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Accompanying the document

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

on the 8th Environment Action Programme Mid-Term Review

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1. INTRODUCTION

On 2 May 2022, the **8th environment action programme** entered into force. It sets out the EU's programme for environment and climate policy until 2030¹. Building on the European Green Deal, the 8th action programme echoes the EU's long-term vision for 2050 of living well, within planetary boundaries. The programme sets six priority objectives for 2030 (on climate mitigation and adaptation, circular economy, zero pollution, biodiversity and reducing environmental pressures) and identifies the conditions needed to achieve these objectives. Its aim is to accelerate the transition to a climate-neutral, resource-efficient economy, recognising that human well-being and prosperity depend on healthy ecosystems.

On 18 December 2023, the European Environment Agency (EEA) presented the first **monitoring report on progress towards the 8th environment action programme objectives**. The report takes stock of progress on Europe's key environment and climate goals based on 28 indicators and monitoring targets included in the dedicated monitoring framework presented by the Commission².

Under Article 5 of the 8th environment action programme, *'the Commission shall carry out a mid-term review of the progress achieved in attaining the thematic priority objectives [...], taking into consideration the status of the enabling conditions [...], and the progress made towards monitoring and assessing systemic change'*.

This staff working document accompanies and complements the Report on the mid-term review of the 8th action programme with more insights and analysis. Chapter 2 provides an analysis of the key deliverables on each specific priority objective, focusing on impacts on the ground. Chapter 3 gives an overview of progress on enablers not covered by the Report on the 8th environment action programme mid-term review. Chapter 4 presents progress towards the vision for 2050 of living well, within planetary boundaries.

Increasing resource use is the main driver of the triple planetary crisis: climate change, biodiversity loss and pollution. At global level the total amounts of materials consumption continue to rise, to reach over a half trillion tonnes of materials in the last six years, i.e. nearly as much as the entirety of the 20th century³. Extraction and processing of material resources (fossil fuels, minerals, non-metallic minerals and biomass) account for over 60% of greenhouse gas emissions (GHG), for 40% of particulate matter health related impacts and 90% of biodiversity loss and water stress⁴. While the mid-term review presents progress on each objective, meeting all 8EAP objectives requires a holistic vision to boost synergies.

2. KEY DELIVERABLES OF THIS MANDATE AND IMPACT ON THE GROUND

2.1 Climate mitigation

The EU has made substantial progress under the **European Green Deal**. The **European Climate Law**⁵, in force since July 2021, writes into law the EU's objective to become climate-neutral by 2050 and the target of reducing net domestic greenhouse gas emissions by at least

¹ Decision (EU) 2022/591.

² [EEA Report 11/23: Monitoring report on progress towards the 8th EAP objectives](#).

³ [Circularity Gap report 2024](#)

⁴ [Global Resources Outlook 2024](#)

⁵ Regulation (EU) 2021/1119 ('European Climate Law'), OJ L 243, 9.7.2021, p. 1.

55% by 2030 compared to 1990 levels⁶. This puts the EU on the path to meet Sustainable Development Goal (SDG) 13 on climate action.

In 2021, the Commission proposed a **package of climate and energy legislation** (the ‘Fit for 55’ package) to ensure that the EU policy framework is fit to achieve the higher climate target set for 2030 in a fair, cost-effective and competitive way. Parliament and Council have now adopted most of the key proposals in the package⁷ and **EU policies are now aligned with the updated 2030 target set in the European Climate Law**. Implementing the new legislation under the ‘Fit for 55’ package will enable the EU and its Member States to reduce net GHG emissions by at least 55% compared to 1990 levels by 2030⁸.

The revised **EU Emissions Trading Directive** increases the level of ambition in the system from 43% to 62% emissions reductions by 2030 compared to 2005 levels. It also extends the system to cover international maritime transport. A separate carbon pricing system will apply to fuel combustion in road transport, buildings and small-emitting sectors⁹ (ETS2) with a 42% emission reduction in 2030 compared to 2005 across the sectors covered.

The amended Effort Sharing Regulation (ESR) increased, for the sectors that it covers, the EU-level target to reduce GHG emissions from 29% to 40% by 2030 compared to 2005, which translates into updated 2030 targets for each Member State. The new Regulation on land use, land-use change and forestry (LULUCF) sets an overall EU-level objective of 310 Mt CO₂ equivalent of net removals in the LULUCF sector in 2030. It simplifies the accounting and improves the monitoring of net emissions data from the sector to improve land management. It also emphasises the need to increase nature-based carbon removals through resilient ecosystems, to restore degraded land and ecosystems, and to rewet peatlands.

To ensure the transition to climate neutrality is socially just, the EU created the new **Social Climate Fund**¹⁰ to accompany the new ETS2. The Fund will tackle the impacts of carbon pricing in new sectors and provide support for vulnerable households, micro-enterprises and transport users. Together with the Just Transition Fund to support the territories most affected by the transition, and other EU financial instruments (European Structural and Investment Fund, Recovery and Resilience Facility, etc.), they will ensure that no one is left behind. The latest legislative initiatives on the electricity market aim to empower energy consumers more. Under the Net Zero Industry Act, the Commission will also support the setting up of specialised academies for up-skilling and re-skilling workers for the sustainability transition.

In 2022 and 2023, the Commission made additional proposals to speed up the transition to climate neutrality. For example, the legislators reached a provisional agreement on the revised Fluorinated greenhouse gases (F-gases) Regulation, which will further reduce emissions from those highly potent greenhouse gases. The Commission proposed more ambitious emission reduction targets for heavy-duty vehicles. Other legislative proposals, such

⁶ Commitment made by the EU and its Member States under the Paris Agreement under its nationally determined contribution (NDC).

⁷ This includes the revised EU ETS Directive, a new ETS for buildings, road transport and fuels, the Market Stability Reserve, the Effort Sharing Regulation, CO₂ standards for cars and vans, the Land Use, Land Use Change and Forestry Regulation, the Carbon Border Adjustment Mechanism, the establishment of the Social Climate Fund, FuelEU Maritime, the Alternative Fuel Infrastructure Regulation (AFIR), ReFuel EU Aviation, the Energy Efficiency Directive and the Renewable Energy Directive. Only the proposed revised energy taxation directive is still pending agreement.

⁸ The adopted legislation is estimated to reduce net domestic GHG emissions by 57% by 2030 (compared to 1990).

⁹ CO₂ emissions from fuel combustion in industry are not covered by the current EU ETS.

¹⁰ Social Climate Fund - European Commission (europa.eu)

as revised Industrial Emissions Directive, the Carbon Removals Certification Framework, the Urban Wastewater Treatment Directive or the Nature Restoration Law, are also designed to either reduce greenhouse emissions (notably methane), increase carbon removals and/or to ensure that the EU will meet its LULUCF targets.

The Commission also put forward the REPowerEU plan with specific measures to reduce the EU's energy dependence on Russian fossil fuels, and to speed up implementation of the European Green Deal with new actions, building on the 'Fit for 55' package. To boost the competitiveness of Europe's net-zero industry and to boost innovation, in particular in green technologies, the Commission put forward a Green Deal industrial plan. The Technical Support Instrument provided tailor-made expertise to support Member States in the implementation of legislative frameworks, by example those put in place to underpin the green transition.

While good progress has been made to adopt the EU policies needed to put the **EU on a path to a net-zero economy**, recent emissions trends in the transport sector, the very slow pace of emission reductions in agriculture, and the decline of the carbon sink all raise concerns. Despite progress on green finance from private sources, significant **additional investment is needed to finance the green transition**¹¹. Specifically, action is needed to redirect finance to enable the transition of 'brown' sectors, and to finance nature restoration work, both to boost biodiversity and to increase carbon removals.

As required by the European Climate Law, in February 2024, the Commission published a Communication¹² and a detailed impact assessment on the EU's climate target for 2040. This provides greater certainty on the EU's path from the intermediate target for 2030 to the 2050 goal of net-zero emissions. The Communication recommends a 2040 target to reduce EU net greenhouse gas emissions by 90% relative to 1990 levels. The legal proposal to amend the European Climate Law to include this target and the post-2030 policy framework will be in the hands of the next Commission.

Once agreed, the 2040 target will form the basis for aligning the measures and investments needed to achieve the EU's 2030 targets on the path to climate neutrality by 2050. The 2040 target will provide a predictable direction and help keep progress on track. It will also send a strong signal to the EU's partners around the world on the need to step up global climate action. The agreed target will be the basis for the EU's new nationally determined contribution under the Paris Agreement to be submitted in 2025.

Greenhouse gas emissions

After the strong rebound in GHG gas emissions in 2021 that followed the unprecedented fall in 2020 due to the COVID-19 pandemic, **EU emissions in 2022 are estimated to have returned to the downward trend seen over the past 30 years**. According to provisional data, total EU domestic GHG emissions (excluding LULUCF and international aviation) decreased by 2.4% in 2022 compared to 2021, while GDP grew by 3.5%. This translates into a reduction of 30.4% compared to the 1990 base year (or 29% when international aviation is included)¹³. Over the same period, greenhouse gas net removals from LULUCF are estimated to have

¹¹ The Union will need to invest EUR 477 billion more per year in 2021–2030 than it did in 2011–2020 to meet its emissions-reduction targets in the energy and transport sectors. It will need to invest an additional EUR 110 billion per year to achieve its environmental objectives. Source: Commission Recommendation (EU) 2023/1425.

¹² [COM\(2024\) 63 final](#).

¹³ [COM\(2023\) 653 final, Annual Climate Action Progress Report \(2023\)](#)

increased by 14 million tonnes of CO₂ equivalent compared to 2021¹⁴. As a result, **net GHG emissions for 2022 (including LULUCF) are expected to be 32.5% below 1990 levels** (or 31.1% including international aviation).

Although the EU's domestic GHG net emissions (i.e. including LULUCF and excluding international transport) are falling steadily, **the pace of reduction needs to be three times faster than** the average annual rate achieved over the last decade. Although sizeable, this is not unprecedented. In the two years before the pandemic, emissions fell by an annual average of 120 million tonnes of CO₂ equivalent, due to progress in energy efficiency and the fast deployment of renewables. In 2022, key sectors in the EU, including energy-intensive industry, reduced their demand for energy compared to pre-pandemic levels, saving over 18% of gas compared to the five years before¹⁵.

According to EEA estimates, the EU is likely to meet its 2030 target if the 'Fit for 55' legislation is fully implemented, if Member States' updated national energy and climate plans bridge the remaining gaps (for instance to tap the potential of the circular economy), and if substantial additional action is taken in the buildings, transport and agricultural sectors. Relative to past mitigation efforts, the most **significant cuts in emissions are needed in buildings and transport**, where the pace of decarbonisation is sluggish or even moving in the opposite direction. At the same time, **action in the LULUCF sector is essential** to achieve a significant boost in carbon removals. Although it looks possible to reach the emissions cuts required from agriculture when looking at progress over the past three decades, the recent lack of significant progress shows that more needs to be done. This is why the Commission has set up a Strategic Dialogue on the future of EU agriculture to jointly shape the transition.

The EU Emission Trading System

The **EU Emissions Trading System (EU ETS) is a cornerstone of the EU's climate action**. It covers around 36% of the EU's total greenhouse emissions from electricity and heat generation, manufacturing industry and aviation within Europe¹⁶. By setting a cap on the total GHG emissions, the system ensures that these emissions decrease over time. Within the cap, allowances are distributed primarily via auctioning, which raises revenue for Member State budgets to fund climate action and energy transformation. The price of allowances is set by the market, so the ETS incentivises cost-effective emission reductions.

By 2022, the **EU ETS had helped drive down emissions from power and industry installations by 37.3% compared to 2005 levels**. These emission reductions have been largely driven by the energy sector switching from coal to gas and increasing the roll-out of renewable energy sources. However, the latest emission trends in the EU ETS also reflect the impacts of the COVID-19 pandemic and the energy crisis.

The **EU ETS has raised over EUR 152 billion in auction revenues** that Member States have mainly used to fund projects in renewable energy, energy efficiency and low-emission transport. In the wake of the energy crisis, Member States have also used their ETS revenues to tackle the negative impacts on consumers and industries.

¹⁴ Provisional 2022 data may indicate a break to the downward trend in the LULUCF sink observed in recent years. However, the assessment reflects the uncertainty of the data and will possibly be subject to larger revisions.

¹⁵ 5-year average compared with gas consumption between August 2022 and June 2023 (State of Energy Union Report 2023).

¹⁶ Including departing flights to Switzerland and the United Kingdom.

The EU ETS was revised under the ‘Fit for 55’ package to bring down emissions faster and across more sectors. The European Parliament and Member States in the Council agreed to tighten the cap on GHG emissions and to extend the system to cover emissions from maritime transport. Reducing the free allocation will help further reduce emissions from manufacturing industry and aviation. At the same time, it leverages more resources to fund decarbonisation in ETS sectors. The revision commits Member States to using all ETS revenue (or an equivalent) to fund climate action, energy transformation and to tackle the social challenges of carbon pricing. It also increases the size of the Innovation and Modernisation Funds.

The revised EU ETS entered into force on 5 June 2023, with most changes taking effect from 1 January 2024. Work on the implementing legislation is ongoing. More details on how the EU ETS performed in 2022 are available in the Carbon Market Report 2023¹⁷.

Effort sharing emissions

The EU's **effort sharing legislation** covers GHG emissions from domestic transport (excluding CO₂ emissions from aviation), buildings, agriculture, small industry and waste. It **covers around 60% of the EU's domestic emissions**. The effort sharing legislation sets binding national targets to reduce emissions in these sectors compared to 2005 levels, firstly under the Effort Sharing Decision¹⁸ (ESD) covering the period 2013-2020 and then under the Effort Sharing Regulation¹⁹ (ESR) covering the period 2021-2030.

From 2013 to 2020, all Member States met their effort sharing obligations every year. The EU exceeded its 2020 emission reductions target by over six percentage points. EU-27 emissions covered by the ESD were 16.3% lower in 2020 than they were in 2005²⁰.

Based on approximated data, emissions from the effort sharing sectors in 2022 were 3% lower than in 2021. Emissions fell in particular in the buildings sector, by over 9% compared to 2021. Small industry achieved the second largest emission reduction with a decrease of almost 6% compared to 2021. The transport sector is the largest sector under the ESR, generating over one third of all effort sharing emissions, and the only one where emissions increased, by over 2% from 2021 to 2022.

In April 2023, the ESR was amended to reflect the EU's higher target for 2030. This increased the ESR EU-wide target to reduce emissions from 29% (for EU-27) to 40% by 2030 compared to 2005 levels. The EU's overall ESR target was translated into higher national emission reduction targets by 2030 and more ambitious greenhouse gas emission limits for 2023-2030. The amendment also changed some of the scope for flexibility available to Member States to meet their annual GHG emission limits and targets and it strengthened other provisions.

The land use, land-use change and forestry sector

The **land use, land-use change, and forestry (LULUCF)** sector plays a significant role in achieving the EU's climate neutrality goal. In the EU, the sector **absorbs more greenhouse gases than it emits**, removing significant volumes of carbon from the atmosphere and acting as a carbon sink. The sector also provides biomaterials that substitute fossil or carbon-intensive materials, which is equally important in the transition to a climate-neutral economy.

¹⁷ [COM\(2023\) 654 final](#)

¹⁸ [Decision No 406/2009/EC](#).

¹⁹ Regulation (EU) 2018/842 of 30 May 2018, as amended by Regulation (EU) 2023/857 of 19 April 2023.

²⁰ EU-27 emissions were 7.2% lower in 2020 than they were in 2013.

However, **carbon removals have fallen at a worrying speed in recent years**. In 2021, the EU's carbon sink achieved a net removal of -230 Mt CO₂-eq²¹. The downward trend in recent years persists, and the size of the carbon sink is continuing to decrease, though approximated data indicate that the sink is estimated to have increased to -244 Mt CO₂-eq in 2022.

This trend is mostly due to a **decrease in forest-related removals, triggered mainly by an increase in harvesting**. To a lesser extent, it is also caused by ageing forests storing less carbon in certain Member States, due to lower growth rates. Climate change is having an increasing impact too. The rising frequency and severity of disturbances such as wind throw, insect and fungus outbreaks, forest fires and droughts are undermining the role of forests as a carbon sink and in some cases turned them temporarily into carbon sources. There are many indications that, due to climate change, the future robustness of Europe's forest sinks is far from guaranteed. The slowing rate of reforestation has also contributed to the fall in removals, but to a smaller extent.

