investments, notably, through a potential **Common Ground Taxonomy**. Furthermore, the Commission has proposed a **Corporate Sustainability Reporting Directive (CSRD)**³⁰ that would amend existing non-financial reporting requirements, extend the scope of reporting to all large companies and all companies listed on regulated markets, except listed micro-enterprises, and foresees the audit of reported information. This would greatly improve transparency.

In the EU, **industrial alliances** are part of the policy toolkit to mobilise investments in key sectors. Those include the European Batteries Alliance, the Clean Hydrogen Alliance and the European Raw Materials Alliance.

Towards a green and just recovery

Since the outbreak of the pandemic in 2020, the EGD has been at the centre of EU efforts when designing the recovery package and the EU's long-term budget (2021-2027). Following the European Council's agreement last year, at least 30% of the €1.8 trillion of both the temporary recovery instrument NGEU and the 2021–2027 budget will be used for climate-related policies and programmes, amounting to €540 bn. The Commission will finance 30% of NGEU through the issuance of green bonds, building on the climate expenditure under the Recovery and Resilience Facility (RRF). To receive support from the RRF³¹, a centrepiece of the NGEU, in 2021 Member States had to prepare national recovery and resilience plans (RRPs) on how they intend to spend their national allocations. These plans must be in line with the National Climate and Energy Plans, meet a specific 37% climate expenditure target and comply with the principle of 'do no significant harm' (DNSH) to avoid any negative impact on climate and environmental objectives³². The Member States that have seen their RRPs assessed by the Commission have overachieved the above target by allocating around 40% to climate³³.

The **Just Transition Mechanism** was set up to ensure that the transition towards a climateneutral economy happens in a fair way, leaving no one behind. This new tool is expected to mobilise around \in 55 bn to alleviate the socio-economic impact of climate transition in the most affected regions and sectors. Member States are preparing **Territorial Just Transition**

²⁷ Commission Delegated Regulation supplementing Regulation (EU) 2020/852 by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives (C/2021/2800 final).

²⁸ Report required under Article 26(2) of the Taxonomy Regulation.

²⁹ This brings together 17 countries representing over 55% of world GHG emissions.

³⁰ COM(2021) 189 final.

³¹ Regulation (EU) 2021/241.

³² For instance investments in fossil fuels and infrastructure, investments in new roads or waste incineration are not allowed.

³³ The expenditures reported for the RRF are estimates processed by the Commission based on the information on climate tracking published as part of the Commission's analyses of the recovery and resilience plans. The data reported covers the 22 national recovery and resilience plans assessed and approved by the Commission by 5 October and the amount will evolve as more plans are assessed.

Plans (TJTPs) identifying the most negatively affected territories and outlining their transition process and. To achieve the energy and climate targets it is crucial that investments support reskilling and upskilling of workers in sectors negatively affected by the transition and smoothen labour market transitions³⁴. In addition, a Just Transition Platform³⁵ has been set up to assist regions relying on solid fossil fuels and carbon-intensive industries, and provide space for open dialogue and exchanges.

Cities and citizens increased climate action

The fight against climate change is a collective responsibility. People and cities across the EU are increasingly taking action. In December 2020, the Commission launched the **European Climate Pact**³⁶ to give citizens a greater role in designing both mitigation and adaptation actions, and an effective platform to do so. By July 2021 there were more than 1000 applications to join the Pact, and over 500 citizens are already fully active ambassadors³⁷.

By the end of 2020, some 9900 European cities had joined the **EU Covenant of Mayors**³⁸, with a collective commitment to reducing GHG emissions by 30% by 2020 and by 47% by 2030 compared with 2005. Under the Horizon Europe programme for research and innovation, the Commission is also launching the **mission 'climate-neutral and smart cities'** for at least 100 cities to become climate-neutral by 2030 and to foster experimentation and innovation while other missions – on adaptation to climate change, on oceans and inland waters and on soil health – will promote climate action through broad-based citizen engagement.

³⁴ 2020 Employment and Social Developments in Europe review.

