



Climate Action Progress Report 2024

country profile

GERMANY

This country profile supports and complement the assessments of the Climate Action Progress Report 2024. It is based on data reported by the EU Member States. It does not replace formal progress assessments.

January 2025

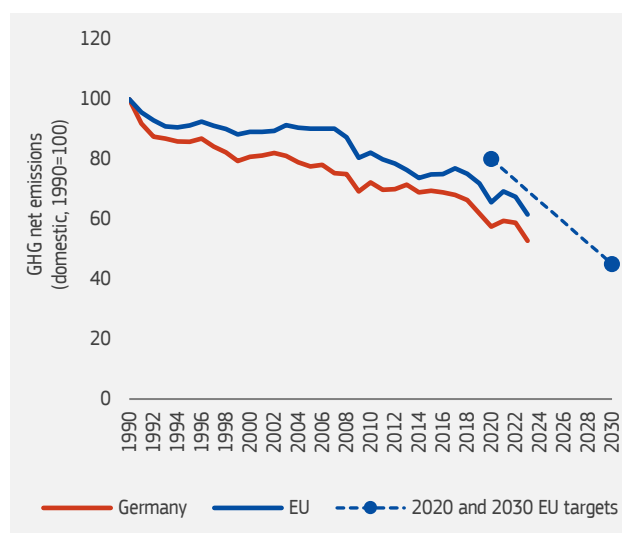


1. Key highlights

- In 2023, GHG emissions in Germany were 674.0 MtCO₂-eq, 10.1% lower compared to 2022.
- Net GHG emissions (i.e. including LULUCF) in 2023 were 47% lower than 1990 levels.
- Emissions covered by the Effort Sharing Regulation decreased by 2.9% compared to 2022.
- 53% of Recovery and Resilience funds and 31% of Cohesion funds are allocated to climate action.

2. Greenhouse gas emissions

In 2023, approximated domestic greenhouse gas (GHG) emissions in Germany were 674.0 MtCO₂-eq, 10.1% lower compared to 2022 and 15.4% below pre-pandemic levels. Overall, net domestic emissions, including the Land Use, Land Use Change and Forestry (LULUCF) sector, were 47.2% lower than 1990 levels.



Total domestic GHG emissions

	MtCO ₂ -eq	% change 1990-2023	% average annual change		
			1990-2005	2005-2022	2022-2023
Germany	1251	-46%	-1.6%	-1.6%	-10.1%
EU	4 867	-36%	-0.5%	-1.7%	-7.6%

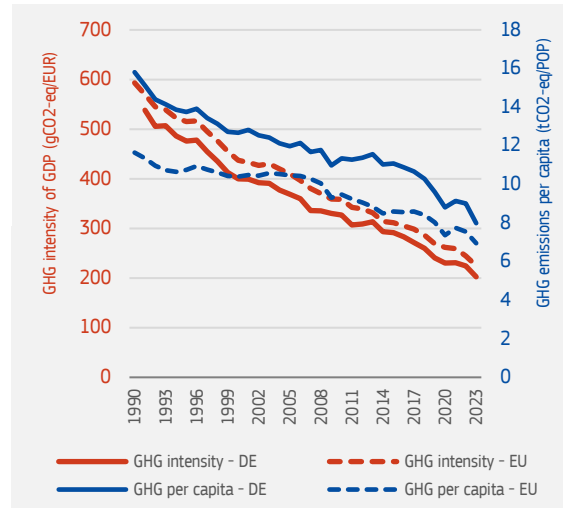
Total net domestic GHG emissions (including LULUCF)

Germany	1284	-47%	-1.7%	-1.6%	-10.2%
EU	4 650	-38%	-0.7%	-1.7%	-8.8%

▲ Note: GHG emissions and removals for 1990-2022 are based on data submitted by EU Member States to the UNFCCC under Regulation (EU) No 525/2013. GHG emissions for 2023 are based on approximated GHG inventories.



In 2023, net GHG emissions per capita in Germany were 8.0 tonnes of CO₂ equivalent, above the EU average of 6.9 tCO₂-eq. In the same year, the GHG intensity of GDP (i.e. net GHG emissions over GDP) was 203 gCO₂-eq/EUR, below the EU average of 225 gCO₂-eq/EUR.