At EU level, cropland, grassland, wetlands and settlements are mainly sources of emissions from the LULUCF sector, with managed organic soils generating particularly high emissions. Action is needed in areas such as peatlands preservation and restoration to increase the volume of removals in this important ecosystem. Similarly, it is essential to make greater use of nature-based solutions, not only for adaptation to climate change, but also for mitigation, as underlined by the latest IPCC assessment report²².

The EEA estimates that it is very unlikely that EU will meet its 2030 target for GHG emissions from the LULUCF sector.

2.2 Climate adaptation

Action on adaptation to climate change has **advanced significantly under the current Commission's term of office**. For the first time, there is now **a legal obligation in the EU to adapt** to the impacts of climate change. The 2021 Climate Law requires the EU and its Member States to make continuous progress on reducing vulnerability to climate impacts, increasing resilience and building adaptive capacity. With the physical impacts of climate change already manifesting at the worst end of the spectrum of what scientists anticipated and set to intensify even in the best-case scenario, building resilience is an ever more pressing concern.

The Commission also adopted a new **adaptation strategy** in 2021. It outlines a long-term vision for the EU to become a climate-resilient society, fully adapted to the unavoidable impacts of climate change by 2050. It pursues three objectives alongside integrating international climate action into its framework and proposes a range of actions to meet the objectives. These are **smarter** adaptation to improve knowledge and manage uncertainty; **more systemic** adaptation that supports policy development at all levels and all related policy fields; and **faster** adaptation across the board.

EU-level progress on adaptation to date

Two years after adoption of the Climate Law, the Commission assessed progress in implementing the Law, in line with the requirements. It published its assessment of EU-level progress in October 2023²³.

²¹ 2023 submission of GHGI reported data on LULUCF, as reported for the entire sector scope.

²² [IPCC, 2022: Summary for Policymakers](#).

²³ [COM\(2023\) 653 final, Annual Climate Action Progress Report \(2023\)](#).

Implementing the adaptation strategy has involved an exceptionally broad range of policies to date. In some areas, such as health policy, **adaptation is being mainstreamed** at a rapid rate. In others, **awareness of the impacts of climate change has increased**, providing a good basis for the progress needed to ensure that all policies exposed to climate risks reflect this properly.

To improve knowledge and manage uncertainty, the Commission and the EEA have expanded the content and partners of the **European Climate and Health Observatory** to help build resilience to the impacts of climate change on human health. New calls for projects under Horizon Europe have been launched to **close knowledge gaps** on climate impacts and resilience and the Risk Data Hub is under development. The Commission is working to expand the content and impact of the Climate-ADAPT knowledge exchange platform.

The first ever **European Climate Risk Assessment** has been published. **Climate Resilience Dialogues** have brought together policymakers, insurers, risk managers, consumers, city associations and other stakeholders to discuss and identify possible actions on insurance and investing in adaptation to help narrow the climate protection gap.

The **European Drought Observatory** promotes the sustainable use of freshwater by sharing knowledge. To tackle the issue of water scarcity, six times more water could be reused than current levels, facilitated amongst others by the Water Reuse Regulation that entered into force in 2023. The **European Flood Awareness System** aims to increase preparedness, but recent, dramatic floodings episodes in the EU show that there is untapped potential to improve uptake at national and local level, in better synergy with Member States' work to prepare their flood risk management plans by the set deadline.

Mindful of the broader need to secure sustainable water management, the Commission has stepped up work to integrate adaptation action systematically in sectoral strategies and plans, with updated **guidelines on Member State adaptation strategies and plans** and complementary support from the **Technical Support Instrument**, including under the 2023 flagship project on adaptation.

In 2021, the Commission published **technical guidance on climate proofing infrastructure** projects and, in 2023, on enhancing the climate resilience of buildings. Climate proofing applies to infrastructure and buildings funded by the EU budget.

The **European Climate Pact**, a stakeholder platform launched by the Commission to empower people to act and advocate on climate matters, runs adaptation and mitigation initiatives. The Policy Support Facility under the **EU Covenant of Mayors** has involved over a thousand people over the past year and a half, including 350 municipalities, in national workshops. This work has led to eight cities developing peer-to-peer exchanges on climate action and 37 adaptation measures implemented.

Good progress has been made in implementing the **EU Mission on Adaptation to Climate Change**, designed to speed up innovative adaptation action at local and regional levels. Over 300 regions and communities covering some 40% of the EU have signed up to the Mission Charter and committed to work together to accelerate action to achieve climate resilience. The Adaptation Community of Practice is live, and the technical support facility is operational.

Climate resilience as an issue is now far **more visible** across EU policies than it was a few years ago. Additional work has been carried out to include adaptation objectives in legislative proposals where resilience to climate change (or risks interacting with climate impacts) were not the primary objectives. For example, the proposal to amend the Budgetary Framework Directive, as part of the economic governance review, includes reporting requirements for

Member States on macro-fiscal risks from climate change and on disaster and climate-related contingent liabilities. Similarly, the proposal to revise the Urban Wastewater Treatment Directive included measures to tackle the overflow of sewage systems caused by flash floods, likely to become more intense and frequent across Europe due to the changing climate. Implementation will need to continue, building on measures initiated under the adaptation strategy.

The Commission now also requires impact assessments to carry out a **consistency check against the climate adaptation objectives**, which should be done systematically, covering both emission reduction and adaptation objectives.

Member State progress to date on adaptation

The competence to act for better resilience to climate impacts and **the ownership of risk does not rest purely at the European level**. Action at Member State level greatly determines the impact, both in terms of vulnerability and resilience, and of our capacity to adapt. Member States often give responsibility for adaptation action to local government with, for example, significant power over spatial and regional planning. However, national governments tend to bear most of the cost of recovery and reconstruction that falls on the public sector after climate-linked disasters. Member States may also call on the EU Solidarity and Emergency Aid Reserve, which is at risk of being exhausted earlier and earlier in the year as the scale of disasters increases. In just two years, requests for assistance from the EU Civil Protection Mechanism increased by 400%.

In December 2023, the European Commission issued an assessment of national progress on adaptation²⁴ and recommendations to the Member States²⁵. The most common acute climate hazards in the EU include heatwaves, droughts, floods, heavy rainfall and wildfires. Changing temperature, rainfall patterns, sea-level rise and hydrological variability are frequently identified as chronic hazards. Member States report health, agriculture, forestry, biodiversity, energy and water management as the **sectors most affected by climate threats** in the EU.

Almost all Member States have conducted **climate risk assessments**. However, robust comprehensive climate risk assessments covering more than five sectors are an exception rather than a rule. All Member States have national adaptation strategies and/or plans, many of which have recently been updated or are currently under revision.

The Member States have also put in place **governance structures** and mechanisms for adaptation, varying greatly in terms of their institutional arrangements. Eight Member States have embedded elements of their adaptation policy systems in domestic legal frameworks. The prime minister's office or another body with strong political authority across all sectoral policies concerned is rarely involved in managing inter-ministerial coordination on adaptation. **Monitoring, reporting and evaluation mechanisms** are lacking in several Member States.

Member States are making progress in **implementing** adaptation measures, but significant gaps remain in assessing the investment needs for adaptation (at national and EU level), and most countries **lack dedicated budgets** to finance this action. Progress remains unclear on **adaptive capacity**.

²⁴ [SWD \(2023\) 932](#).

²⁵ [European Climate Law - Recommendations to Member States](#)

Nature-based solutions are included only to a limited extent at strategic level and in policy documents, especially sectoral strategies and plans. This may hamper their more systemic use and deployment for climate adaptation.

The private sector also has an important role to play. Improving climate resilience and adaptive capacities to climate change requires concerted efforts by all sectors of the economy and society, aided by policy coherence and consistency in all related legislation and policies.

Outlook to 2030

It is challenging to measure the effectiveness and impact of adaptation policies. There are some **good examples** of innovative indicators being developed, though for the moment their geographical and timeframe coverage is narrow. One such example is a shift in heat mortality thresholds, i.e. the temperature at which deaths increase rapidly in a given location. In Seville, it has increased from 40°C in 2000-2009 to 41.5 °C. This suggests a degree of successful adaptation, but it is not possible to identify how each type of adaptation measure contributes specifically to this outcome.

The 8th environmental action programme tracks climate adaptation by looking at changes to climate-related economic losses and the impacts of drought on ecosystems. The former is a widely used indicator for adaptation. The advantage is good coverage across all Member States and an available time-series, and the disadvantage is the imperfections in the data captured. Building resilience reduces economic losses relative to no action on adaptation. On the other hand, losses may outpace the beneficial effects of adaptation if the climate-related hazards are intensifying even faster. There have also been historically high degrees of variability from year to year. The data is therefore to be interpreted with these considerations in mind.

The EEA estimates that **the prospect of monetary losses from climate-related events falling over the coming years is unlikely but uncertain.** Extreme events are projected to become even more intense, but full implementation of adaptation strategies can limit the costs.

Tracking the **impact of drought**²⁶ on health and ecosystems complements the picture by giving a proxy for nature's ability to provide a wide range of environmental, social and economic benefits. The health of ecosystems links to a range of values²⁷ and to human well-being, and is itself impacted by climate-linked hazards, above all drought. The productivity of vegetation is linked to the EU's ability to achieve its climate change mitigation objective through carbon sequestration, to the contribution of vegetated land to disaster risk reduction, to implementation of the EU's biodiversity and soil strategies and also to the contribution of natural capital to the economy at large, viable food production and other long-term objectives.

The EEA also estimates that **the area affected by drought is unlikely to get smaller in the coming years, although this too is uncertain.** Similarly to economic losses related to climate-linked events, the outcome depends to a high degree on the success in implementing adaptation strategies and more broadly, the quality and implementation of adaptation policies.

²⁶ [EDO Home - European Drought Observatory - JRC European Commission \(europa.eu\)](#)

²⁷ [Methodological assessment regarding the diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services | IPBES secretariat](#)

2.3 A clean circular economy

The **second circular economy action plan**²⁸, adopted in 2020, responds to the goal of transformative change set by the European Green Deal and to SDG 12 on responsible consumption and production. It draws on several policy instruments to reach the 8th environment action programme priority objective of *‘advancing towards an economy that gives back to the planet more than it takes, where **growth is regenerative, resources are used efficiently and sustainably, and the waste hierarchy is applied**’*.

While the first circular economy action plan, adopted in 2015, focused on increasing the ambition of waste legislation and a comprehensive plastics strategy, the second action plan focuses on **earlier stages in the product life-cycle**, in particular the design stage. It also focuses on reducing waste generation, strengthening producer responsibility and improving waste management, with measures to support businesses, cities and regions and citizens in this transition.

Other EU-level actions complement the measures set out in the second action plan. For example, the Sustainable Finance Taxonomy sets technical screening criteria to determine a ‘substantial contribution to circular economy’ in several areas of economic activity. Funding programmes, including the Recovery and Resilience Facility and the New European Bauhaus, have supported circular initiatives, in addition to long-standing financing programmes.

A sustainable product policy framework

The second circular economy action plan announces a series of initiatives to **make sustainable products the norm** in the EU, to empower consumers to make sustainable choices and to foster resource efficiency in production processes.

The cornerstone of the policy framework is the **new Ecodesign for Sustainable Products Regulation**²⁹. The Regulation establishes a process for setting design requirements for products placed on the EU single market, whether produced inside or outside the EU, and in compliance with international trade rules.

The Regulation extends the scope of the current Ecodesign Directive, which covers only energy-related products, to a wider range of products. It will bring in **design requirements for specific product categories to make them last longer, be reusable, repairable and recyclable, as well as sustainable, energy and resource efficient**. It enables restrictions on substances of concern that inhibit circularity, and requirements for carbon and environmental footprinting and recycled content. In addition to physical design requirements, a **Digital Product Passport** will ensure relevant data is made available to consumers, businesses along the value chain (such as repairers and recyclers) and to market surveillance and customs authorities.

The Regulation also brings in a **ban on the destruction of unsold textiles and footwear**. It empowers the Commission to bring in similar bans for other categories of unsold products in future if evidence demonstrates the need for action.

Lastly, the Commission will be able to lay down **mandatory green public procurement rules** for contracting authorities in the EU to steer public purchasing towards more sustainable products.

²⁸ [COM\(2020\) 98](#).

²⁹ [COM\(2022\)142 final](#). Provisional political agreement reached on 5.12.2023, publication in the Official Journal expected in the course of 2024. The agreed text is public and can be found [here](#).

The Commission tabled three pieces of legislation **enabling consumers to make more sustainable choices**. The aim of the proposal for a Directive to Empower Consumers for the Green Transition³⁰ is to enhance consumer rights by amending the Unfair Commercial Practices Directive and the Consumer Rights Directive. The amendments inform consumers of how long a product is designed to last, and how (if at all) it can be repaired. It strengthens consumer protection against untrustworthy or false environmental claims, effectively banning ‘greenwashing’.

The proposal for a Green Claims Directive³¹ complements this work by setting common criteria to guard against greenwashing and misleading environmental claims. The Commission also adopted a legislative proposal³² to ensure that more products are repaired within the legal guarantee, and that consumers have easier and cheaper options to repair products that are technically repairable (when the legal guarantee has expired or when the good is no longer functional as a result of wear and tear).

The second circular economy action plan also proposed actions to improve the resource efficiency of production processes. The **revised Industrial Emissions Directive** will contribute to this objective by including resource use performance levels, as well as lower chemical pollution through requirements to reduce the use of toxic chemicals during industrial processes. Industrial symbiosis, where the waste of a company is used by another company as a resource, was also supported thanks to the EU-funded programme, CircLean³³ aimed at creating a European network of businesses and SMEs for industrial symbiosis.

Key value chains

Under the second circular economy action plan, the Commission has proposed **comprehensive value chain strategies and targeted action for high-impact activities**.

Key value chains	Actions
Electronics and ICT	Ecodesign requirements and an energy label will apply to smartphones and tablets as of 2025, promoting the use of fewer natural resources and greater energy efficiency. Legislation on a common charger will contribute as of 2024 to reducing electronic waste in the EU. Finally, the Commission has issued recommendations to the Member States on the return of used and waste mobile phones, tablets and laptops ³⁴ .
Batteries and vehicles	A new regulation on sustainable batteries ³⁵ will ensure that batteries have a low carbon footprint, use minimal harmful substances, need less raw materials from non-EU countries, and are collected, reused and recycled to a high degree in Europe. The Commission recently tabled a proposal for a regulation to improve the circularity of the automotive sector, covering the design, production and end-of-life processing of vehicles.
Packaging	New EU-wide rules ³⁶ on packaging aim to tackle this source of waste by preventing the generation of packaging waste, by making all packaging

³⁰ COM/2022/143 final, 30.3.2022. Publication in the Official Journal in the course of 2024.

³¹ [COM\(2023\) 166 final](#) in negotiation with co-legislators.

³² [COM\(2023\) 155 final](#)

³³ <https://circlean-symbiosis.eu/>

³⁴ [Commission Regulation \(EU\) 2023/1670](#), [Directive 2014/53/EU](#) and [COM Recommendation \(EU\) 2023/2585](#).

³⁵ [Regulation \(EU\) 2023/1542](#) and [COM\(2023\) 451 final](#).

³⁶ [COM\(2022\) 677 final](#).

	on the EU market recyclable in an economically viable way by 2030, and by increasing the use of recycled plastics in packaging through mandatory targets.
Plastics	The policy framework on the sourcing, labelling and use of biobased plastics and the use of biodegradable and compostable plastics aims to clarify where these plastics can bring genuine environmental benefits. In 2023, the European Commission adopted a REACH restriction on microplastics intentionally added to products and a proposal for a regulation ³⁷ on preventing plastic pellet losses to the environment. These actions will directly contribute to reaching the 30% reduction target for microplastic releases set out in the zero pollution action plan.
Textiles	The EU strategy for sustainable and circular textiles ³⁸ sets a vision for this sector by 2030, building upon the application of the ESPR to textiles, including Digital Products Passports, upon the establishment of harmonised EPR requirements in the recent targeted revision of the Waste Framework Directive, and the review of the Textile Labelling Regulation. The strategy also calls on businesses and consumers to make fast fashion go out of fashion.
Construction and buildings	The transformative change of this sector started with the launch of the Renovation Wave. It continued with the proposal to revise the Construction Products Regulation and the transition pathway of this ecosystem ³⁹ .
Food, water and nutrients, for a circular bioeconomy	The second circular economy action plan also targeted the circular use of renewable resources, in line with the bioeconomy strategy. Efforts focused on setting an EU-wide food waste prevention target, which was integrated in the proposed revision of the Waste Framework Directive in 2023 ⁴⁰ . Work will continue to reduce nutrient losses and to increase nutrient recovery (nitrogen & phosphorus). An ongoing evaluation of the Nitrates Directive will also look at whether it sufficiently promotes the recycling of nutrients from various sources.