³⁵https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transitionmechanism/just-transition-platform_en

³⁶ <u>https://europa.eu/climate-pact/index_en</u>

³⁷ https://europa.eu/climate-pact/ambassadors/meet-our-ambassadors_en

³⁸ <u>https://www.covenantofmayors.eu/about/covenant-initiative/covenant-in-figures.html</u>

2. THE EU EMISSIONS TRADING SYSTEM

The EU Emissions Trading System $(ETS)^{39}$ presently covers around 36% of EU's total GHG emissions from close to 9500 power stations and manufacturing plants (i.e. stationary installations), and flights within the EEA⁴⁰. In total, by 2020 EU ETS emissions from stationary installations had already fallen by 43% since 2005^{41} . This decrease was mostly driven by the electricity and heat production sectors (-15%), reflecting both previously identified decarbonisation trends (such as switching from coal to natural gas-fired power generation and replacement of fossil fuels by renewable energy sources driven by EU and Member States renewable energy policies) and, in 2020, reduced electricity consumption due to the pandemic. In 2020, it is estimated that, due to the effects of the pandemic, emissions from stationary installations decreased by 11.4%, while emissions from industry saw the greatest decrease (-7%) since the start of EU ETS phase 3 in 2013 and aviation saw a record drop (-63.5%).



Figure 2: Verified (historical) ETS emissions 2005-2020 in Mt CO₂-eq⁴², Member State projections with existing measures 2021-2030, ETS cap phases 2, 3 and 4, and accumulated surplus of ETS allowances 2008-2020, including UK (Northern Ireland), Norway and Iceland

The last couple of years of phase 3 were marked by a reinforced carbon price signal. This was also the case in 2020 and 2021 when, despite the difficult economic situation in industry and aviation due to the pandemic, the carbon price remained strong due high gas prices and market anticipation of the increased 2030 climate ambition. Carbon prices have increased

³⁹ Covers EU-27, Iceland, Liechtenstein, Norway and Northern Ireland. Until 2021 it covered the UK.

⁴⁰ Covers only CO₂ emissions from flights within the EEA, departing flights to Switzerland and the UK.

⁴¹ Verified emissions from Union Registry.

⁴² Due to ETS scope changes, time-series are not consistent before 2013. The figure includes all countries participating in the EU ETS in the respective years. Cap phase 4 with existing 40% target. The cap for 2021-2030 reflects the UK withdrawal.

over 2021, which contributed to higher electricity wholesale prices but to a much smaller extent than the increased gas price.

Each year, the Commission publishes the surplus of allowances for the preceding year. In May 2021, the 2020 surplus was around 1.58 bn⁴³, somewhat higher than in 2019 (1.39 bn), as emissions kept decreasing due to the pandemic. Given the current surplus, auction volumes from September 2021 to August 2022 will be reduced by 378 m allowances. The first review of the **Market Stability Reserve**⁴⁴, operational since 2019, showed that it has fulfilled its objective to reduce the historical surplus and stabilise the market, even in the face of reduced emissions due to the COVID-19 outbreak. Namely, it led to an intake (reduced auction volumes) of nearly 1.1 bn allowances so far, and this is expected to continue in the coming years.

Regarding **international credits**, at the onset of phase 3, market analysts estimated that the quantity of international credit entitlements used over phases 2 and 3 (2008-2020) would amount to approximately 1.6 bn credits. As of May 2021⁴⁵, the total number used or exchanged was around 1.565 bn, accounting for almost 98% of the estimated maximum. In phase 3 alone (2013-2020), 506.3 m international credits were exchanged. As per the provisions of the EU ETS Directive, international credits may no longer be used for EU ETS compliance in the system's fourth trading period (2021-2030).

Revenues from the auctioning of allowances on the European carbon market continued to grow in 2020 due to an increasing carbon price. Total revenues generated by Member States, the UK and EEA countries from the auctions between 2012 and 30 June 2021 were close to €83.5 bn. In 2020 alone, the generated total revenues were €16.5 bn (EU27 plus EEA) or €19 bn when including the UK. In the first six months of 2021 revenues (EU-27 plus EEA) were close to €14 bn⁴⁶.

Actions in aviation and maritime transport

Emissions from extra-European aviation, i.e. resulting from incoming flights to the EEA and flights departing to other countries, with the exemption of flights departing to the UK and Switzerland, are currently not priced under the EU ETS, in accordance with the "stop the clock" provision in the EU ETS Directive.

During 2021, the EU continued to support the implementation of the initial International Maritime Organisation GHG reduction Strategy with a focus on short-term measures. The Commission also signed a memorandum of understanding for a new Horizon Europe Partnership that will invest up to \notin 3.8 bn in research and innovation to develop and demonstrate deployable zero-emissions solutions for all main ship types and services by 2030. In July 2021 the Commission proposed to extend the EU ETS to include emissions from the maritime transport and to boost the use of sustainable alternative fuels in the sector.

⁴³ C(2021) 3266 final.