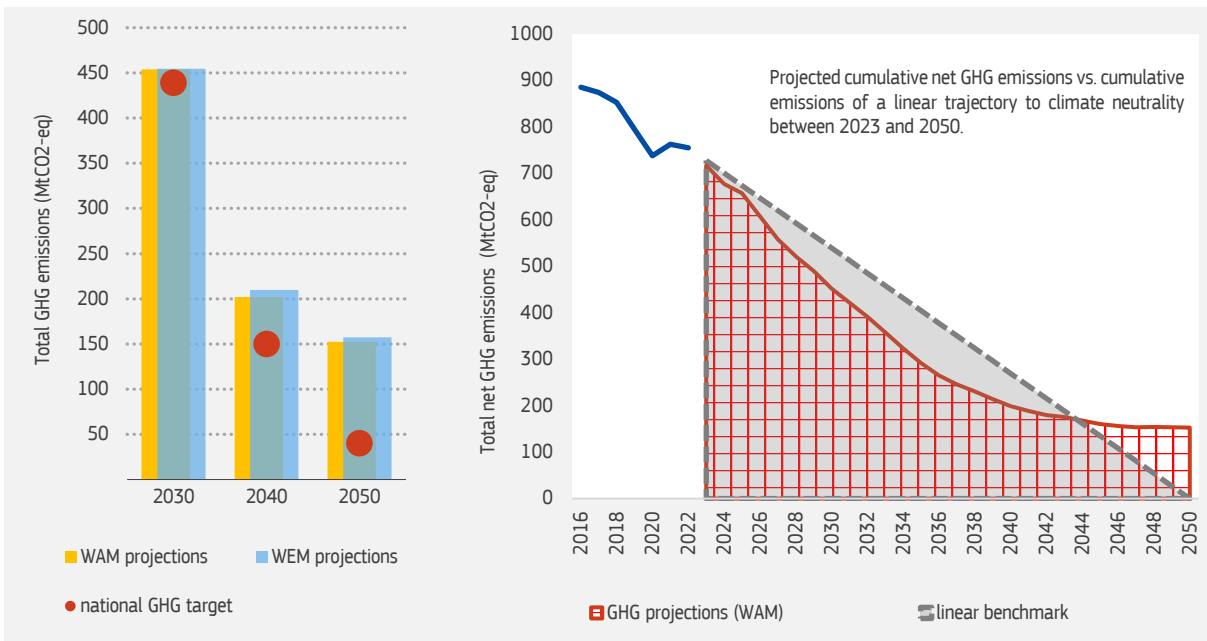


► Note: Total net GHG emissions, including LULUCF and excluding international aviation. GHG inventory 1990-2022 and approximated GHG inventory 2023 (EEA). Real GDP in 2015-prices (Eurostat). Population (Eurostat).

In 2024, Germany updated GHG projections. Under the existing policy scenario (WEM) they point to a reduction in net GHG emissions (including LULUCF) of 65% and 87% by 2030 and 2050, respectively, compared to 1990. With additional measures (WAM), projected reductions are 65% and 88% for the same respective years.

By comparing the cumulative projected net GHG emissions between 2023 and 2050 with a linear trajectory to climate neutrality by 2050, Germany shows an undershoot of 9% (i.e. cumulative projected emissions are lower than those from a linear trajectory).

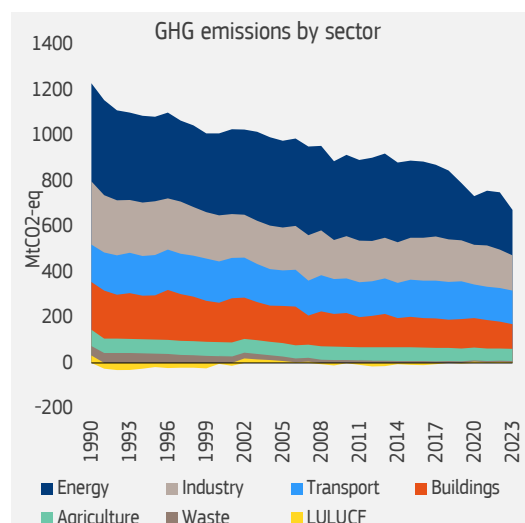
Projections overshoot
-9%



▲ Note: Note: (1) GHG emission projections as updated by 11 Member States in March 2024. (2) WEM = with existing measures; WAM = with existing and additional measures. (3) The national GHG targets are from Member States' submissions of NECP progress reports (Annex I, Table 1). Missing data are replaced by other available reported information. (4) The overshoot metric compares cumulative projected net GHG emissions under the WAM scenario (including LULUCF) with cumulative emissions underlying a linear trajectory from 2021 emissions levels to zero by 2050.