Less waste, more value

Waste policies were pivotal to the transformation proposed by the second action plan, as they have been driving improvements in the EU since 1970. The agenda sketched out in 2020 was built on reaping the contribution of the Ecodesign for Sustainable Products Regulation and other circular economy instruments to help **prevent waste**. The Extended Producer Responsibility schemes are key to achieving this, and they have been applied to other areas such as textiles⁴¹.

The Commission has also revised key pieces of legislation to make them fit to the **circular economy in the digital age** in critical areas such as batteries, end-of-life vehicles or packaging.

³⁷ COM(2022) 682 final, [COM Regulation \(EU\) 2023/2055](#) and [COM\(2023\) 645 final](#).

³⁸ [COM\(2022\) 141](#).

³⁹ COM(2020) 662 final and [COM\(2022\) 144 final](#).

⁴⁰ [COM\(2023\) 420 final](#).

⁴¹ [COM\(2023\) 420 final](#).

On packaging, the Commission has also brought in measures such as clear labels to facilitate the disposal for consumers and to improve collection and recycling.

The second action plan sought to make ‘**recycled in the EU**’ a **sign of quality** recycling and recycled materials. In line with the goal of zero pollution, the Commission has worked to achieve clean recycling cycles, for instance, minimising the presence in recycled materials of substances that pose problems to health or the environment. The Commission has prioritised work on end-of-waste criteria for certain materials⁴², starting with plastics and textiles.

These actions aim to reduce waste generation and improve waste recycling, which should equip the EU to recycle waste and **limit exports of waste** to other countries. To reach these goals, the revised Waste Shipment Regulation⁴³ brought in measures to reduce shipments of problematic waste to outside the EU, update shipment procedures to reflect the objectives of the circular economy and improve enforcement within EU borders.

Managing critical raw materials is a good example of the importance of effective waste policies in boosting the EU's supply autonomy. In March 2023, the European Commission proposed the Critical Raw Material Act⁴⁴ to ensure the secure and sustainable supply and sustainable recovery of critical raw materials. It proposes a capacity target of at least 15% of the EU's annual consumption of critical raw materials from recycling.

Helping Member States and businesses unlock the benefits of the circular economy

The Commission has encouraged **Member States to develop their own strategies** for promoting the circular economy and 23 have already done so. The Environmental Implementation Reports and the European Semester process of macroeconomic coordination are guiding national approaches, funded by the Recovery and Resilience Facility, the Technical Support Instrument and other EU funding programmes. It is estimated that of the EUR 282 billion in total environmental expenditure under the current EU multiannual budget and the Recovery and Resilience Facility combined, almost EUR 17 billion (5.9%) is allocated to action on the circular economy.

The European Circular Economy **Stakeholder Platform**⁴⁵, a joint initiative by the Commission and the European Economic and Social Committee, continued to bring together the circular economy community to exchange good practices and discuss how best to support the transition.

Leading action at global level

EU action has also **promoted the circular economy at global level**. Launched and supported by the EU, the Global Alliance on Circular Economy and Resource Efficiency aims to accelerate the global transition, in particular through more coordinated action on priority areas such as textiles. The EU is paving the way for a new global agreement on plastics, to prevent plastic pollution throughout the entire plastics lifecycle. The circular economy is one of the pillars of bilateral and regional outreach/dialogues with third countries.

The European Commission also joined the Latin America and Caribbean Circular Economy Coalition and African Circular Economy Alliance. In multilateral fora, the EU has put forward resolutions adopted at the 4th, 5th and 6th session of the UN Environment Assembly.

⁴² <https://publications.jrc.ec.europa.eu/repository/handle/JRC128647>

⁴³ [COM\(2021\) 709 final](#).

⁴⁴ [COM\(2023\) 160 final](#).

⁴⁵ <https://circulareconomy.europa.eu/platform/en>

Progress and outlook to the 2030 targets

The indicators assessed in the EEA 8th environment action programme monitoring report show that it is still too early to see progress on the ground. According to the EEA, it is unlikely that the EU will achieve a significant reduction of its consumption and material footprint and double circular material use rate by 2030. Similarly, it is unlikely that the EU will reach its waste legislative targets⁴⁶. The EU is still largely dependent on imported materials, especially critical raw materials. Faster progress on circularity will boost EU competitiveness and open strategic autonomy. The latest trends in the revised Circular Economy Monitoring Framework⁴⁷, including indicators on material footprint and consumption footprint, also confirm that the EU is far off the targets set in the second circular economy action plan.

EU production has become more resource-efficient, with **resource productivity** having increased by around 35% since 2000. However, the EU's **material footprint** has also increased in the last decade, reaching 14.8 tonnes in 2022⁴⁸.

Overall, the volume of **waste generated** (by households and economic activities) has fallen by 3% since 2010 and amounted to 2.15 billion tonnes in 2020, while the amount of residual municipal waste generated each year has stabilised at about 113 million tonnes over the last five years⁴⁹, showing limited progress on the waste reduction objectives set out in the second action plan and the zero pollution action plan⁵⁰. Some specific waste streams increased: **municipal waste** increased by 2% between 2010 and 2022 and reached 513 kg per capita.

Food waste is stable but very high, amounting to 131 kg per capita (59 million tonnes of food waste) in 2021. EU **packaging waste** increased by 20% in the last decade, to reach 189 kg per person in 2021 (84 million tonnes). In particular, **plastic packaging waste**, which represents 19% of EU packaging waste, increased by almost 27%. In 2021, each person living in the EU generated an average of around 36 kg of plastic packaging waste. The biggest increase happened between 2020 and 2021, as an effect of the COVID-19 pandemic: in 2021 each European generated on average almost 11 kg more packaging waste than they did in 2020.

Generally speaking, the EU is **managing waste** better in terms of the waste hierarchy, but wide differences persist between Member States and major efforts are needed to improve the management of some waste streams, such as plastics, biowaste, textile and food waste. Over the last decade, the EU's **recycling rate for municipal waste** increased by around 10 percentage points to reach 49% in 2021, and **for plastic packaging waste** by 4 percentage points to 40% in 2021. The **recycling rate for overall packaging waste** was stable at 64%. The latest figures show that in 2021, some 81% of **collected waste electrical and electronic equipment is either reused or recycled** in the EU, stable since 2012.

Recycled materials only met 11.5% of EU demand for materials in 2022, only half a percentage point more than in 2012. This is higher than the global circularity rate of 7.2%⁵¹. The ratio of secondary critical raw materials is still low or negligible. The **end-of-life recycling input rates** reach 16% for nickel and 22% for cobalt, both raw materials used in batteries. For

⁴⁶ See also [COM\(2023\) 304 final](#).

⁴⁷ [COM\(2023\) 306 final](#) and [SWD\(2023\) 306 final](#). The indicators presented in this section are included in the EU circular economy monitoring framework and data are available on: [Monitoring framework - Eurostat \(europa.eu\)](#)

⁴⁸ Data quoted in this section are available in the EU circular economy monitoring framework, hosted by Eurostat: [Monitoring framework - Eurostat \(europa.eu\)](#)

⁴⁹ EEA, <https://www.eea.europa.eu/publications/reaching-2030s-residual-municipal-waste>

⁵⁰ Target 6 of the zero pollution action plan.

⁵¹ Circularity gap report 2024: <https://www.circularity-gap.world/2024> [CGR 2024 \(circularity-gap.world\)](#)

many specialty metals and rare-earth elements such as lithium, gallium and neodymium, the end-of-life recycling input rate is around 1%.

In 2021, the EU was overall a **net importer of recyclable raw materials**. **Trade in waste in the EU** increased by around 40% between 2004 and 2021⁵², enabling business to reap the benefits of the EU's internal market for secondary raw materials.

Optimised material use significantly reduces the **EU's dependency on imported materials**, which was around 22% in 2022, up slightly since 2000. The highest levels of dependency are on fossil-energy materials, including plastics (71% dependency) and metal ore (52%). For critical raw materials (like cobalt for batteries used in electric vehicles and silicon for solar panels), the EU relies on imports to a large extent⁵³. For refined rare-earth elements and refined magnesium, the EU is fully dependent on imports from China⁵⁴.

The main sectors in the circular economy have grown in recent years, boosting jobs and EU competitiveness. In 2021 there were **4.3 million jobs** in these sectors, up 11% since 2015, with an **added value of around EUR 299 billion**, up 27% since 2015.

The second action plan proposed a forward-looking and ambitious legislative agenda, which goes beyond waste management. It contains action on waste generation and unsustainable consumption trends, also in key value chains. It prioritises the circular economy for innovation funding and private investment. To address the findings of the EEA monitoring report on progress towards the 8th environment action programme objectives, it will be critical for the public authorities and businesses to take joint implementation action and to keep the issue high on the EU policy agenda for the next Commission's term of office.

2.4 Zero pollution

Clean air, clean water and clean soils are preconditions for life. Pollution threatens well-being and is one of the main drivers of biodiversity loss. It generates significant economic costs for society, causes premature deaths, many other physical and mental health effects and reduces ecosystem services such as carbon sequestration and decontamination.

The European Green Deal took action on pollution to the next level by setting the goal of **zero pollution for a toxic-free environment**. This became the priority objective on zero pollution in the 8th environment action programme, further developed in the **zero pollution action plan**⁵⁵. The plan outlines the long-term vision that *'by 2050 air, water and soil pollution [are] to be reduced to levels no longer considered harmful to health and natural ecosystems, that respect the boundaries with which our planet can cope, thereby creating a toxic-free environment.'*⁵⁶ It helps the EU meeting several SDGs, in particular SDG 3 on good health and well-being, SDG 6 on clean water and sanitation and SDG 11 on sustainable cities and communities,

In addition, the action plan⁵⁷ sets six key targets, that **by 2030 the EU should reduce**:

1. *by more than 55% the health impacts (premature deaths) of air pollution;*
2. *by 30% the share of people chronically disturbed by transport noise;*
3. *by 25% the EU ecosystems where air pollution threatens biodiversity;*

⁵² In particular for plastics, paper, cardboard, copper, aluminium, nickel and precious metals.

⁵³ Eurostat [[cei_gsr020](#)].

⁵⁴ <https://rmis.jrc.ec.europa.eu/eu-critical-raw-materials>

⁵⁵ [Zero pollution action plan - European Commission \(europa.eu\)](#)

⁵⁶ This is in line with priority objective in Article 2.1 of the 8th environment action programme.

⁵⁷ [COM\(2021\) 400](#).

4. *by 50% nutrient losses, the use and risk of chemical pesticides, the use of the more hazardous ones, and the sale of antimicrobials for farmed animals and in aquaculture;*
5. *by 50% plastic litter at sea and by 30% microplastics released into the environment;*
6. *total waste generation significantly and residual municipal waste by 50%.*

The ‘**chemicals strategy for sustainability**’⁵⁸ has corresponding objectives focused on chemical pollution. Both the zero pollution action plan and the chemicals strategy establish a clear hierarchy whereby the priority should always be to prevent pollution (alongside the precautionary principle and the polluter pays principle).

The **action plan** entitled ‘**Towards Zero Pollution for Air, Water and Soil**’⁵⁹ sets out 9 flagship initiatives and 33 actions to progress on these 2030 and 2050 objectives. The **chemicals strategy for sustainability** outlines over 80 actions. Most of these flagship initiatives and actions have been completed or are at an advance stage of implementation⁶⁰.

In addition, there were also many specific **actions on preventing and reducing pollution** taken under other strategies⁶¹ under the European Green Deal. Once adopted and implemented, they will make a significant contribution to progress on the goal of zero pollution for a toxic-free environment.

The actions are based on an **integrated approach to pollution** in air, water and the soil. They mostly tackle the impacts of pollution on health and/or biodiversity or seek to reduce pollution and waste as a driver for the circular economy.

Under the heading on ‘**zero pollution & health**’, the Commission has set out a number of initiatives. The revised Ambient Air Quality Directives⁶² aims to further improve air quality and align EU air quality standards more closely with the recommendations of the World Health Organization (WHO). The goal is to align standards with the WHO air quality guidelines by 2050 at the latest to better protect people’s health and well-being (e.g. to further reduce premature deaths).

Other important legislative work includes the revision of the Regulation on classification, labelling and packaging of chemicals⁶³, the proposals on ‘one substance, one assessment’⁶⁴, the revision of the Mercury Regulation⁶⁵ and a new Regulation on EURO7 for vehicle emissions⁶⁶; there was preparatory work for the revision of EU rules on food contact materials⁶⁷. This work goes hand in hand with the agreements to reach climate neutrality by 2050 and legislation to reduce greenhouse gas emissions by 2030 as set out in the ‘Fit for 55’ package, such as the proposal for a new Energy Efficiency Directive, the revised Renewable Energy Directive and standards for certain polluting products under the energy efficient products legislation.

⁵⁸ [COM\(2020\) 667](#).

⁵⁹ [COM\(2021\) 400](#).

⁶⁰ See the [zero pollution action tracker](#) and the [chemicals strategy action tracker](#).

⁶¹ E.g. the farm to fork strategy, the circular economy action plan, the biodiversity strategy and the beating cancer action plan (see details in [COM\(2022\) 674](#)).

⁶² [COM\(2022\) 542 final/2](#).

⁶³ [COM\(2022\) 748 final](#).

⁶⁴ See: https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6413. [COM\(2023\) 779 final](#), [COM\(2023\) 783 final](#) and [COM \(2023\) 781 final](#).

⁶⁵ [COM\(2023\)395](#).

⁶⁶ [COM\(2022\) 586](#).

⁶⁷ https://food.ec.europa.eu/safety/chemical-safety/food-contact-materials/revision-eu-rules_en

Under the heading ‘**zero pollution & biodiversity**’, the zero pollution policy package included two water initiatives, the revised Urban Wastewater Treatment Directive⁶⁸ and an update of the lists of surface and groundwater pollutants⁶⁹. Marine pollution from underwater noise and marine litter is tackled by setting EU-wide threshold values, which were set recently under the Marine Strategy Framework Directive⁷⁰. In addition, the Commission has proposed a number of measures to better protect biodiversity from pollution, mainly as part of its biodiversity and ‘farm to fork’ strategies (e.g. related to nutrients and antimicrobials) and a bespoke soil strategy with the centrepiece being a new proposal on soil monitoring and resilience⁷¹. Other important contributions will come through the strategic plans under the common agricultural policy⁷² or the pharmaceuticals strategy⁷³. The Commission continues to encourage the use of integrated pest management and improved data collection on pesticide use⁷⁴.

Under the heading ‘**zero pollution & circular economy**’, the Commission highlights the need to have a clean and circular economy in Europe. The second circular economy action plan aims to make production and consumption systems safer and more sustainable (see the section on the circular economy). The revised Industrial Emissions Directive⁷⁵ and the associated Industrial Emissions Portal⁷⁶ will substantively contribute to reducing pollutant emissions from the EU’s largest and most polluting industrial installations, while supporting EU industry in the shift to a decarbonised, zero-pollution and circular economy.

In addition, **non-legislative action** will be important to implement this priority objective on pollution. The recommendations on safe and sustainable by design or the fitness check for the polluter pays principle are some examples of the work that can have systemic effects on the goal of zero pollution. An evaluation of the Marine Strategy Framework Directive is ongoing and should be completed in the second quarter of 2024, in preparation of a possible review of the Directive.

At the same time, the Commission has stepped up its **implementation and enforcement action**, as laid down in its communications⁷⁷, in particular via infringement procedures on Member States’ obligations under zero pollution legislation. End 2023, infringements related to zero pollution legislation made up 48% of all environmental infringements⁷⁸, mainly breaches of the clean air legislation (Ambient Air Quality Directives and National Emission Reduction Commitments Directive) and the Urban Wastewater Treatment Directive⁷⁹.

Particular efforts were made to **assist Member States in the implementation process** and to integrate zero pollution into other policy areas, e.g. policies to reduce noise or marine pollution

⁶⁸ [COM\(2022\) 541 final](#)

⁶⁹ [COM\(2022\) 540 final](#)

⁷⁰ See action 12 under https://environment.ec.europa.eu/strategy/zero-pollution-stakeholder-platform/actions_en.

⁷¹ [COM\(2023\) 416 final](#)

⁷² [CAP Strategic Plans - European Commission \(europa.eu\)](#)

⁷³ [Reform of the EU pharmaceutical legislation - European Commission \(europa.eu\)](#)

⁷⁴ Including through the [IPM toolbox](#), [SMARTPROTECT](#), [IPM Works](#), [AdvisoryNetPest](#), [EU-FarmBook](#), further Horizon Europe projects and other instruments (EU CAP Network and EIP-AGRI operational groups).