⁴⁴ Annex 7 of SWD (2021) 601 final.

⁴⁵ The exchange of international credits was possible until end of April 2021 i.e. the end of the 2020 compliance cycle.

⁴⁶All amounts include allowances auctioned for the Innovation and Modernisation Funds.

3. EFFORT SHARING EMISSIONS

Emissions from sectors not included in the ETS, such as transport, non-ETS industry, buildings, agriculture and waste, are covered by the EU effort sharing legislation. The Effort Sharing Decision (ESD) sets national emissions targets for 2020, expressed as percentage changes from 2005 levels. It also sets annual emissions allocations (AEAs) which Member States⁴⁷ must respect. Similarly, the successor Effort Sharing Regulation⁴⁸ (ESR) sets national emissions targets for 2021-2030, including for Iceland and Norway⁴⁹. Iceland and Norway took further steps to implement the ESR and by now both countries have submitted their national plans to the Commission^{50,51}.

Since the effort sharing system was launched in 2013, EU-wide emissions have been below the overall limit each year. EU-27 emissions covered by the ESD were almost 11% lower in 2019 in comparison to 2005. Thus, the 2020 target (-10%) was over-achieved already before the COVID-19 crisis set in (Figure 3).



Figure 3: Emissions in sectors covered by effort sharing legislation 2005-2030 and annual emission allocations (AEAs), EU-27 and Iceland and Norway (Mt CO₂-eq)⁵²

⁴⁷ Under the Withdrawal Agreement, the UK continues to apply key ESD provisions.

⁴⁸ Regulation (EU) 2018/842.

⁴⁹ ESA decision No. 204/21/COL of 21 July 2021.

⁵⁰ December 2019: <u>Norway's National Plan related to the Decision of the EEA Joint Committee No. 269/2019 of 25 October</u> 2019.

⁵¹ November 2020: <u>Iceland's National Plan – Issued in accordance with Declaration related to the Decision of EEA Joint</u> <u>committee No 269/2019 of 25 October 2019.</u>

⁵² Figure based on reported projections by Member States under the Regulation (EU) 2021/1119, compiled and quality checked by the European Environment Agency. Until 2020 figures include EU-27 only and as of 2021 also Iceland and Norway.

Member State compliance with effort sharing obligations 2013-2020

All Member States have complied with their effort sharing obligations in 2013-2018. Malta exceeded its AEAs in each of these years, but covered the deficit by purchasing AEAs from Bulgaria. In 2018, Austria, Belgium, Bulgaria, Cyprus, Estonia, Finland, Germany, Ireland, Luxembourg and Poland also exceeded their AEAs but could use saved surpluses from previous years. Sweden and UK cancelled AEA surpluses in 2018 to improve the environmental integrity of the system⁵³. All other Member States banked surplus allocations for possible later use. No international project credits from the clean development mechanism or joint implementation were used to comply with the effort sharing obligations.

The compliance cycle for 2019 is ongoing. Based on the annual inventory review under the ESD, Malta's emissions exceeded its AEAs by 22% and therefore it will again need to purchase them. Emissions in nine other Member States⁵⁴ exceeded the 2019 AEAs by up to 18%. Except for Ireland and Germany, these countries have enough AEA surplus banked from previous years. Proxy inventory data for 2020 shows that Bulgaria, Cyprus, Finland, Germany, Ireland and Malta exceeded their AEAs, ranging from 0.4% (Finland) to 14% (Ireland). Member States which do not have banked surplus AEAs (Ireland, Germany and Malta) can use the ESD flexibility mechanisms (beyond banking and borrowing AEAs).

 $^{^{53}}$ Sweden deleted 5.8 Mt and the UK 27.4 Mt.

⁵⁴ AT, BE CY, DE, EE, FI, IE, LU, PL.



Figure 4: Cumulative surplus of AEAs as percentage of 2005 base year emissions, 2013-2019 for EU-27 and the UK

Progress towards the 2030 effort sharing targets

Member States are planning, adopting and implementing policies and measures to achieve their current 2030 effort sharing targets under the ESR. If currently implemented national policies are aggregated, the EU-27 would, compared with 2005, reduce effort sharing emissions by 22% by 2030. This is well below the current 30% overall emissions reduction target and the more ambitious target of 40% proposed in July 2021. Even if all additional policies reported by Member States were to be implemented, the 30% would be just met. This underpins the strong and imminent need for Member States to plan and implement additional climate action in the effort sharing sectors.