⁷⁵ [COM\(2022\) 156 final](#)

⁷⁶ [COM\(2022\) 157 final](#)

⁷⁷ [COM\(2022\) 518](#)

⁷⁸ For the other environmental sectors, infringements of biodiversity and circular economy legislation each make up 21% of infringements, and 10% concern environmental governance.

⁷⁹ DG Environment has also made available an interactive map which provides information and statistics on all open and closed environmental infringement cases: https://environment.ec.europa.eu/law-and-governance/environmental-implementation-review_en#environmental-infringements-map-and-dashboard.

and to improve drinking water quality⁸⁰. For instance, the Technical Support Instrument provided support in the design of air quality policies and to improve environmental monitoring systems.

The Commission took action on financing to prevent and reduce pollution in a number of ways. Most importantly, it set technical screening criteria to determine ‘substantial contribution to pollution reduction and water management’ under the **Sustainable Finance Taxonomy** in several areas of economic activity, decisions on data for company disclosures under the **Corporate Sustainability Reporting Directive** and on financing under long-standing EU funding programmes, including the **Recovery and Resilience Facility**.

There has also been significant progress in fostering **global action on zero pollution**. The Global Biodiversity Framework includes a specific target on pollution (target 7), which embraces the goal of zero pollution to protect biodiversity and ecosystems. The revised Waste Shipment Regulation regulates EU exports of waste, in line with international rules. Negotiations have been launched on a Global Plastics Agreement and to establish a global Science-Policy Panel for Chemicals, Waste and Pollution. The improved and ambitious global framework for the sound management of chemicals and waste will be a major contribution to reaching the EU's goal of zero pollution. The EU commitments for the UN Water Conference 2023 also included the goal of zero pollution. The link between pollution and the One Health agenda was highlighted at the seventh Ministerial Conference on Environment and Health. And negotiations have started on a legally binding agreement to strengthen pandemic prevention, preparedness and response.

Important decisions, such as a compliance mechanism or the listing of some hazardous ‘forever’ chemicals (some per- and polyfluoroalkyl substances (PFAS) and pesticides), have also been adopted at the **triple Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions** held in June 2022 and May 2023. To tackle the impacts of air pollution from international shipping on health, the Mediterranean Sea has been designated as an Emission Control Area as of 1 May 2025 by the International Maritime Organization, which also contributes to the EU's goal of zero pollution and sustainable mobility under the Green Deal.

The EU contributed to work on closing the gaps in global science-policy approach to zero pollution and on improving compliance with recognised environmental principles.

As regards the **knowledge base**, several activities under Horizon Europe contribute to the goals of the zero pollution action plan, including the five Horizon Missions (focusing on cities, soil, ocean & waters, climate change adaptation and cancer), European Partnerships, clusters of projects or individual projects. In October 2022, the Commission published a report presenting selected Horizon 2020 projects that contribute to implementing the nine flagship initiatives in the zero pollution action plan⁸¹. In addition, EU knowledge providers published several publications and online tools, such as the EEA's Health and Environment Atlas or JRC's Atlas of Demography with thematic stories on demography and water, air and soil pollution⁸².

In December 2022, the Commission adopted a comprehensive **Zero Pollution Monitoring and Outlook Report**⁸³, one of the headline actions in the zero pollution action plan. The report

⁸⁰ See actions on implementation in the [zero pollution action tracker such as number 4, 5 and 6 on noise, 8 on drinking water or 11 and 12 on marine protection as well as horizontal actions under flagship 5 and actions 20 and 21](#).

⁸¹ [Horizon projects supporting the Zero Pollution Action Plan | Research and innovation \(europa.eu\)](#)

⁸² [European environment and health atlas goes live — check your place \(europa.eu\)](#)

⁸³ [COM\(2022\) 674 final](#).

assesses progress on the 2030 targets and looks at other indicators to give a comprehensive picture on progress. It uses modelling, where possible, to predict developments under a number of assumptions. It also identifies emerging pollution issues and describes the action taken. It is underpinned by the Zero Pollution Monitoring Assessment published by the European Environment Agency and a Zero Pollution Outlook for 2030 presented by the Joint Research Centre⁸⁴.

Progress and outlook to 2030

Overall, **progress on zero pollution is mixed**. Despite the progress made, every year, over **10% of premature deaths in the EU are still related to environmental pollution**. This is mainly due to high levels of air pollution, noise pollution and exposure to chemicals, which is likely to be underestimated⁸⁵. Although the levels of certain chemicals are falling, the use of some substitute chemicals that present similar risks is steadily increasing.

Pollution is not distributed equally across the EU. Vulnerable people, including children, the elderly and people with asthma or other respiratory or cardiovascular diseases are more sensitive to pollution exposure. People in lower socio-economic groups also tend to be exposed to higher levels of pollution⁸⁶. However, if the legislative proposals in the zero pollution action plan (over 75%) and the chemicals strategy for sustainability will be quickly implemented, significant progress on reducing pollution is expected by 2030.

Reducing by over 55% the **health impacts (premature deaths) of air pollution** by 2030 is one of the headline targets on zero pollution and in the 8th environment action programme. Compared to 2005 levels, tangible progress has been made, with a 41% reduction in pollution achieved by 2021⁸⁷. The EU is well on track to reach the 55% reduction target for the health impacts (premature deaths) of air pollution by 2030 in all scenarios analysed in the Third Clean Air Outlook⁸⁸. As a result of the revision to the Ambient Air Quality Directive proposed by the Commission, including assumptions on the outcome of implementing the ‘Fit for 55’ legislation, reductions by over 70% compared to 2005 levels are likely to be achieved by 2030.

The other headline indicator is on **nutrient pollution of groundwater**, which tracks progress on the objective of reducing nutrient losses by 50% by 2030. The EEA assessed that the EU is unlikely to meet this objective. In the first assessment of this target in 2022, a range of proxy indicators seemed to indicate that nutrient losses have remained relatively stable, with no indication of a significant reduction over the last decade⁸⁹. Member States will need to take further action, including beyond what is already required at EU level, to meet the target on nutrient losses to the environment by 2030.

Overall, **water pollution** levels remain high. The Commission is in the process of assessing the 3rd river basin management plans drawn up under the Water Framework Directive and will publish its 7th Implementation Report by the end of 2024. Indications are that the overall EU share of water bodies failing to achieve ‘good chemical status’ has not changed significantly,

⁸⁴ [COM\(2022\) 674](#), the first [Zero Pollution Monitoring and Outlook Report](#) ; JRC [Zero Pollution Outlook 2022 - European Commission \(europa.eu\)](#); EEA report on [Zero pollution monitoring assessment — European Environment Agency \(europa.eu\)](#), ‘[Monitoring report on progress towards the 8th EAP objectives: 2023 edition](#)

⁸⁵ An underestimation as it includes only a limited number of risk factors and does not, for example address the real health risks related to exposure to chemicals. Work is ongoing in the Horizon Europe partnership for the assessment of risk from chemicals ([PARC](#)).

⁸⁶ [EEA Report No 22/2018](#) and new signal [here](#).

⁸⁷ [Harm to human health from air pollution in Europe: burden of disease 2023](#)

⁸⁸ [COM\(2022\) 673](#).

⁸⁹ [COM\(2022\) 674](#).

with 23% of the EU's almost 10 000 groundwater bodies and 59% of the EU's nearly 100 000 surface water reported to fail in the 2nd river basin management plan (data from 2015)⁹⁰. On the positive side, the EU has **clean drinking water and bathing waters** with overall high rates of compliance with existing legislation (>99% and 96% respectively)⁹¹.

On the other targets listed in the zero pollution action plan, there has been a reduction in pollution over the past years, namely in:

- EU ecosystems where **air pollution threatens biodiversity** [by -12%];
- the **use and risk of chemical pesticides**⁹² [by -33%];
- the **use of the more hazardous pesticides** [by -21%];
- the sale of antimicrobials for farmed animals and in aquaculture [by -18%]; and
- total volume of **waste generated** [by -3%].

At the same time, the share of people chronically disturbed by transport **noise**⁹³ and **residual municipal waste**⁹⁴ has not changed much. **Marine pollution from plastic litter and microplastics** may have decreased (although the data are not yet available to confirm this).

The Zero Pollution Outlook for 2022 assessed that only the target on antimicrobials is likely to be met by 2030. In addition, indications are that current observed reductions will not be sufficient to eliminate pollution of water, soil or species such as pollinators. The EU is not on track to meet the remaining targets (on transport noise, EU ecosystems where air pollution threatens biodiversity, total waste generation and residual municipal waste, and marine pollution from plastic litter and microplastics) by 2030 without significant additional action.

The Zero Pollution Stakeholder Platform, which the Commission co-chairs in cooperation with the Committee of the Regions, was set up to mainstream action on zero pollution. It brings together stakeholders and experts from different policy areas such as health, agriculture, research and innovation, transport, digitalisation and the environment. It will create co-ownership, promote collaboration and foster integrated solutions to maximise synergies. In conclusion, the 2022 integrated 'zero pollution' monitoring and outlook report underlines that the **three concurrent environmental crises - pollution, climate change and biodiversity loss - are deeply intertwined**. It is becoming increasingly pressing to move to a clean, circular and nature-positive economic model – both for the EU and for the rest of the world. It is clear that **global cooperation** to tackle the planetary crisis is intensifying. The **EU must be part of the global solution**, as its pollution footprint is too high⁹⁵. **Inequalities in exposure to pollution** are also high, with pollution affecting the most vulnerable members of society more.

2.5 Biodiversity

Biodiversity is crucial for food security, a stable climate, well-being for all, social fairness, resilience and sustainable economic development. Biodiversity loss and ecosystem collapse are

⁹⁰ New EEA figures will be available in 2024.

⁹¹ Eionet, <https://rod.eionet.europa.eu/obligations/171/deliveries>

and EEA, European bathing water quality in 2022 — European Environment Agency (europa.eu).

⁹² It is to be noted that the indicator used for this assessment has been intensively discussed. The Commission is committed to assess options for improving the existing harmonised risk indicators, or developing new ones, to better estimate the trends in the risk and use of plant protection products.

⁹³ EEA, <https://www.eea.europa.eu/publications/zero-pollution/health/noise-pollution>

⁹⁴ EEA, <https://www.eea.europa.eu/publications/reaching-2030s-residual-municipal-waste>

⁹⁵ See [EEA Report No 1/2020](#) 'Is Europe living within the limits of our planet?'.

one of the biggest threats facing humanity as confirmed in the World Economic Forum's Global Risks Report 2024⁹⁶.

The EU biodiversity strategy for 2030⁹⁷ is the EU's response to this urgency and the nature pillar of the European Green Deal. It aims to put EU biodiversity on the path to recovery by 2030 for the benefit of nature, people and the climate, thereby meeting SDG 14, life below water, and SDG 15, life on land. The strategy implements the 8th environment action programme priority objective on biodiversity. It is dependent on and contributes to achieving the programme's other priority objectives on climate neutrality, adaptation and resilience, regenerative growth and zero pollution. The strategy supports implementation of EU legislation on birds, habitats, invasive alien species, marine strategy and water. The strategy has also paved the way for legislative proposals on nature restoration, soils and forests. The strategy's targets have been reflected in EU policies and funding instruments on the environment, agriculture, forestry, rural development, marine and fisheries, regional development, and research and innovation. Together with other Green Deal initiatives, the biodiversity strategy and EU laws are key to delivering on the EU's international obligations under the ⁹⁸. They also contribute to meeting the EU's commitments under the Paris Agreement and the 2030 agenda for sustainable development.

The following sections summarise the progress in implementing the biodiversity strategy. Further information on the state of implementation and deliverables of the strategy's more than 100 actions is available in the online biodiversity action tracker⁹⁹. The Commission published a biodiversity dashboard¹⁰⁰ in 2022 with indicators that track progress towards the strategy's targets. Work is now under way to complete the dashboard with indicators for all targets.

The biodiversity strategy aims to: (i) **protect** at least 30% of EU land and 30% of EU sea areas; (ii) **strictly protect** a third of those areas (meaning 10% of all land and sea areas), including all remaining primary and old-growth forests; (iii) integrate **ecological corridors**; and (iv) ensure all areas are **effectively managed** with clear conservation objectives and measures and appropriate monitoring. These targets build on the EU Natura 2000 network of protected areas, which is the backbone of EU protected land and sea areas.

To support national efforts in meeting these targets, the Commission has drawn up guidance and criteria for designating protected areas and for defining, mapping and strictly protecting primary and old-growth forests¹⁰¹. The Commission is also facilitating technical discussions on these targets with Member States and stakeholders at regional biogeographical seminars. Member States are in the process of submitting their protected area pledges. At the time of this report's publication, only five Member States have submitted pledges, which is insufficient for assessing progress in reaching the overall EU target. A review of the pledges is ongoing and will continue at additional regional EU biogeographical seminars in 2024. The Commission is also continuously working to ensure the completion of the Natura 2000 network through bilateral nature dialogues. It is also taking enforcement action when necessary to ensure the full implementation of the Birds and Habitats Directives.

The biodiversity strategy aims to support further **investment** in nature, including **green infrastructure** and **ecological corridors**. An EU assessment has estimated the investment

⁹⁶ [Global Risks Report 2024 | World Economic Forum | World Economic Forum \(weforum.org\)](#)

⁹⁷ [COM\(2020\) 380 final](#)

⁹⁸ <https://www.cbd.int/gbf>

⁹⁹ <https://dopa.jrc.ec.europa.eu/kcbd/actions-tracker/>

¹⁰⁰ <https://dopa.jrc.ec.europa.eu/kcbd/dashboard/>

¹⁰¹ [SWD\(2022\) 23 final](#) and [SWD\(2023\)62](#).

needs and priorities for Natura 2000 and green infrastructure to be EUR 10.2 billion a year¹⁰². Several funding instruments under the EU's 2021-2027 multiannual financial framework give Member States opportunities to support Natura 2000, green infrastructure and nature-based solutions¹⁰³.

Given the exceptional biodiversity in the EU's **outermost regions** and its **overseas countries and territories**, the Commission highlighted support opportunities under EU funding instruments in its renewed strategy for the EU's Outermost Regions¹⁰⁴. The Commission organised 10 workshops in 2022-23 to promote the exchange of good practices and solutions to common adaptation challenges between the Outermost Regions and their neighbouring countries and territories, and presented a compendium of innovative and effective good practice projects on adaptation to climate change to inspire and facilitate cooperation.

In line with the biodiversity strategy's commitments, the upcoming **Nature Restoration Law** sets **restoration targets** for specific terrestrial and marine ecosystems.

The biodiversity strategy sets a target for at least 30% of habitats and species that do not currently have **favourable conservation status** to achieve this status by 2030 or at least show an improvement. The Commission has provided technical guidance to Member States on how to select and prioritise species and habitats for status improvement measures. At the time of publication of this report, six Member States have submitted national pledges. A review of these pledges is ongoing as part of regional biogeographical seminars.

Healthy and biologically diverse **agroecosystems** are essential for a sustainable farming sector and food security. The upcoming Nature Restoration Law supports the setting up of restoration measures to strengthen biodiversity in agroecosystems and to improve key indicators. The biodiversity strategy sets a target to have **high-diversity landscape features** on 10% of agricultural areas by 2030. One of the ten key policy objectives of the EU's common agricultural policy (CAP) for 2023-2027 is to preserve landscapes and biodiversity, and CAP strategic plans contribute to the biodiversity strategy's targets through for instance support to organic farming, agroecological practices and development and maintenance of landscape feature. Furthermore, to achieve the **25% organic farming target** set in the biodiversity strategy and the farm to fork strategy¹⁰⁵, the Commission adopted, in 2021, an action plan for the development of organic production¹⁰⁶. Current estimates indicate that 10% of EU agricultural areas would receive CAP support for organic farming by 2027, up from 5.6% in 2020. The Commission has also proposed new legislation to facilitate registering and marketing vegetable varieties suitable for organic farming and marketing forest reproductive material.

To help **reverse the decline of pollinators**, the Commission adopted a revised EU pollinators initiative in 2023¹⁰⁷. It includes measures to improve knowledge, tackle the causes of pollinator decline, and support citizen engagement, strategic planning and cooperation. The upcoming Nature Restoration Law also contributes to halting the decline of pollinators by 2030 and ensure an upward trend after that.

¹⁰² SWD(2023) 99.

¹⁰³ See [Vademecum on EU Funding Programmes for the environment](#) (2022) and the report on [Financing Natura 2000](#) (May 2022).

¹⁰⁴ [COM\(2022\) 198 final](#).

¹⁰⁵ [COM\(2020\) 381 final](#).

¹⁰⁶ [COM\(2021\) 141 final/2](#).

¹⁰⁷ [COM\(2023\) 35 final](#).

The biodiversity strategy aims to **reduce pollution** affecting biodiversity. This includes excess nutrients, pesticides, pharmaceuticals, hazardous chemicals, urban and industrial wastewater, and plastics. The measures and progress towards these goals are described in the zero pollution section. The EU chemicals strategy for sustainability and the zero pollution action plan are key instruments to **reduce pollution pressures on biodiversity**. The zero pollution action plan and the farm to fork strategy reflect the biodiversity strategy's targets to reduce **pesticides** and **nutrient** losses and set a target to reduce **antimicrobials**. The global biodiversity framework target to reduce excess nutrient losses to the environment has further strengthened the promotion of an integrated approach to nutrients management. In this context, the Commission launched an evaluation of the Nitrates Directive in 2023¹⁰⁸ to support the EU's environmental and climate objectives and global biodiversity commitments and the need for a resilient agriculture sector and food security.

In 2022, the Commission proposed a Regulation on the sustainable use of plant protection products¹⁰⁹. Following the rejection of the proposal by the European Parliament, in February 2024 the Commission announced to withdraw the proposal. Directive 2009/128/EC establishing a framework to achieve the sustainable use of pesticides remains in force. The European Food Safety Authority published revised guidance on the risk assessment of plant protection products on honeybees, bumblebees and solitary bees (which is pending endorsement)¹¹⁰.

Forest ecosystems play an essential role in biodiversity, the climate, social benefits and the economy. As a result, the EU forest strategy for 2030¹¹¹ aims to increase the quantity, health and resilience of EU forests and contribute to the EU's biodiversity and climate objectives. The strategy was accompanied by a roadmap¹¹² to meet the biodiversity strategy EU target of **planting 3 additional billion trees, fully respecting ecological principles**, and was followed by the launch of a tree counter¹¹³.

The upcoming Nature Restoration Law also contributes to improve forest biodiversity and key indicators for forest ecosystems. In 2023, the Commission published guidelines on biodiversity-friendly afforestation, reforestation and tree-planting¹¹⁴ and on closer-to-nature forestry¹¹⁵. Work continues with Member States to develop the Forest Information System for Europe¹¹⁶ as the main tool for monitoring Europe's forests and track progress on forest-related Green Deal objectives. In 2023, the Commission published a proposal for a Regulation on a monitoring framework for resilient European forests¹¹⁷. This aims to fill knowledge gaps on the condition of EU forests, enable Member States, forest owners and managers to improve their preventive and management responses to pressure, and strengthen forest resilience to climate change.

The Commission and Member States are working on increasing the EU's capacity to prevent and respond to forest fires¹¹⁸. Moreover, to protect forests outside the EU, the new Regulation

¹⁰⁸ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14051/public-consultation_en

¹⁰⁹ [COM\(2022\) 305 final](#).

¹¹⁰ <https://www.efsa.europa.eu/en/efsajournal/pub/7989>

¹¹¹ [COM\(2021\) 572 final](#)

¹¹² [Roadmap: Three billion additional trees by 2030](#)

¹¹³ [3 Billion Trees \(europa.eu\)](#)

¹¹⁴ [Guidelines on biodiversity-friendly afforestation, reforestation and tree planting](#)

¹¹⁵ [Guidelines on closer-to-nature forest management](#)

¹¹⁶ [Forest Information System for Europe \(FISE\) \(europa.eu\)](#)

¹¹⁷ [COM\(2023\) 728 final](#)

¹¹⁸ [Forest fires - European Commission \(europa.eu\)](#)

(EU) 2023/1115 on deforestation-free products¹¹⁹ entered into force on 29 June 2023. Under the Regulation, any operator or trader placing commodities such as cattle, wood, cocoa, soy, palm oil, coffee, rubber and some of their derived products on the EU market, or exports from it, must be able to prove that the products do not come from recently deforested land or have contributed to forest degradation.

In line with the biodiversity strategy, the EU soil strategy for 2030¹²⁰ sets targets and measures to **protect and restore soils**, ensure their sustainable use, avoid land sealing, limit the drainage of peatlands, prevent pollution, restore contaminated sites and tighten monitoring and reporting obligations. In 2023, the Commission adopted a proposal for a Directive on soil monitoring and resilience¹²¹ and guidance on funding opportunities¹²². The proposal aims to achieve healthy soils in the EU by 2050, set up a comprehensive soil health monitoring framework, draw up sustainable soil management principles and tackle soil pollution. It also calls for continuous EU funding to support its implementation. This includes current support under the CAP and the Soil Mission¹²³ under Horizon Europe, which aims to fill knowledge gaps and develop practical solutions for soil restoration.

To step up the restoration of **freshwater ecosystems**, the upcoming Nature Restoration Law foresees the identification and removal of artificial barriers to the connectivity of surface waters and the setting up of measures to improve the natural functions of floodplains. The Commission has also published a technical note on barrier removal for river restoration¹²⁴ to support efforts towards achieving the biodiversity strategy target of restoring **25 000 km of free-flowing rivers**.

To help **marine ecosystems** achieve good environmental status, the biodiversity strategy sets targets to **substantially reduce the negative impact of fishing** on sensitive species and habitats, including on the seabed, and to eliminate **bycatch** or reduce it to levels that allow for species' recovery and conservation. The EU action plan to protect and restore marine ecosystems for sustainable and resilient fisheries¹²⁵, adopted in 2023, calls on Member States to step up efforts to decrease bycatch and minimise the adverse effects of mobile bottom fishing (or bottom trawling) on marine protected areas. Member States were invited to submit roadmaps by March 2024 describing the measures they intend to put in place by 2030. The Commission committed to assess progress on: (i) the measures announced in the roadmaps; and (ii) national measures taken or joint recommendations submitted by March 2024. So far, very few Member States have delivered their roadmaps, and none of those roadmaps are comprehensive enough. Three Member States have presented partial contributions. Progress is also slow on several measures that are due to reduce bycatch of priority species and phase out bottom fishing in Natura 2000 sites. This slow progress highlights the need to step up implementation efforts. The Commission has drawn up Guidelines on implementing an ecosystem-based approach in maritime spatial planning¹²⁶ and a report on progress in implementing the Marine Spatial Planning Directive¹²⁷. The EU common fisheries policy (CFP)

¹¹⁹ [Regulation \(EU\) 2023/1115](#)

¹²⁰ [COM\(2021\) 699 final](#)

¹²¹ [COM\(2023\) 416 final](#)

¹²² [SWD\(2023\) 423 final](#)

¹²³ [EU Missions Soil Deal for Europe | Mission Soil Platform \(europa.eu\)](#)

¹²⁴ [Biodiversity strategy for 2030 – Barrier removal for river restoration](#)

¹²⁵ [COM\(2023\) 102 final](#)

¹²⁶ [Guidelines for implementing an ecosystem-based approach in maritime spatial planning – Including a method for the evaluation, monitoring and review of EBA in MSP](#)

¹²⁷ [COM\(2022\) 185 final](#)

provides a toolbox for implementing **fisheries management measures** as well as funding under the European Maritime, Fisheries and Aquaculture Fund.

To support reaching biodiversity strategy's targets in urban areas, the Commission has published guidance for cities on how to develop **urban greening plans** and integrate biodiversity measures in urban planning processes. It has also set up the Urban Greening Platform¹²⁸. The upcoming Nature Restoration Law supports maintaining and progressively increasing national areas of urban green space and urban tree canopy cover.

The Commission is assessing the latest data on **biofuels** that pose a high risk of causing indirect changes in land use. The objective is to draw up a plan to gradually phase them out by 2030. The revised Regulation on land use, land-use change and forestry (LULUCF) aims to create stronger policy incentives to lower greenhouse gas emissions from land activities and improve land-based carbon sinks.

The biodiversity strategy sets the target to reduce the number of Red List species¹²⁹ threatened by **invasive alien species** by 50% by 2030. The Commission is working with Member States to step up implementing the Invasive Alien Species Regulation¹³⁰ and other instruments. The aim is to minimise and, where possible, eradicate the introduction and spread of invasive alien species in the EU and to manage those species that have already spread. There are now 88 species on the list of invasive alien species of EU concern.

Global biodiversity action

The Kunming-Montreal global biodiversity framework was adopted at the Conference of the Parties to the Convention on Biological Diversity (COP 15) in December 2022. It sets out a comprehensive agenda with targets¹³¹ to protect and restore nature, reduce pollution and tackle the direct and indirect drivers of biodiversity loss. This includes targets to eliminate, phase out or reform incentives that are harmful for biodiversity and to increase financing for biodiversity. COP 15 also adopted a monitoring framework¹³² to measure progress on the global biodiversity framework's objectives and targets, including an initial set of 27 headline indicators, accompanied by binary, component, complementary and national indicators.

The biodiversity strategy's ambition and the EU's consistent implementation efforts have helped the EU to advocate for an ambitious global biodiversity framework. The Commission is preparing the submission of EU targets to implement the global biodiversity framework, which will cover the commitments laid down in existing and proposed legislation and policies. In addition, the submission will present the degree of alignment between EU and global biodiversity targets.

Through its **external action**, the EU is stepping up its engagement to protect and restore global biodiversity and promote its sustainable use. The EU has pledged to double international biodiversity financing¹³³ to reach EUR 7 billion in 2021-2027. This will happen through initiatives such as NaturAfrica¹³⁴, which draws inspiration from the Natura 2000 network. The Commission has also pledged to invest up to EUR 1 billion in ocean and coastal biodiversity and the climate in 2021-2027. Biodiversity protection and following up the global biodiversity framework feature prominently in the Commission's outreach to non-EU countries and

¹²⁸ [Urban Greening Platform - European Commission \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-urban-greening-platform-2022-01-11.aspx)

¹²⁹ [European Red Lists of species \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-european-red-lists-2022-01-11.aspx)

¹³⁰ [Invasive alien species - European Commission \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-invasive-alien-species-2022-01-11.aspx)

¹³¹ [15/4. Kunming-Montreal Global Biodiversity Framework \(cbd.int\)](https://www.cbd.int/15/4/Kunming-Montreal-Global-Biodiversity-Framework)

¹³² [Monitoring framework for the Kunming-Montreal global biodiversity framework.](https://www.cbd.int/15/4/Kunming-Montreal-Global-Biodiversity-Framework)

¹³³ [IP 22 7767 EN.pdf \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-ip-22-7767-en-2022-01-11.aspx)

¹³⁴ [NaturAfrica - European Commission \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-natur-africa-2022-01-11.aspx)

regional associations. This outreach aims to mobilise resources and efforts to attain domestic and global biodiversity targets.

As part of its international ocean agenda, the EU has committed to an ambitious set of marine biodiversity targets and to strengthened synergies between marine, water and food security policies. These EU commitments were instrumental in concluding the global biodiversity framework and the ambitious Agreement on the protection of marine biodiversity in areas beyond national jurisdiction¹³⁵ under the United Nations Convention on the Law of the Sea in 2023. The role of the Regional Sea Conventions¹³⁶ in implementing the agreement could be considerable; for example, in 2023, the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention¹³⁷) in the Northeast Atlantic designated its largest marine protected area in international waters, which has around the same surface area as France. It would also be within OSPAR's mandate to consider designating a marine protected area in the Arctic. The biodiversity strategy and the international ocean agenda call for prohibiting deep-sea mining until the scientific knowledge gaps are filled, it can be demonstrated that it has no harmful effect, and effective environmental protection rules are in place. To support filling these scientific gaps, the EU has invested more than EUR 80 million in research on the potential impact of deep-sea mining.

To counter the impact of EU **production and consumption** on global biodiversity, the EU adopted a Regulation on deforestation and forest degradation-free supply chains¹³⁸. This aims to ensure certain products are legal and deforestation-free by setting out mandatory due diligence rules for companies that want to place such products on the EU market or export them. Sustainable and deforestation-free agricultural production is also promoted through dialogues at bilateral, regional and international level (such as the Cocoa Talks¹³⁹ with West African countries) and, where needed, development cooperation funds (for example, a dedicated Team Europe Initiative on deforestation). The EU has also adopted a wildlife action plan¹⁴⁰ and several guidance documents on trade in wild species.

The EU and the UN Environment Programme World Conservation Monitoring Centre have also launched an initiative to set up a global knowledge support service for biodiversity¹⁴¹ inspired by the EU Knowledge Centre for Biodiversity.

Frameworks to improve biodiversity

To help meet biodiversity commitments agreed at national, EU and international levels, the Commission has strengthened the EU Biodiversity Platform as the **main forum for coordinated biodiversity strategy implementation** with Member States and stakeholders. The Platform's subgroups deal with implementing the Nature Directives, pollinators, monitoring and assessment, urban biodiversity, invasive alien species and other topics.

The Commission has continued to work with national authorities to improve **implementation of and compliance** with EU legislation related to biodiversity. The Commission has also engaged in dialogues with national and regional authorities on the key structural challenges they face in implementing the Nature Directives.

¹³⁵ [Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction | \(un.org\)](https://un.org/)

¹³⁶ <https://water.europa.eu/marine/countries-and-regional-seas/regional-conventions>

¹³⁷ [OSPAR Commission | Protecting and conserving the North-East Atlantic and its resources](#)

¹³⁸ [Regulation \(EU\) 2023/1115](#)

¹³⁹ [The Sustainable Cocoa Initiative - European Commission \(europa.eu\)](#)

¹⁴⁰ [COM\(2022\) 581 final](#)

¹⁴¹ [COP15: EU joins capacity-building initiatives \(europa.eu\)](#)

On **biodiversity financing**, the Interinstitutional Agreement for the 2021-2027 multiannual financial framework (MFF) set the targets of investing 7.5% of annual EU spending in biodiversity in 2024 and 10% in 2026-2027. Biodiversity objectives and measures have been mainstreamed¹⁴² in most legislation underpinning EU programmes. A new methodology¹⁴³ was agreed in 2023 to track biodiversity expenditure in each programme under the MFF.

Estimates of national commitments suggest that the EU is on track to reach the biodiversity financing target in 2024 but risks falling significantly short of the target for 2026 and 2027. Between 2021 and 2030, Member States are estimated to allocate around EUR 14 billion per year from their national budgets to biodiversity. Financing is also expected from the private sector, including businesses, banks, financial institutions, philanthropy, and NGOs. The Green Advisory Service for Sustainable Investments Support (Green Assist)¹⁴⁴ aims to develop financial and advisory products for natural capital and the circular economy. It also seeks to build a pipeline for high-impact green investment projects, green investments under InvestEU¹⁴⁵, cohesion policy funds and other EU instruments.

The EU has taken further steps to implement the ‘**do no significant harm**’ principle (DNSH) under the MFF and NextGeneration EU. The protection and restoration of biodiversity and ecosystems is one of the six environmental objectives against which Member States must evaluate whether any measure proposed in their national recovery and resilience plans are DNSH compliant¹⁴⁶. The DNSH principle has also been applied for cohesion policy instruments and sustainability proofing guidelines¹⁴⁷ for InvestEU. It will also be integrated into other EU funds and programmes.

The amendment to the EU Regulation on environmental economic accounts¹⁴⁸ added new modules on forest and **ecosystem accounts**. Work continues to better integrate biodiversity into the Product Environmental Footprint¹⁴⁹ methodology. **Natural capital accounting** for business is being supported by EU projects. These include the LIFE transparent project¹⁵⁰, which has developed a set of generally accepted environmental accounting principles, and the Align project¹⁵¹, which has drawn up recommendations to companies on how to measure their impact on biodiversity.

The Commission has continued to support **business networks** working to integrate biodiversity and natural capital considerations into their decision-making, especially as part of the EU Business and Biodiversity Platform (B@B)¹⁵². The annual Business and Nature Summit¹⁵³ has also helped strengthen the business-for-biodiversity movement.

¹⁴² https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/horizontal-priorities/green-budgeting/biodiversity-mainstreaming_en

¹⁴³ [Biodiversity tracking methodology for each programme 2023.pdf \(europa.eu\)](#)

¹⁴⁴ [Green Advisory Service for Sustainable Investments Support: GREEN ASSIST v\(europa.eu\)](#)

¹⁴⁵ [InvestEU - European Union \(europa.eu\)](#)

¹⁴⁶ [RRF technical guidance.](#)

¹⁴⁷ [Technical guidance on sustainability proofing for the InvestEU Fund](#)

¹⁴⁸ Regulation (EU) No 691/2011. Provisional agreement on a final text: <https://aeur.eu/f/aeu>.