Figure 5⁵⁵: Gaps between 2030 ESR targets and projected emissions⁵⁶ with existing measures and with additional measures as a percentage of 2005 base year emissions for EU-27,Iceland and Norway. Positive values indicate projected overachievement of targets; negative values indicate that projected targets are not going to be met.

⁵⁵ The aggregated AEAs for the 27 Member States do not exactly match the current EU-level effort sharing reduction targets expressed in percent. See SWD for more details.

⁵⁶ European Environment Agency gap-filled missing "projections with additional measures" with "projections with existing measures". The original data have different metrics, which a conversion approximately corrects. The gaps are thus provided here for illustrative purposes only. See SWD for more details.

Policies in key sectors

In the **road transport sector**, the second largest source in the EU, emissions had – after a dip following the financial crisis – again reached their 2005 level in 2019. They are expected to rebound after the pandemic and are not likely to fall without additional measures. CO₂ emissions standards for new cars and vans and for heavy-duty vehicles are thus key drivers for reducing road transport emissions. Average emissions from new cars decreased from 122.3 g CO₂/km in 2019 to 107.8 g CO₂/km in 2020.⁵⁷ This is by far the greatest annual decrease since CO₂ standards were introduced in 2010, thanks to the phase-in of a stricter EU fleet-wide CO₂ target in 2020. In addition, it shows the effect of targeted recovery measures put in place by Member States which stimulated the uptake of zero- and low-emission vehicles and investments in recharging infrastructure. In 2020 electric car registrations tripled compared with 2019 (up from 3.5% to over 11%, of which 6% are full electric vehicles and 5% plug-in hybrids). In 2020 average emissions for new vans also decreased to 155.7 g CO₂/km, thanks to stricter standards (Figure 6). Heavy-duty vehicles, such as lorries, heavy vans, buses & coaches, contribute about 30% of road transport's total CO₂ emissions. Existing legislation requires average CO₂ emissions of a manufacturer's fleet of new heavy lorries to be reduced by 15% and 30%, as from 2025 and 2030, respectively, compared with the 2019 baseline.



⁵⁷ Provisional data published by the European Environment Agency.



Figure 6: Average emissions (g CO₂/km) for newly sold cars and vans and fleet-wide targets⁵⁸

Another tool used in the transport sector to decrease emissions is the **Fuel Quality Directive**, which requires life-cycle GHG emissions intensity of fuels to be reduced by 6% by 2020, compared with 2010. The average GHG intensity of fuels supplied in 2019 was 4.3% lower than in 2010 (Figure 7). The progress achieved varies greatly across reporting countries and almost all Member States need swiftly to take further action to meet the 2020 target. In July, the Renewable Energy Directive revision proposed a GHG intensity reduction target of 13% for all transport fuels by 2030. In addition, Member States need to meet sub-targets for renewable fuels of non-biological origin (2.6%) and advanced biofuels (2.2%).

⁵⁸ Targets for 2020-2024 to be calculated in the Worldwide Harmonised Light Vehicle Test (WLTP).



Figure 7: Reductions in GHG intensity of fuels achieved by EU fuel suppliers in 27 Member States and the UK, 2010-2019

Fluorinated gases (F-gases) are very powerful GHG and their emissions are counted under the ESD. Since 2019 the EU must also comply with consumption limits for hydrofluorocarbons (HFCs) under the *Montreal Protocol on substances that deplete the ozone layer*. The current Regulation on F-gases⁵⁹ aims to cut emissions by promoting a shift from highly warming F-gases towards gases with a lower global warming potential. In 2020, the amount of F-gases supplied to the EU market had already been reduced by 40% compared with 2015, when measured in terms of its potential climate effect. Also, the EU was well below its 2020 HFC consumption limit under the *Protocol*. In 2021 the Commission continued to expand its real-time monitoring system - the EU Single Window Environment for Customs - so as to help Member State competent authorities prevent illegal imports of HFCs not covered by the quota system.

In many cases, F-gases replaced **ozone-depleting substances** (ODS), which are often also very potent GHG gases. By now the EU has phased out ODS and it successfully met its obligations under the *Montreal Protocol*. However, since ODS may still be used for certain exempted activities, it is essential to continue to enforce related policies.

⁵⁹ Regulation (EU) 517/2014.

4. LAND USE, LAND USE CHANGE AND FORESTRY (LULUCF)

LULUCF can generate GHG emissions into the atmosphere but also remove CO_2 from it. Between 2013 and 2020, Member States committed to ensure that GHG emissions and CO_2 removals from additional action are accounted towards the reduction target under the Kyoto Protocol. As of 2021, the EU's 2030 Climate and Energy Framework integrates emissions and removals from the land sector using a set of accounting rules adapted from the Kyoto Protocol.