¹⁴⁹ [European Platform on LCA | EPLCA \(europa.eu\)](#)

¹⁵⁰ [Transparent - Capitals Coalition](#)

¹⁵¹ [Align - European Commission \(europa.eu\)](#)

¹⁵² [Business and Biodiversity - European Commission \(europa.eu\)](#)

¹⁵³ [European Business and Nature Summit - European Commission \(europa.eu\)](#)

Knowledge management has been boosted by a Knowledge Centre for Biodiversity¹⁵⁴, a one-stop shop on biodiversity, supported by a dedicated science service¹⁵⁵. Under Horizon Europe, the Commission has set out a long-term research agenda for biodiversity¹⁵⁶ and a mechanism for scientific input on biodiversity policy. Understanding ecosystem conditions, trends, pressures and their impact on ecosystem services is essential for effective decision-making and policy design. The first EU-wide ecosystem assessment¹⁵⁷ published in 2020 revealed that Europe's ecosystems, within and outside protected areas, suffer from pressures caused by intensive land and sea use, climate change, pollution, overexploitation and invasive alien species. Bringing natural, semi-natural and human-dominated ecosystems to good condition is key for a more sustainable planet. The assessment brings together for the first time commonly agreed EU-wide datasets to assess the state and trends of ecosystems, their services, and the pressures they are exposed to. This can help set priorities and feed into cost-effective restoration measures.

Learning and skills for nature and biodiversity are being promoted as part of the Council Recommendation on learning for the green transition¹⁵⁸, and follow-up measures¹⁵⁹.

Progress and outlook for meeting 2030 targets

The Knowledge Centre for Biodiversity manages two **online progress tracking tools** that aim to provide up-to-date information on the biodiversity strategy's implementation: an action tracker¹⁶⁰ (fully operational) and a dashboard¹⁶¹ with indicators to track progress on the targets (under development). There is limited evidence at EU level of progress on the ground in protecting and restoring ecosystems and their services since the strategy was adopted. When new data and indicators become available, the biodiversity dashboard will be gradually improved and updated.

The following figures provide insights into the status and trends of key indicators up to the adoption of the biodiversity strategy for 2030.

In 2021, 26% of the **EU's land area** had been designated as Natura 2000 or nationally protected areas, an increase of 1.7 percentage points over the last decade. In the same period, there was a significant increase in **EU marine protected areas**; the coverage of these areas doubled to 12.1%. Natura 2000 areas cover 18.6% and 9% of EU land and marine areas, respectively. Despite some progress, the EEA monitoring report on the 8th action programme concludes that, at the current rate, the EU is unlikely to reach the target of protecting 30% of land and 30% of marine areas by 2030.

Common bird populations have continued to decline in the EU, falling by 12% between 1990 and 2021. Populations of common forest birds declined by 5%, and common farmland birds declined by 36% in the same period¹⁶². The EEA assessment indicates that, based on the latest trends, it is unlikely that the EU will reverse the decline of its common bird populations by 2030.

¹⁵⁴ [Biodiversity \(europa.eu\)](https://ec.europa.eu/biodiversity/)

¹⁵⁵ [Science at the service of biodiversity](https://ec.europa.eu/science-at-service/)

¹⁵⁶ [Biodiversity research policy - European Commission \(europa.eu\)](https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1734)

¹⁵⁷ [JRC Publications Repository - EU Ecosystem Assessment \(europa.eu\)](https://ec.europa.eu/jrc/publications-repository/)

¹⁵⁸ [EUR-Lex - 32022H0627\(01\) - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2022/1400/oj)

¹⁵⁹ [Learning for the green transition and sustainable development | European Education Area \(europa.eu\)](https://ec.europa.eu/education/)

¹⁶⁰ [EU Biodiversity Strategy Actions Tracker \(europa.eu\)](https://ec.europa.eu/biodiversity/)

¹⁶¹ [EU Biodiversity Strategy Dashboard \(europa.eu\)](https://ec.europa.eu/biodiversity/)

¹⁶² Eurostat dataset (env_bio3).

EU average **forest connectivity** was 79% in 2018, stable compared to 2000, with no signs of improvement. The EEA assessment indicates that the degree of connectivity in forest ecosystems is unlikely to increase by 2030.

Grassland butterfly populations, which are indicators of pollinator health, decreased by around 30% in the last 30 years (1991-2020), and the trend has not reversed in recent years.

Air, water and soil pollution levels affecting biodiversity are still high, and limited progress has been made in reducing them (see zero pollution section).

EU soils are not in good health, undermining EU resilience and the sustainability of agriculture. **Organic carbon content** is limited in some European regions, affecting land fertility. More than 5% of the non-artificial erodible land area in the EU suffers from severe **soil erosion** by water.

There is some progress on the target of planting 3 billion additional trees in EU; 13 million **trees had been planted** by January 2024.

2.6 Reducing environmental pressures

The sixth priority objective of the 8th environment action programme aims to significantly reduce key environmental and climate pressures from the EU's production and consumption. This concerns, in particular, energy, industry, buildings and infrastructure, mobility, tourism, international trade and food. This is also relevant for meeting: SDG 2 Zero hunger and sustainable agriculture; SDG 7 Affordable and clean energy; SDG 8 Decent work and economic growth; SDG 9 Industry, innovation and infrastructure; SDG 12 Responsible consumption and production; SDG 17 Partnerships for the goals.

2.6.1 Energy system

The transition to a sustainable energy system requires decarbonisation measures and tackling environmental problems associated with energy production and consumption, including air, water and soil pollution, climate change, water use and solid waste disposal.

The European Green Deal's **systemic approach** extends to the energy system through interrelated strategies and policies that address different climate and environmental impacts, focusing on improving energy sustainability and reducing energy use.

The 'Fit for 55' package revised and strengthened EU energy and climate legislation to **set ambitious goals**. **Legislative targets** were agreed for a minimum share of 42.5% of renewable energy, with the ambition to reach 45% by 2030. Energy efficiency targets were also increased, to reduce final energy consumption by 11.7% by 2030.

This also has co-benefits, for example, significantly reducing pollution's impact on health. All of the 'Fit for 55' legal proposals have been agreed by Parliament and Council. The reform of **electricity market design** and the revision of the Renewable Energy Directive and the Land Use, Land-Use Change and Forestry (LULUCF) Regulation illustrate **how the synergies between environmental policies have been improved**. The revised Renewable Energy Directive sets an overall renewable energy target of at least 42.5% binding at EU level by 2030 - but aiming for 45% and reflects on the need to speed up the EU's clean energy transition and reduce greenhouse gas emissions originating from the energy sector. It also boosts the sustainability criteria of bioenergy, which represents around 60% of renewables in the EU. It includes, in particular, no-go areas for forest biomass and a requirement for Member States to

take into account the cascading principle¹⁶³. This revision strengthens the **links between bioenergy, biodiversity and carbon sinks**. The revised **Gas Directive and Gas Regulation** will help advance the decarbonisation of the natural gas sector, by establishing a new regulatory framework for hydrogen markets and by creating incentives for the uptake of renewable and low-carbon gases, including renewable hydrogen. The revised **Energy Efficiency Directive** will also bring co-benefits to the environment as the most sustainable energy source is the one not consumed. The provisionally agreed **Regulation to reduce methane emissions** in the energy sector, represents the most comprehensive framework of its kind world-wide to regulate energy sector methane emissions. The regulation is currently being finalised in view of final approval and adoption is expected in the first half of 2024. Its scope extends to crude oil, natural gas and coal. The regulation contains a number of measures which taken together will contribute to improving measurement and reporting of methane emissions in the EU; reducing methane emissions in the EU via prescriptive abatement measures that can be applied from day one; incentivising the EU's international partners to measure, report and reduce their methane emissions and increasing transparency on methane emissions globally. Lastly, the **REPowerEU plan** – the EU response to the energy crisis – supports energy-saving measures, diversifying energy supply and accelerating the deployment of renewables.

Between 2005 and 2022, EU primary **energy consumption** and final energy consumption **decreased** by 16% (to 1 259 million tonnes of oil equivalent in 2022) and 8% (to 954 million tonnes of oil equivalent in 2022) respectively. In 2002, the **share of renewable energy sources more than doubled** to 23% (in gross final energy consumption). That year also saw a record high of around 60 GW of wind and solar installed in the EU¹⁶⁴, and the heat pump market broke a new record, with around 3 million units sold (up by 37%)¹⁶⁵.

However, the pace of this progress is likely to be **not enough to meet the 2030 target**, which requires a deeper and faster transformation of the energy sector. Further efforts are also needed to prioritise renewable energy solutions that allow for **biodiversity co-benefits** and minimise environmental risks related to certain sources of bioenergy as set out in the biodiversity strategy. However, several measures the EU has adopted measures to help accelerating permitting in Member States (including the revised Renewable Energy Directive¹⁶⁶, a dedicated Regulation aimed at speedy roll-out of such projects¹⁶⁷ as well as a recommendation¹⁶⁸ and guidance document¹⁶⁹ were adopted). These measures aim at accelerating permitting procedures taking advantages of flexibilities offered by the EU legal framework. As a novelty,

¹⁶³ 'Cascade use' denominates the efficient utilisation of resources by using by-products and recycled materials for material use to extend total biomass availability within a given system (see: [jrc-forest-bioenergy-study-2021-final_online.pdf](#)).

¹⁶⁴ Annual EU solar power growth increased by 47% from 28.1 GW in 2021. The new added capacity of 41.4 GW of solar power in 2022 is equivalent to the power needs of 12.4 million European homes ([New report reveals EU solar power soars by almost 50% in 2022 – Solar Power Europe](#)). New wind energy capacity in 2022 amounted to around 16 GW, up 40% from 2021 ([The EU built only 16 GW new wind in 2022: must restore investor confidence and ramp up supply chain | Wind Europe](#)).

¹⁶⁵ European Heat Pump Association, based on 21 markets, the number of heat pumps sold in 2022 replaced roughly 4 bcm of natural gas, avoiding about 8 million tonnes of CO₂ emissions. [Market data – European Heat Pump Association \(ehpa.org\)](#).

¹⁶⁶ [Directive \(EU\) 2023/2413](#)

¹⁶⁷ [Regulation \(EU\) 2022/2577](#)

¹⁶⁸ [C\(2022\)3219 final](#)

¹⁶⁹ [Speeding up permit-granting and PPAs SWD\(2022\)149,151 - European Commission \(europa.eu\)](#)

the revised Renewable Energy Directive introduces the concept of renewable acceleration areas for one or more renewable technologies in which permitting will be further facilitated.

The sustainable transformation of the energy system faces several challenges. As regards EU's energy infrastructure, the revised trans-European energy networks regulation (TEN-E Regulation) ensures that we plan and build the necessary infrastructure that will underpin a climate-neutral energy mix by mid-century. Interconnected infrastructure is the best guarantee of security of supply, essential for integrating renewable energy sources and therefore key for keeping prices at check. The Union's energy infrastructure policy has been instrumental in achieving further market integration, alleviating infrastructure bottlenecks, relieving or reducing the energy isolation in specific areas and facilitating integration of electricity produced by renewables into the European network. However, the recent energy and cost of living crises raised energy, environmental and social concerns. This led to an increase in **fossil fuel subsidies and potential divestments from necessary investments in renewable-enabling infrastructure**, which risk to slow the energy transition, if the subsidies are not phased out after the crisis. Moreover, in summer 2022, heat waves and droughts severely challenged hydro and nuclear electricity production, underlining the importance of the **water-energy nexus**. The deployment of large-scale wind and solar farms supported by REPowerEU requires better planning of **land use**. The obligation on Member States under the revised Renewable Energy Directive to designate renewables acceleration areas helps to direct renewable energy generation capacities to areas that are particularly suitable for renewable energy projects and where the projects are not expected to have a significant environmental impact. Spatial planning and the link to the Marine Strategy Framework Directive is also discussed in the context of deploying offshore wind power. The measures put in place to speed up the permitting of renewable projects include certain checks and balances to ensure sustainability and future proofing of investments in renewables. For example, a strategic environmental assessment in accordance with the Directive on the assessment of the effects of certain plans and programmes on the environment (SEA Directive) and if applicable an appropriate assessment under the Directive on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) have to be carried out for all plans that identify renewables acceleration areas most suitable for deployment of renewable projects. Moreover, all projects within those areas will be screened from the environmental viewpoint: individual projects with highly likely significant adverse effects will be subject to a full environmental assessment.

With a strong EU legislative framework largely in place, **Member States now need to meet their shared commitments**. Combined with the new Net-Zero Industry Act and the Critical Raw Materials Act, this is the opportunity to boost EU **competitiveness and industrial leadership** and accelerate environmental and climate action.

2.6.2 Industry

Resilience in industry is crucial for the green transition, and in light of geopolitical tensions, there is greater need for ensuring supply of energy and materials.

As a result, the **speed and scale of the green transition has intensified**. The EU is modernising its industrial ecosystems through an updated industrial strategy for Europe and a new approach to industrial transformation. These are based on co-created transition pathways bringing together industries, policymakers and stakeholders across entire value chains to address identified gaps and foster partnerships, with a strong focus on SMEs. The Green Deal industrial plan and the Net-Zero Industry Act support the competitiveness of Europe's net-zero industry and boost innovation in clean and green technologies.

This systemic approach for **industry's transition to environmental sustainability is reflected into the European Semester**. This covers also decarbonisation and re-industrialisation, tracking progress in several areas, among which: (i) efficiency and productivity; (ii) uptake of environmental sustainability approaches; (iii) waste generation and management; and (iv) industrial pollution and hazards. While the Semester focuses on textile, retail, energy-intensive industries and electronics, the Commission is also working on other industrial ecosystems (agri-food, construction, energy and mobility). Dedicated chapters on the green transition were also included into the **European Monitor of Industrial Ecosystems** and the **single market and competitiveness scoreboard**.

Progress in moving towards green industry has been mixed. In 2022, only 11.5% of secondary materials were reused in the economy, which builds mostly on extracting and processing primary raw materials. The EU is not on track to meet its target of doubling this percentage by 2030.

On a positive note, **greenhouse gas emissions and fine particulate matter intensity from industry are decreasing**. Moreover, air and water pollution from industrial production has decreased significantly in recent years. Depending on the pollutant, reductions have been as high as 72% (for SO_x emissions to air) or at least 20% (for total nitrogen emissions to water) since 2010¹⁷⁰. The number of EU **ecolabel products has also more than doubled** in the last decade, reaching almost 89 000 in 2023¹⁷¹.

Preventing and reducing the environmental pressures of the industrial sector presents several **opportunities**. These range from sustainable economic growth and job creation to promoting innovation in clean technologies. It can also lead to improved air quality and public health, better energy security and energy efficiency and lower greenhouse gas emissions. In addition, reduced air, water and soil pollution can help restore ecosystem services. To accelerate progress, it is crucial to **improve access to finance** for EU start-ups and scale-ups, promote research and innovation, boost skills and ensure the availability of critical raw materials.

Security of critical raw materials must go hand in hand with the highest environmental standards. This prevents pressure on, for instance, biodiversity, natural resources and health. Pressures include air, water and soil pollution, which might offset the benefits of reduced emissions.

2.6.3 Buildings and infrastructure

Construction and buildings are the **most material-intensive, polluting and energy-consuming sectors** in the EU, often leading to **land take and soil sealing**. This comes at the expense of croplands and pastures, which are essential for wildlife habitats, carbon sequestration and flood protection. Between 2000 and 2018, net land take in the EU amounted to 11 845 km², equivalent to an average annual land take of 658 km².

European Green Deal initiatives brought greater focus on material use and its greenhouse gas impact. The Green Deal extended the approach of the **Waste Framework Directive**, which already included binding targets for non-hazardous construction and demolition waste (recycling at least 70% by 2020) and waste prevention obligations (reuse, recycling and selective demolition).

The new EU voluntary assessment and reporting framework to **calculate the sustainability performance of buildings in an integrated 'whole life-cycle' approach**, known as 'Level(s)',

¹⁷⁰ <https://www.eea.europa.eu/publications/zero-pollution/production-consumption/production>

¹⁷¹ [EU Ecolabel use and recognition on the rise, new Commission data shows - European Commission \(europa.eu\)](#)

is fully aligned with or integrated in several recent initiatives: (i) the revised Construction Products Regulation, which also applies to construction products imported from non-EU countries; (ii) the Sustainable Finance Taxonomy, which promotes circularity through specific thresholds for primary raw materials content; and (iii) the revised Energy Performance of Buildings Directive will introduce the assessment of the whole-life-cycle as part of the requirements for new buildings, sets zero-emission targets for existing buildings and promote the renovation of the worst-performing buildings¹⁷². It also strengthens access to information and finance and links with schemes like the EU Green Taxonomy.

Moreover, the supply side approach of **emission trading systems** tackles the sector's demand for material and energy.