The LULUCF Regulation⁶⁰ requires each Member State to ensure that accounted GHG emissions from land use, land use change and forestry are balanced by at least an equivalent accounted removal of CO₂ from the atmosphere from 2021-2030 (the "no-debit" rule). Forest Reference Levels of the Member States for the period 2021-2025 have also been set⁶¹. The EFTA Surveillance Authority (ESA) adopted these levels for Iceland and Norway⁶² following a similar process.



Figure 8. Reported (R) and preliminary accounted (A) emissions and removals under the Kyoto Protocol, second commitment period, EU-27⁶³

Figure 8 shows for the 2013-2019 period a decreasing sink of 'reported' emissions and removals per activity for the EU with average net removals of - 344.9 Mt CO₂-eq. Applying the specific Kyoto Protocol accounting rules, the 'accounted' balance produced an average sink (or credit) of - 115.0 Mt CO₂-eq. The accounted net credits decreased from -153.3 to

⁶⁰ Regulation (EU) 2018/841.

⁶¹ Delegated Regulation (EU) 2021/268, accompanying SWD/2020/0236 final and scientific analysis (Vizzarri, M., Pilli, R., Korosuo, A. et al. Setting the forest reference levels in the European Union: overview and challenges. Carbon Balance Manage 16, 23 (2021)).

⁶² ESA Decision No 157/20/COL of 16 December 2020.

⁶³ Reported emissions and removals from LULUCF under the Kyoto Protocol shown here are based on specific activities and are not the same as land-based reported emissions and removals from LULUCF under the UNFCCC Convention inventory in Figure 1.

-85.3 Mt CO₂-eq⁶⁴. These quantities include both 'mandatory', i.e. afforestation/reforestation, deforestation and forest management, and 'elected' activities under the KP^{65} .

The main driver for the EU LULUCF sink decline is the decrease in reported net removals and accounted net credits by Forest Management for 2013 -2019⁶⁶. The decline in carbon removals is due to a mix of factors, including an increase in wood demand (e.g. 2018 in Finland), an increasing share of forests reaching harvest maturity (Estonia, Latvia) and an increase in natural disturbances such as insect infestations (Czechia since 2015), storms (2019 in Poland), droughts and forest fires (e.g. 2017 in Italy and Portugal)⁶⁷. According to preliminary estimates, using the accounting rules for the Kyoto Protocol second commitment period, Cyprus, Finland and Netherlands have average net LULUCF debits smaller than 1 Mt CO₂-eq per year. Higher levels of debits are forecasted for Czechia, Latvia and Slovenia (2.6, 2.4 and 3.9 Mt CO₂-eq per year, respectively).

To reverse the decline in LULUCF net removals, the Commission proposed a new target of - 310 Mt CO_2 eq. in 2030 for the carbon sink and a climate neutral land sector combining LULUCF net removals and emissions from livestock and fertilisers in 2035⁶⁸.

⁶⁴ The pattern in the time series of reported emissions and removals for the EU differs from accounting due to the application of accounting rules, notably by applying a cap to credits by Forest Management equal to 3.5% of total GHG emissions in the base year.

⁶⁵ DK, DE, IE, ES, IT and PT elected to include in their accounts Cropland Management; DE, DK, IE, IT and PT also elected Grazing Land Management; RO elected Revegetation.

⁶⁶ Other noteworthy trends or dynamics: net removals or credits by Afforestation/Reforestation decreased by 7 Mt CO₂-eq in 2017; net emissions (credits) by Cropland Management decreased (increased) by 5 Mt CO₂-eq over the 7-year period.

⁶⁷ Grassi, G., Fiorese, G., Pilli, R., Jonsson, K., Blujdea, V., Korosuo, A. and Vizzarri, M., Brief on the role of the forestbased bioeconomy in mitigating climate change through carbon storage and material substitution, Sanchez Lopez, J., Jasinevičius, G. and Avraamides, M. editor(s), European Commission, 2021, JRC124374.

⁶⁸ This is based on land-based LULUCF emissions and removals reported to the UNFCCC. The average EU net removals in the LULUCF sector were -268 Mt CO₂-eq between 2016-2018.

5. ADAPTING TO CLIMATE CHANGE

Climate adaptation is now mainstreamed into EU policies and the long-term EU budget. By 2020, all Member States had put in place a national adaptation strategy or plan. The Climate-ADAPT platform has become a reference for adaptation knowledge. In 2021, the Commission adopted its **new EU strategy on adaptation to climate change**⁶⁹, which sets out the path on how to prepare for the unavoidable impacts of climate change and to become climate resilient by 2050. This by improving and exchanging knowledge (e.g. via EU platforms and observatories), and collecting more and better data on climate-related risk and losses. The strategy highlights that policy developments at all levels and sectors should be supported, especially **local and just resilience**. It explores the macro-fiscal relevance of climate change and natural disaster risks and underlines the importance of integrating climate resilience into national fiscal frameworks. It also emphasises nature-based solutions.

Swifter adaptation solutions will be tested and scaled up through the Horizon Europe mission on adaptation to climate change. The aim is to support at least 150 regions and communities and to test at least 75 deep demonstrations. Horizon Europe missions on Soil health, Climate-neutral cities, and Oceans and inland waters are also directly relevant to action on adaptation.

First assessment of reporting on national adaptation policies

Starting in 2021 Member States are required to report on their national adaptation policies⁷⁰. All Member States have completed this reporting. While it is still premature to assess actual progress in implementation, a snapshot of observed key hazards and future risks can be taken, against which progress can be measured in 2023⁷¹.

The most frequently observed acute hazards in Member States are heatwaves and droughts (in all countries), heavy precipitation (leading to floods), storms, landslides and wildfires (a high number of countries in each climatic zone⁷²). Most frequently observed chronic hazards are changing temperatures, changing precipitation patterns and types (as well as increased variability) and coastal erosion. There are also some hazards that stand out but are only reported in specific climatic zones: water scarcity, soil degradation and erosion appear to be almost absent in the north; the change in wind patterns is reported to affect mainly the north and the east; saline intrusion is especially problematic in the south. Overall, Finland, France and Spain reported the highest number of hazards and Ireland, Italy and Luxembourg the lowest. More than 60% of Member States mentioned health, agriculture and food, forestry, biodiversity, water management, tourism and energy as sectors that are mostly affected by future climate-induced risks. Portugal, Spain and Sweden reported the highest number of sectors subject to future risks.

⁶⁹ COM(2021) 82.

⁷⁰ Article 29 of Regulation (EU) 2018/1999.

⁷¹ See details in the SWD.

⁷² Country grouping into climatic zones according to a frequently used nomenclature in climate-related assessments of the European Environment Agency and of the Commission: northern (DK, EE, FI, IE, LT, LV, SE), eastern (BG, CZ, HU, PL, RO, SK), southern (CY, EL, ES, HR, IT, MT, PT, SI) and western (AT, BE, FR, DE, LU, NL).

6. FINANCING CLIMATE ACTION

Mainstreaming climate policies into the EU budget

As shown in Chapter 1, the transition to climate neutrality and climate resilience requires substantial investments. At least **30%** – the highest share ever – **of the next EU long-term budget** (2021-2027) is allocated for climate action (up from 20% in the 2014-2020). This means around €625 bn compared to around €210 bn in the previous period. Specific spending programmes have higher climate targets (Horizon Europe - 35%, Cohesion Fund - 37%, CAP - 40%, Connecting Europe Facility (CEF) - 60%, LIFE - 61%, the Just Transition Fund⁷³ - 100%), contributing even a larger share to the overall budget ambition.

To be able to benefit from **loans and grants for up to €723.8 bn under the RRF**, Member States were preparing Recovery and Resilience Plans (RRPs) in 2021. These Plans include investments and reform initiatives that have an added value for the EU as a whole, such as, the development and use of renewables including hydrogen, building renovation and energy efficiency, and roll-out of infrastructure for alternative fuels or railway transport. The specific target of 37% of expenditure on climate has been overachieved, as the combined climate investments of 22 assessed RRPs approved by the Commission⁷⁴ amounted to €177 bn, or around 40% of the total RRF funds allocated. About 43% of the amount allocated to climate measures will target renewable energy and networks and energy efficiency, and 35% sustainable mobility. Thus, RRPs can already help Member States achieve the more ambitious targets for 2030. The Commission has integrated the technical screening criteria from the EU Taxonomy where feasible to track climate spending under the RRF and structural funds. The NGEU green bond framework⁷⁵ adopted in September 2021 provides the necessary guarantees that proceeds will finance green and climate investments under the RRF.