Broader initiatives and strategies, such as the **Renovation Wave**, the **Transition Pathway for Construction** and the **New European Bauhaus** confirm this integrated approach. The Renovation Wave aims to at least double the annual energy renovation rate by 2030. It also highlights the importance of combining improved energy efficiency with circularity and resource efficiency to reduce overall emissions. As part of the Renovation Wave, the Commission is developing a **2050 roadmap** to support a whole life-cycle approach for reducing emissions in the building sector.

Work is ongoing to **improve the quality of data** needed to benchmark individual buildings' whole life-cycle emissions and the sector's emissions at national and EU levels.

The **urban nature plans and the urban targets** under the upcoming Nature Restoration Law will give a strong push to greening urban developments and renovations and integrating green and grey infrastructure, including via the implementation at scale of nature-based solutions.

There is a clear opportunity for construction and buildings to be more resource-efficient, clean and circular and to make greater use of secondary materials. Material use for buildings could potentially decrease by 30% if used more efficiently. The most effective action to reduce the sector's use of materials would be to extend the lifespan of existing assets and reduce the demand for new buildings. Housing renovations provide win-win opportunities for the EU's climate, social and energy objectives and are aligned with the Commission recommendation on energy poverty¹⁷³ and the Social Climate Fund.

2.6.4 Mobility

Under the European Green Deal, the EU strengthened efforts to address pollution and emissions at source and promote the shift towards more sustainable mobility systems.

The **smart and sustainable mobility strategy**¹⁷⁴ includes ambitious 2030 targets and initiatives to reduce pollution and emissions in the transport sector and promote climate-neutral cities.

The **'Fit for 55' package** aims to reduce the entire sector's pollution and greenhouse gas emissions through: (i) zero-emission cars and vans; (ii) more stringent CO₂ emission performance standards for lorries and buses; (iii) the new EURO 7 standard for road vehicles for air pollution, including for brakes and tyres; (iv) zero-emission heavy-duty vehicles for transporting freight and passengers; (v) the uptake of sustainable aviation and maritime fuels; (vi) reduced air pollution in ports; (vii) a gradual shift to zero-emission inland waterways transport; and (viii) promoting rail transport. **EU emission trading initiatives** will cover road

¹⁷² Provisional agreement: <https://data.consilium.europa.eu/doc/document/ST-16655-2023-INIT/en/pdf>.

¹⁷³ [COM Recommendation 2023/2407 on energy poverty](#).

¹⁷⁴ [COM \(2020\) 789 final](#).

transport and implement the **global market-based** scheme for CO₂ emissions from international aviation (CORSIA), which will become mandatory for all major emitters from 2027. The revised Eurovignette Directive will require that existing tolls and user charges for heavy-duty vehicles are either based on the vehicles' CO₂ emissions or include the CO₂ price as of 2024. Including air pollution external costs in tolls will be mandatory from 2026.

These zero-pollution initiatives will help reduce the impact of traffic **air and noise pollution** on people's health. To apply **circularity principles**, the Commission recently made a proposal on end-of-life vehicles.

Lastly, to improve **monitoring** the sector's environmental impact and keep people informed, work on better accounting and disclosing of emissions is ongoing for all transport modes, including noise in aviation.

Overall, the **transport system's environmental and climate impact is still too high**. There has been good progress in increasing the share of electric cars sold in Europe, which reached 21.6% in 2022, while the availability of publicly accessible chargers surged by more than 50% compared to 2021. However, the sector still produces almost 25% of the EU's greenhouse gas emissions, 70% of which came from road transport in 2019. Increasing the share of collective passenger transport (buses, coaches and trains) by 2030 is crucial, but this share fell sharply due to the COVID-19 pandemic, reaching 13.7% in 2021 (in total inland passenger transport). According to the EEA, it is unlikely that this will increase.

Transport is still also the **main cause of air pollution and related health effects and noise exposure**. Around 18 million people are still highly annoyed by noise, and 5 million people are highly sleep disturbed because of long-term exposure to noise from transport¹⁷⁵. In maritime transport, the number of accidental oil spills in EU waters has fallen, despite an increase in the quantity of oil transported by sea. However, this sector is responsible for bringing the largest proportion of non-indigenous species into seas around the EU.

Further progress is needed, for example, to cut emissions and air pollution from **inland vessels** (the Non-road Mobile Machinery Regulation only deals with new vessels). The EU's **circularity agenda** provides opportunities to reduce pollution and the high material footprint of the mobility system via reuse, remanufacturing, pooled vehicles and circular production and consumption.

2.6.5 Food system

Food accounts for **around 45% of the environmental impact of consumption in the EU**. Agriculture is responsible for 10.3% of the EU's greenhouse gas emissions (80% of which comes from livestock). This has adverse effects in terms of water-use stress, pollution (for example, rising nitrate or pesticides concentrations in EU groundwater bodies) and the continued decline of common farmland birds and pollinators.

The EU's **farm to fork strategy** aims to accelerate the transition to a fair, healthy and environmentally friendly food system through an integrated approach covering all stages (production, transport, packaging, consumption, waste). The strategy's targets include a 50% reduction in pesticide use and risk, a 50% reduction in nutrient losses, and a 50% reduction in sales of antimicrobials used for farmed animals and aquaculture (see the zero pollution section). Moreover, reaching 25% of agricultural land under organic farming is another major goal. Specific regulatory measures are under negotiation to reach these targets.

¹⁷⁵ 2017 data (source EEA). 2022 data will be available in May 2024.

Some steps have been taken to address pressures from agriculture. For instance, the commitment to **reverse the decline in pollinators** is crucial to prevent the worst effects of biodiversity loss on agriculture. The **soil strategy for 2030** and the proposed **soil monitoring law** aim to tackle the problem of continuing and aggravating soil degradation in the EU. Lastly, a **marine action plan** sets out measures based on common fisheries policy (CFP) rules and EU environmental law to protect marine ecosystems from the adverse effects of fisheries.

The proposed revised Waste Framework Directive sets out legally binding **food waste targets** for 2030: a 10% reduction in processing and manufacturing waste and a 30% reduction in retail waste and consumption per person.

Moreover, there are efforts to integrate European Green Deal targets into the CAP and CFP. Member States must consider the **objectives and targets of the farm to fork strategy in their national CAP strategic plans**. The CFP commitment to step up efforts to bring fish stocks to sustainable levels is supported through an action plan to conserve fishery resources and protect marine ecosystems.

There is **mixed progress in decreasing food system pressures**. EU organic farming (as a percentage of agricultural area used) increased from 6% in 2012 to 10% in 2021 (equivalent to 15.9 million hectares of agricultural land). However, the EU is unlikely to meet its 2030 target of at least 25%. The risk of pesticides has fallen but not enough to meet the 2030 target, and the sales of pesticides in the EU, after some decline, rebounded in 2021 to reach 355 175 tonnes. EU sales of antimicrobials used for farmed animals decreased from 118.3 mg/PCU (population correction unit) in 2018 to 84.8 mg/PCU in 2022. The EU is on track to reach the 2030 target of 59.2 mg/PCU if Member States continue to lower sales every year by approximately 5% for the remaining 8 years. There has been no progress in moving towards healthy and plant-based diets. Food waste in the EU remained stable in 2021 compared to 2020 and accounted for around 131 kg per person (58.4 million kg). 54% of waste comes from households, and the remaining 46% was generated further up the food supply chain. It is no longer disputed that food systems transformation is needed that will enable us to live and thrive within planetary boundaries and ensure food and nutrition security for all and in the long term for future generations. This requires a better understanding of the complex interactions between the components of our current food systems, and innovative ways to accelerate and develop solutions that can contribute to systemic change.

Food 2030¹⁷⁶ is the EU's research and innovation policy framework supporting the transition towards sustainable, healthy and inclusive food systems, that respect planetary boundaries. It is in line with, and supports the goals of the European Green Deal, farm to fork strategy and Bioeconomy strategy.

Food 2030 and their pathways for action are being deployed via Horizon Europe, the EU's framework programme for R&I (2021–2027), which provides funding to support a diversity of projects and initiatives, in Europe and beyond.

The report “Food 2030 - Pathways for action 2.0”¹⁷⁷ provides an update on the European Commission's Food 2030 initiative and is meant to guide future research and innovation policy reflections related to Horizon Europe, the farm-to-fork strategy, the European Green Deal and beyond.

Fully **integrating a systemic approach to food policies in the legislative framework** would support accelerating progress to a truly sustainable system. **Carbon farming** practices will

¹⁷⁶ [Food 2030 – Pathways for action](#)

¹⁷⁷ [Food 2030 – Pathways for action 2.0](#)

bring new business opportunities, rewarding farmers for preserving or increasing soil organic carbon and improving soil quality and its fertility¹⁷⁸.

2.6.6 Trade

As the world aims to achieve the goals of the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, relevant Multilateral Environmental Agreements (MEAs) and the UN Sustainable Development Goals, trade policy plays a role in supporting an ecological and green transition not only within the EU but globally. This includes, for instance, accelerating investment in the promotion of value chains that are circular, responsible, and sustainable. It also means creating opportunities for sustainable products and services to be traded more extensively.

As the EU continues to be a front runner with the Green Deal and its associated policy implementation, it places significant importance in supporting partner countries in building the necessary mechanisms, capacity and systems via technical exchanges, financial support, and diplomatic efforts.

Trade policy can serve as a platform to engage with trading partners on climate and environmental action, multilaterally e.g., in the World Trade Organization or bilaterally through our Free Trade Agreements. Commitments to sustainability have been continuously strengthened in EU trade agreements, in particular with regard to enhancing climate action through the recent Communication on Trade and Sustainable Development (TSD) chapters in free trade agreements¹⁷⁹. The Commission has also stepped-up efforts to implement and enforce the sustainable development commitments of EU trade agreements. Recent TSD chapters commit parties to the full respect of their obligations under the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework and relevant Multilateral Environmental Agreements. For countries with which the EU has or is negotiating free trade agreements, climate policy dialogues are also pursued within the Trade and Sustainable Development sub-committees, complemented by institutional advisory and monitoring mechanisms. Joint Committees under the EU Strategic Partnership Agreements also provide a forum to review the respective climate, energy, and environmental policies. In addition to, or in the absence of such existing frameworks, bilateral summits and other official visits create opportunities to exchange on green deal issues.

Plurilaterally as well as multilaterally, the EU is involved in the **trade, environment and climate nexus**. Within the WTO, the EU is working towards making the body a more relevant forum to tackle such global challenges. In the plurilateral context in the WTO, the EU is involved in discussion on environmental sustainability, ending plastics pollution and fossil fuel subsidy reform. Outside the WTO, the EU together with Ecuador, Kenya and New Zealand forged the Coalition of Trade Ministers on Climate¹⁸⁰. The Coalition will provide political steer and guidance to boost inclusive cooperation on climate, trade, and sustainable development. The EU is also an active participant in the OECD's Joint Working Party on Trade and Environment that provides analytical work on the trade and environment nexus.

¹⁷⁸ See [Commission Communication on Sustainable Carbon Cycles](#) promoting carbon farming and the [Commission proposal for the certification of carbon removals](#).

¹⁷⁹ COM(2022) 409 final.

¹⁸⁰ See <https://www.tradeministersonclimate.org/>

2.6.7 Tourism

The global tourism sector's **consumption of key resources** – energy, water, land and materials – is growing at the same pace as its generation of solid waste and sewage, the loss of biodiversity and greenhouse gas emissions. In a 'business-as-usual' scenario, in 2050, tourism will have generated an increase of 154% in energy consumption, 131% in greenhouse gas emissions, 152% in water consumption and 251% in solid waste disposal¹⁸¹.

Based on the **Transition Pathway for Tourism**¹⁸², co-created by the Commission and tourism stakeholders, in 2022 the Council adopted the **EU tourism agenda 2030**¹⁸³. Under green transition priority, this plan sets out measures to: (i) reduce the sector's environmental footprint (food/general waste, water/energy efficiency and pollution); (ii) encourage companies to take up greener practices by increasing demand for green services by public bodies through green public procurement and promoting schemes that support assessing, tracking and reducing their environmental footprints (such as the Eco-Management and Audit Scheme, the EU Ecolabel, other EN ISO 14024 type I ecolabels or equivalent third-party verified voluntary labels); and (iii) fund research and innovation projects and pilot projects on circular and sustainable tourism.

In 2022, the Commission also launched the **EU Tourism Dashboard**, a tool to improve access to statistics and indicators for tourism. In addition, the dashboard supports tourist destinations and public authorities in tracking their progress in the green and digital transitions. It includes statistical data on greenhouse-gas intensity from tourism, bathing water quality, the share of trips by train, air-travel emission intensity, tourism-energy intensity and the use of sustainability labels.

The first 2024 stock-taking report of the Transition pathway¹⁸⁴ provides insights on the broad stakeholder progress towards greening tourism ecosystem.

So far, there has been a fragmented policy response across EU legislation to the sustainability challenges faced by the tourism industry. This has led to a **lack of data availability** for the sector as a whole, especially on environmental impact. However, work is ongoing and, in cooperation with the European Commission (in particular Eurostat) and supported by the technical support instrument, Member States have set up methodologies to develop new indicators, new data sources and building capacities. In the future, the revised EU Tourism Dashboard will gradually allow for better monitoring of environmental impacts at national, regional and local levels.

The EEA's 2023 8th environment action programme monitoring report recalls that of most concern are the 2030 indicator outlook results for the programme's priority objective on 'environmental and climate change pressures related to EU production and consumption'. The **pace of change** for most of the headline indicators that address key aspects of energy, mobility, food and material resource use systems will have to **speed up significantly** in the coming years. This underlines the need to finish the work to transform these systems that was started under the European Green Deal.

3. PROGRESS ON ENABLERS

The Report on the mid-term review of the 8th environment action programme provides an overview of selected key enablers laid down in Article 3 of the 8th Environment Action

¹⁸¹ See <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/responsible-industry/tourism>.

¹⁸² [Transition pathway for tourism - Publications Office of the EU \(europa.eu\)](#)

¹⁸³ [New European agenda for tourism - Consilium \(europa.eu\)](#)

¹⁸⁴ [Transition pathway for tourism - Publications Office of the EU \(europa.eu\)](#)

Programme Decision. It specifically looks at the following enablers: (i) implementation, enforcement and environmental rule of law; (ii) financing the transition; (iii) integrated policymaking; (iv) sustainable business models for a resilient economy; (v) a just transition and environmental fairness; (vi) the environment-health nexus; (vii) digitalisation; and (viii) global uptake. This staff working document gives further details on a few additional enabling conditions.

3.1 Improving the knowledge base and research and innovation (R&I)

The knowledge-based approach is firmly integrated into EU policymaking, including through the Better Regulation framework. A regularly **improved scientific evidence base** benefiting from digitalisation opportunities underpins environmental and climate targets and the pathways to reach them. This effort continues, for instance, in the process to set an EU climate target for 2040. The Commission's Knowledge Centre for Biodiversity¹⁸⁵ was set up to improve the knowledge base and how it is shared and used for biodiversity policy. It integrates a Science Service for Biodiversity that supports policy decision-making.

R&I is a key-enabler of the green transition through the development of new technologies, social innovation and other tools based on social sciences like citizen science. **Horizon Europe** is supporting the green transition not only with technology but also with social innovation and partnerships involving authorities and private bodies. The **new EU missions**¹⁸⁶ are tackling environmental challenges with an innovative approach encompassing a wider range of instruments and partners, including the public. The four ongoing missions are particularly relevant (Adaptation to climate change, Restore our oceans and waters, Climate-neutral and smart cities and A soil deal for Europe). They will deliver concrete results by 2030.

Environmental Observations are an essential means to detect, understand and monitor environmental changes, like climate change, pollution or biodiversity decline. They are thus the bases for designing related policies and monitor their effectiveness. R&I is necessary to develop observing systems at local, regional or global scales and to enable their effective implementation and exploitation. Environmental Observations are addressed in many parts of Horizon Europe in the context of, for example, disaster risk reduction (cluster 3), space based services (cluster 4) Climate Sciences (cluster 5) and most prominently throughout all the thematic domains of cluster 6 including biodiversity, natural resources, oceans, agriculture, and urban development. Copernicus and Galileo are key space assets that play a crucial role in environmental awareness and policy making.

R&I for the green transition is increasingly being applied to EU products and services. The **eco-innovation index** has increased in the last decade, and it is very likely that it will further increase to support meeting the objectives of the European Green Deal. The EU single market is going through a green transition: by September 2023, almost 89 000 products (goods and services) had been awarded the EU Ecolabel. This is a 17% increase compared to 2020 despite the COVID-19 crisis and the geopolitical tensions.