The Just Transition Mechanism (JTM) is expected to mobilise around €55 bn (2021-2027) of investments and consists of three pillars:

- 1. Just Transition Fund of at least €25 bn;
- 2. **InvestEU ''Just Transition'' scheme** a budgetary guarantee under the InvestEU programme to mobilise private investments;
- 3. **Public Sector Loan Facility** which will combine €1.5 bn of grants from the EU budget with €10 bn of loans from the European Investment Bank (EIB) to mobilise around €18 bn of public investment.

As of 2021, parts of different EU programmes that contribute to the EGD such as CEF, Horizon Europe programme, Innovation Fund, LIFE programme, Loan Facility under JTM etc. will be managed by a single entity - the European Climate, Infrastructure and Environment Executive Agency (CINEA).

⁷³ Regulation (EU) 2021/1056.

⁷⁴ See footnote 33 for explanations on methodology used.

⁷⁵ SWD(2021)242.

Member State use of revenues from the auctioning of EU ETS allowances

With the significant carbon price increase in phase 3, auctioning revenues increased accordingly – up from $\in 3.1$ bn in 2013 to $\in 14.4$ bn in 2020 in the EU-27. Based on annual reporting, it is estimated that 75% of total revenues ($\notin 56.5$ bn) was used for climate and energy purposes during phase 3 and 72% in 2020. In practice, Member States spend more on climate change and energy than their auctioning revenues⁷⁶.



Figure 9: Auctioning revenues and reported usage (€ bn), 2013-2020, EU-27

During phase 3 the additional annual revenues from rising carbon prices were mainly spent domestically while the reported annual international spending has been fairly stable (ca \in 100-200 million/year). The latter has been mostly channelled to developing countries via multilateral funds and institutions. Figure 10 shows how the reported revenues have been spent since 2013.

⁷⁶ See SWD for overview of revenues and reported spending per year.



Figure 10: Reported domestic and international share of revenues spent on climate change and energy, 2013-2020, EU-27

Lastly, in 2020⁷⁷, Member States spent most of their reported revenues on direct support i.e. on the installation of technologies that reduce emissions (e.g. renewables).



Figure 11: Reported share per type of support spent on climate change and energy domestically (incl. planned) in 2020, EU-27

 $^{^{77}}$ In 2020 Member States reported for the first time on the type of support used domestically as per Article 5 of the Implementing Regulation (EU) 2020/1208.

NER 300 programme

The NER 300 is a large-scale funding programme for innovative low-carbon energy demonstration projects in the EU linked to renewable energy technologies and environmentally safe carbon capture and storage (CCS) on a commercial scale. The programme is funded from the monetisation of 300 m emission allowances from the New Entrants Reserve under ETS phase 3. In total, 39 projects have been awarded €2.1 bn of funding in 20 Member States. Projects are at different stages but 23 were withdrawn due to difficulties in raising sufficient equity and/or attracting additional financial support.

These withdrawals led to a release of almost $\notin 1.5$ bn. The amended NER 300 Decision allowed to reinvest $\notin 708.7$ m of unused funds through the existing financial instruments. Under the InnovFin Energy Demonstration Projects (InnovFin EDP) and the CEF Debt Instrument, both managed by the EIB, another three innovative projects on charging and energy storage, hydrogen production and distribution benefited from funding. The remaining unspent funds will be channelled to the Innovation Fund with $\notin 746.6$ m already having been transferred. This shows that the blending mechanism put in place is working efficiently with the perspective of full allocation of undisbursed funds by the end of 2022.

Innovation Fund

The Fund is financed from the auctioning of 450 m allowances between 2020 to 2030 and any unspent funds from the NER300 programme. It pools together around \in 25 bn (at a carbon price of \in 50/tonne) until 2030 and is one of the world's largest programmes for commercial demonstration of innovative low-carbon technologies in energy intensive industries, innovative renewables, energy storage, and CCUS.

In 2020, first calls for proposals attracted significant interest from companies of all sizes and from various sectors in the EU-27, Iceland and Norway. For small-scale projects, 32 were selected and invited for grant preparation for a total volume of \notin 118 m. Under the large-scale call 66 best-ranked projects (out of 311 applications) submitted complete proposals worth \notin 6 bn (against a call volume of \notin 1 bn). Of these, 15 large-scale projects were selected for Project Development Assistance (\notin 4 m).

Modernisation Fund

The Modernisation Fund, operational since 2021, is one of the key funding instruments supporting decarbonisation in 10 lower income Member States, including just transition. It is financed from the auctioning of more than 640 m ETS (2020-2030) allowances, which includes voluntary transfers from beneficiary Member States, and pools together around \in 31 bn (at a carbon price of \notin 50/tonne) until 2030.