EU and national **pathways supporting industrial sectors** to reduce their overall climate and environmental footprints systematically build on scientific research on whole life-cycle approaches (for instance, Level(s) for the building industry). However, for some industries, the fragmented policy responses to sustainability challenges have led to a lack of data availability for the sector as a whole (as mentioned above for the tourism sector).

¹⁸⁵ https://knowledge4policy.ec.europa.eu/biodiversity_en

¹⁸⁶ https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe_en

At international level, the **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services**' assessments have gained global recognition on par with the IPCC reports. Building on its experience with the Knowledge Centre for Biodiversity and supported by Horizon Europe, the EU is fostering the development of a global support service for biodiversity and regional technical and scientific cooperation centres to implement the global biodiversity framework. There is a need to improve dataflows, models and scenarios to underpin the development of policy options and measures for 2040 and 2050, including the integration of biodiversity data into climate and agriculture. Setting up a **science to policy panel on chemicals, waste and to combat pollution**¹⁸⁷ is another milestone in an area where there is an urgent need for scientific evidence on the local and global impact of chemicals on human, animal and environmental health and their effect on each other.

On **Better Regulation**, there is a strong framework in place, and the main challenge is to improve implementation. The Regulatory Scrutiny Board's opinions have called for improved environmental analysis in almost a quarter of the impact assessments developed under the European Green Deal to ensure an overall integrated approach. The issues are complex and combine factors such as the lack of good data, poor quantification and monetisation of environmental impacts, and a paucity of better regulation work in Member States to underpin Commission analysis. The Regulatory Scrutiny Board noted that the analysis of economic, social, societal, competitiveness and environmental impacts was the weakest part of all impact assessments at first submission in 2022¹⁸⁸.

3.2 Environmental accounting

The contribution and value of nature to a healthy economy and human prosperity and well-being is increasingly recognised, including in standard economic thinking. Accounting for natural capital in public and private systems enables collecting, organising and using information on the stocks and flows of natural resources and trends over time.

In February 2023 a provisional agreement¹⁸⁹ was reached on the amendment of Regulation (EU) 691/2011 on European environmental economic accounts, as regards new accounts on forests, ecosystems and environmental subsidies and similar transfers. This follows the Commission proposal of 2022. More specifically, the new module on ecosystem accounting builds on the first EU assessment of ecosystems¹⁹⁰. The adoption in 2021 of the **UN standard methodologies for ecosystem accounting**¹⁹¹ was a breakthrough. The standard provides a common framework for organising data on habitats and landscapes, measuring ecosystem services, tracking changes in ecosystem assets, and linking this information to economic and other human activity. Despite some progress, natural capital is still overlooked in many policy and business decisions. Better integrating value is one of the international commitments taken by the EU and Member States as part of the global biodiversity framework. A standardised methodology is essential to further progress.

In the private sector, the **EU business & biodiversity platform**¹⁹² has continued to provide a forum for businesses working to better understand and act on their impact and dependencies

¹⁸⁷ [Ad hoc open-ended working group on a science-policy panel on chemicals, waste and pollution prevention | UNEP - UN Environment Programme](#)

¹⁸⁸ [Regulatory Scrutiny Board Annual Report 2022](#)

¹⁸⁹ <https://data.consilium.europa.eu/doc/document/ST-6430-2024-INIT/en/pdf>

¹⁹⁰ [JRC Publications Repository - Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment \(europa.eu\)](#)

¹⁹¹ [‘System of Environmental-Economic Accounting– Ecosystem Accounting’ \(SEEA-EA\) \(europa.eu\)](#)

¹⁹² https://green-business.ec.europa.eu/business-and-biodiversity_en.

on biodiversity, including in annual **European business and nature summits**¹⁹³. The Transparent project¹⁹⁴, supported by the EU LIFE programme, has developed the **first corporate natural capital management accounting methodology**. It is a powerful tool to integrate the different values of biodiversity into decision-making at all levels. The methodology can already be used for companies' internal decision-making and provide valuable data for their disclosures under the Corporate Sustainability Reporting Directive. The challenge for the future will be encouraging companies to adopt the methodology and further developing its biodiversity component.

3.3 Nature-based solutions

Nature-based solutions¹⁹⁵, including the protection and restoration of biodiversity on land and at sea, have many climate, environmental, social and economic benefits. They help reverse biodiversity loss, foster climate change mitigation and adaptation, and improve the resilience of agriculture, forestry, fisheries and other sectors of the bioeconomy. They also provide many job and business opportunities.

In line with the 2022 Resolution **5/5 of the United Nations Environment Assembly**¹⁹⁶, the EU has set up an ambitious policy framework for accelerating and scaling up implementation of nature-based solutions and strengthening synergies among all relevant national strategies and plans. Several policy initiatives under the European Green Deal explicitly promote nature-based solutions (for example, the European Climate Law, the adaptation strategy, the biodiversity strategy, the European Bauhaus). The upcoming Nature Restoration Law requires Member States to foster synergies with climate change mitigation and adaptation.

The EU's Horizon 2020 and Horizon Europe research programmes have invested half a billion EUR in research and demonstration projects on nature-based solutions¹⁹⁷. Efforts are ongoing to tackle the barriers to further investment.

The preparation and update of national plans and strategies on implementing the Green Deal objectives¹⁹⁸ gives Member States the opportunity to include information on nature-based solutions that can strengthen synergies with other priorities. Stepping up investment is still a major challenge.

3.4 Monitoring progress

Good progress has been made in **monitoring environmental policies**: the 8th environment action programme monitoring framework provides a strategic approach to measuring progress

¹⁹³ [European Business and Nature Summit - European Commission \(europa.eu\)](#)

¹⁹⁴ [Transparent - Capitals Coalition](#)

¹⁹⁵ The Commission defines nature-based solutions as 'Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions'. Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services. See [Nature-based solutions \(europa.eu\)](#).

¹⁹⁶ Resolution 5/5 on nature-based solutions for supporting sustainable development, adopted by the United Nations Environment Assembly on 2 March 2022.

¹⁹⁷ See: European Commission, European Research Executive Agency, Nature-based solutions – EU-funded nbs research projects tackle the climate and biodiversity crisis, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2848/42098>

¹⁹⁸ This includes integrated national energy and climate plans, national adaptation plans, national biodiversity strategies and action plans, national restoration plans, strategic plans under the common agricultural policy, marine strategies and measures adopted under the common fisheries policy.

on the ground. It is also fully consistent with more detailed sector-specific environmental monitoring tools.

For climate policies, the 8th environment action programme's headline indicators draw on data reported by the EU and Member States under GHG inventories to the UN Framework Convention on Climate Change. The 2023 climate action progress report also uses approximated GHG emission data from Member States as well as their **national energy and climate plan reporting** to monitor progress on climate and energy objectives. Additional data come from Copernicus Atmosphere Monitoring Service (CAMS)¹⁹⁹ and its reinforced capacity on CO₂ Monitoring and Verification Support²⁰⁰. The revised **monitoring framework for the circular economy** measures the contribution of the circular economy to sustainability within the planetary boundaries, competitiveness and the EU's open strategic autonomy. Its conclusion was that more progress is needed for the EU to become circular and decrease pressure on natural resources. The first **zero pollution monitoring and outlook** showed progress in reducing air pollution, risks from pesticides, antimicrobials and marine litter. However, there was insufficient progress in reducing pollution from noise, nutrients and waste. Efforts for measuring progress on the EU biodiversity targets have increased as part of the development of the **EU biodiversity dashboard**²⁰¹. To fill current knowledge gaps, the Commission is developing sustainability indicators for the chemicals strategy on soil, forests and pollinators. It is also improving the pesticides risk indicator.

The Commission launched several other initiatives to improve the knowledge base. These include the knowledge centre on earth observation, on the blue economy and the raw materials information system.

In recent years, the Commission has developed several **new cross-cutting monitoring tools to measure progress on systemic change**, including on the UN Sustainable Development Goals²⁰² and resilience²⁰³. Those use climate and environmental indicators from existing thematic monitoring frameworks, including the 8th environment action programme's monitoring framework. These indicators are also used in the European Semester.

As requested by the 8th Decision and announced in the 2023 Strategic Foresight Report²⁰⁴, work is ongoing to develop a framework to measure progress '**beyond GDP**', by means of a sustainable and inclusive well-being dashboard.

There are still major **data and monitoring gaps**, for instance on climate and the environment vs the social nexus, which need to be filled to set the right framework for a just and fair green transition. Monitoring the link between competitiveness and green transition could also be further strengthened.

4. PROGRESS ON THE 2050 VISION OF LIVING WELL WITHIN THE PLANETARY BOUNDARIES

The 8th environment action programme (Article 2.1) sets out a 2050 vision where people live well within the limits of the planet in a well-being economy.

¹⁹⁹ e.g. [Anthropogenic and natural emissions | Copernicus](#)

²⁰⁰ Relying on new satellites, Akas CO₂M, to be launched in 2026.

²⁰¹ <https://dopa.jrc.ec.europa.eu/kcbd/dashboard/>

²⁰² <https://ec.europa.eu/eurostat/web/sdi/database>.

²⁰³ https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en

²⁰⁴ [Commission's Strategic Foresight Report 2023](#)

4.1 Planetary boundaries

The Commission's 2023 Strategic Foresight Report 2023 underlines that avoiding the disruption of critical natural systems is essential for resilient societies and sustainable economies. Scientists calculated that, at global level, **six out of nine planetary boundaries have been transgressed** and cascading tipping points are approaching²⁰⁵. High-income Member States score among the highest for transgressing several planetary boundaries²⁰⁶.

Water scarcity and **land take** (the conversion of land to artificial surfaces, in particular through soil-sealing) are cross-cutting environmental challenges that link to several systems. They have therefore been selected as the best available indicators for the 2050 vision under the 8th environment action programme monitoring framework.

Water scarcity affects almost one third of the EU in at least one season (mostly in southern and western Europe). Despite successful efforts to reduce water abstraction (-15% since 2000), ongoing **water scarcity challenges are likely to further increase** with climate change.

Land take continues to be a major pressure on biodiversity and ecosystems and threatens the EU's capacity for climate mitigation. Between 2012 and 2018, the net land take in EU was on average 450 km² annually (almost the surface of Andorra). The EU is unlikely to achieve the 2050 target of no net land take.

Built-up areas have increased in the EU, mostly in cities and commuting zones as a result of population growth, transport infrastructure, cultural preferences and economic growth. Even though the rate of net land take has fallen by more than 40% over the three observation periods, it is **very unlikely that the 'no net land take' policy target for 2050 will be met**.

The **EU biodiversity strategy**, the upcoming **Nature Restoration Law** and the **Soil Monitoring and Resilience Law** include ambitious measures to reverse land take and boost land's valuable ecological functions (for example, carbon sequestration, water retention and protection from floods). The measures will also protect and restore the water cycle, making a key contribution to strengthen the EU's water resilience.

4.2 Consumption footprint

The green and digital transitions are vital in strengthening the EU's open strategic autonomy, ensuring its long-term competitiveness, upholding its social market economy model and consolidating its global leadership in the new net-zero economy. The **2023 Strategic Foresight Report** calls for a new economic model, decoupling economic growth from virgin resource use and its negative environmental impact.

Environmental resources, which are not infinite, form the very foundation of economic activity given that **most eurozone businesses are highly dependent on natural resources**. 72% of the 4.2 million companies in the euro area are highly dependent on at least one nature-related service, such as pollination, clean water, healthy soil, or timber²⁰⁷. The socio-economic benefits of investing in these resources far outweigh the costs: up to EUR 850 billion in avoided social and health costs from air pollution a year²⁰⁸, EUR 300 billion in economic benefits per year

²⁰⁵ [Planetary boundaries - Stockholm Resilience Centre](#)

²⁰⁶ [Commission's 2023 Strategic Foresight Report](#)

²⁰⁷ COM(2023) 376 final.

²⁰⁸ See [Third Clean Air Outlook](#), COM(2022) 673 final.

from Natura 2000 ecosystem services, and every euro invested in nature yielding 8 euro in broader socio-economic benefits²⁰⁹.

The 8th environment action programme monitoring framework includes the **consumption footprint**. This estimates the overall impact of EU consumption, considering all phases of the product (building on life-cycle analysis), and **jobs and gross added value in the green economy** to measure progress towards a regenerative and competitive economy.

From **2010 to 2021, the EU consumption footprint increased by around 4%**, with impacts due to climate change, fossil resources use and the release of particulate matter representing more than 50% of the overall impact. It has transgressed the planetary boundaries for five impacts (particulate matter, freshwater ecotoxicity, climate change, use of fossil-based resources, and use of mineral and metal resources). Although it is too early to assess the full impact of the European Green Deal on the ground, according to the Commission's Joint Research Centre, the EU's consumption footprint is **projected to grow further by 2030** based on current consumption patterns (in terms of quantity and type of products consumed) and expected economic growth²¹⁰.

Progress in greening the EU economy will play a major role in to reducing the EU's consumption footprint and boosting competitiveness. The environment goods and services sector has been very resilient in recent crises and outperformed the wider economy in the last decade: it represented 2.1% of total EU employment in 2010 and 2.5% in 2020, reaching 5.1 million full-time equivalent employees. This growth is mainly due to job creation related to renewable energy, energy efficiency and waste management and is expected to continue. However, this sector still accounts for less than 3% of the EU's economy. The transition will create more **green jobs**, in particular in applying circular economy principles and moving to a low-carbon economy. The clean water, waste and remediation sector alone employs about 1 million people, and investment in clean technologies and innovation in these sectors drives the demand for new talent.

4.3 Well-being and fairness

Nature and biodiversity play a fundamental role in human health and well-being. The '**One health approach**' recognises the interdependence of the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems).

While EU environmental policies have brought great benefits to people living in the EU, questions remain on whether benefits or remaining impacts are distributed equitably within and among Member States. **Vulnerable groups** – be it for socio-economic reasons, health status, age, gender²¹¹ or minority status – **are disproportionately affected** by climate change extreme events, environmental hazards and related health risks. People at risk of poverty or social exclusion have more difficulties in accessing quality drinking water and sanitation, which is considered an essential service under the EU Pillar of Social Rights²¹².

Despite improving trends, **air pollution inequalities** remained stagnant between 2007 and 2020. Levels of fine particulate matters (PM2.5) were consistently higher by around one third

²⁰⁹ See IEEP (2013) [The economic benefits of the Natura 2000 network. Final Synthesis Report to the European Commission](#). Publications Office of the EU and the Impact Assessment accompanying the Commission proposal for a Nature Restoration Law ([SWD/2022/167 final](#)), p. 96 – 104.

²¹⁰ https://joint-research-centre.ec.europa.eu/scientific-activities-z/zero-pollution-outlook-2022_en

²¹¹ Review of the Implementation in the EU of area K of the Beijing Platform for Action: Women and the Environment. Gender Equality and Climate Change, p. 20.

²¹² See: European Commission, Access to Essential Services: Evidence from EU Member States, Final Synthesis Report, 2023.

in the poorest regions (the 20% with the lowest GDP per capita). It is unlikely that such environmental inequality will decrease in the coming years.

Recent Green Deal initiatives include **dedicated measures for vulnerable people** (for example, in the proposed Air Quality and Urban Waste Water Directive), and further action is supported through implementation of the European Social Pillar of Rights on water access. To help vulnerable women, the EU **gender equality** strategy for 2020-2025 and the Recovery and Resilience Facility aim to incorporate gender and intersecting inequalities in the green transition, also by promoting green skills among women. The Facility's Just Transition Mechanism²¹³ will support workers and people in the regions most affected by the transition (with at least EUR 100 billion). The Social Climate Fund, accompanying the new emissions trading system (ETS2), will help shield vulnerable households, micro-enterprises and transport users from the impact of carbon pricing in the transport and building sectors.

The European Green Deal's **Just Transition Mechanism** addresses the socio-economic consequences of the transition and brings a geographical dimension to ensure that no one and no region is left behind. The Social Climate Fund, to accompany the new ETS2, will address the impacts of carbon pricing in the transport and building sectors and provide support for vulnerable households, micro-enterprises and transport users. The Just Transition Fund provides targeted support to those territories most affected by the transition. The EU is encouraging the education and training sector to contribute to strengthening competencies and skills so that learners of all ages are better prepared to engage in the green transition.

Social cohesion and the fight against inequality in the EU would benefit from **integrating an even stronger social dimension into transition policies** to: (i) prevent environmental hazards from further exacerbating existing socio-demographic differences within and among Member States; (ii) share the costs of pollution and the transition fairly, reflecting people's financial means and their environmental footprint; (iii) support the most affected groups and regions to alleviate the socio-economic impact of the transition (e.g. coal regions) and unleash job opportunities, better jobs and savings for everyone.

²¹³ [Just Transition Mechanism - Funding & tenders \(europa.eu\)](#)