In the first biannual disbursement cycle, six multiannual schemes worth \in 304 m are being funded in Czechia, Hungary and Poland targeting renewables, energy efficiency, smart grids, and development of the power grid and energy communities.

LIFE programme

The LIFE programme is the EU's funding instrument for the environment and climate action and co-finances projects with European added value. For 2021-2027 period the budget has been substantially increased to €5.43 bn and allocated to four sub-programmes:



Figure 12: Budget allocation for LIFE 2021-2027 (€ bn)

The number of proposals submitted under the 2020 LIFE Climate Action calls was considerably higher than in previous years. In addition, the new sub-programme Clean Energy Transition contributes directly to climate change mitigation and most of the Environment projects also bring related climate benefits.

Technical Support Instrument (TSI)

Tailored technical support for design and implementation of climate reforms continued to expand with almost one in three TSI 2021 projects supporting the EGD. Some Member States received technical support when preparing their RRPs while more than 60% of TSI 2021 projects support their implementation, including the DNSH principle, and/or the green components of their Plans. In 2021 a training on green budgeting took place and 17 Member States received support to prepare their TJTPs.

7. INTERNATIONAL CLIMATE ACTION

The EU continued to lead by example on how to achieve climate neutrality and climate resilience by 2050. In line with the Paris Agreement, the EU raised its 2030 target and submitted updated NDCs to the UNFCCC. In implementing the Paris Agreement, the EU cooperates with international partners, encourages and assists delivery of highest possible ambitions, and has shown solidarity in addressing the impacts of climate change. After the EU, over 50 other countries representing over half of the world economy have committed to net-zero emissions around mid-century, including the China, the United States and Japan. In recent months, the EU initiated new climate dialogues with India and the US, and a green alliance with Japan.

Western Balkans and the European Neighbourhood

The EU continued to support the development of long-term strategies and monitoring reporting and verification systems to help improve governance and to mobilise resources, both in the Pre-Accession and the Neighbourhood countries.

At the end of 2020, the Western Balkans' leaders committed to climate neutrality by 2050 and to reduce fossil fuel subsidies and endorsed an Economic and Investment Plan of \notin 9 bn. This funding can be used to leverage \notin 20 bn through the new Western Balkans Guarantee Facility. The Energy Community⁷⁸ intensified its work to adopt the 2030 Energy and Climate Framework, a Decarbonisation Roadmap and the Governance Regulation⁷⁹, and Renewable Energy and Energy Efficiency Directives.

Good progress in dialogue on climate issues has been made in the framework of the Union for the Mediterranean, especially with Morocco and Jordan. Eastern Partnership countries have confirmed their commitment to step up cooperation and adopted an Economic and Investment Plan in 2021. To align its policies and legislation with the EGD, Ukraine started a dedicated dialogue with the EU. The EU also supported the update of NDCs for Moldova, Georgia and Armenia through the regional project EU4Climate.

Supporting developing countries

The EU and its 27 Member States are the world's largest provider of international public climate finance and make a substantial contribution to the developed countries' collective goal to provide USD100 bn per year to support climate action in developing countries. This contribution has more than doubled since 2013 reaching almost \notin 22 bn in 2019.⁸⁰ As an example, the Global Climate Change Alliance Plus (GCCA+) initiative helped fund 80 climate resilience and NDCs preparation projects in Africa, Asia, the Caribbean and the Pacific.

The 2021 EU strategy on adaptation aims to scale up international finance to build climate resilience and promote sharing of best-practices and expertise while promoting sub-national, national and regional approaches in partner countries. The global Technical Assistance Facility was launched in 2020 to help enhance NDCs, formulate and implement national

⁷⁸ Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Georgia, Moldova, Montenegro, Serbia and Ukraine.

⁷⁹ Regulation (EU) 2018/1999.

⁸⁰ 2020 data forthcoming.

adaptation plans, land policies and practices, disaster risk reduction strategies and low-carbon/climate-neutral development strategies. In 2021, the EU outlined actions to further mainstream climate change impacts and environmental factors into humanitarian aid policy and practice⁸¹.

Finally, between 2021 and 2027 Global Europe is expected to dedicate some €28 bn to climate action by combining all EU external action programmes into one financing tool. Programming work at country, regional and thematic levels is currently underway and prioritises climate change in for example peace-building and crisis response.

⁸¹ COM(2021) 110 final.