3. Greenhouse gas emissions by sector



	1990-2023 % change	1990-2005 % average annual change	2005-2022 % average annual change	2022-2023 % average annual change	EU 2022-2023
Energy	-53.5%	-0.8%	-2.4%	-20.4%	-19.8%
Industry	-44%	-2.6%	-0.7%	-7.7%	-5.5%
Transport	-10.9%	-0.3%	-0.3%	-1.4%	-0.8%
Buildings	-48%	-1.7%	-1.9%	-7.0%	-5.6%
Agriculture	-27.1%	-1.4%	-0.5%	-2.2%	-2.0%
Waste	-87%	-4.8%	-7.1%	-2.5%	-1.3%
LULUCF	(absolute change) -29.3	(absolute annual change)			-20
International aviation	135%	4.4%	1.0%	4.0%	9.8%

▲ Notes: (1) Energy sector refers to electricity and heat production and petroleum refining. (2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use. (3) Buildings includes emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors. (4) For LULUCF, the table reports differences between the given years in absolute values (MtCO₂-eq). Negative values indicate a reduction of net emissions or an increase in net removals.

In 2023, the highest contribution to GHG emissions in Germany came from the Energy sector (29%), followed by the Industry sector (22%) and the Transport sector (21%).

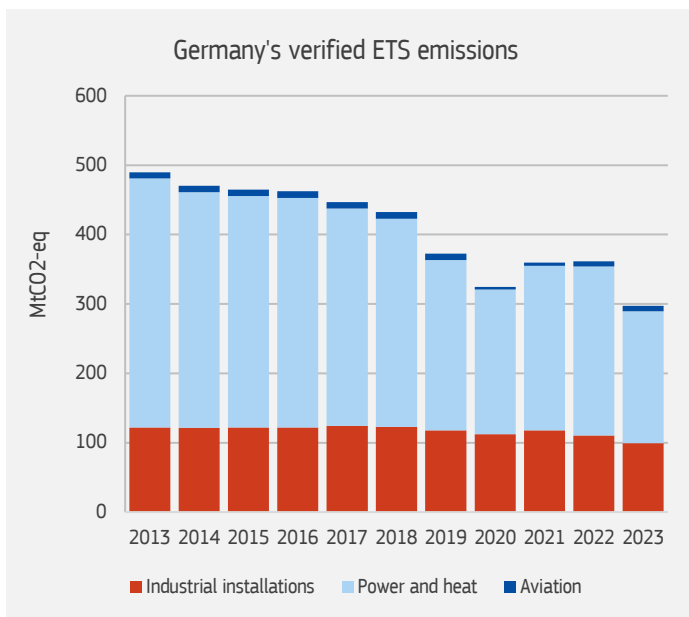
Between 2005 and 2023, the sectors which contributed the most to the change in net GHG emissions (i.e. -30%) were Energy, for which emissions fell by 47%, and Buildings, where emissions fell by 33%.

4. Emissions under the EU Emissions Trading System (ETS)



The EU ETS is an EU-wide market instrument to provide an incentive for emission reductions and transformative investments in the covered sectors. This means that it is largely the market that determines where in the EU the emission reductions take place, outside the control of Member States. However, Member States may adopt complementary (sectoral) policies in addition to the ETS's carbon price signal.

In 2023, stationary installations (1694 power generation and manufacturing industries) in Germany emitted 289.4 MtCO₂-eq (equal to 39% of total GHG emissions in Germany). This was 18.2% lower compared to 2022 and 20% below pre-pandemic levels. By 2023, emissions from stationary installations were down by 40% against the 2013 level (i.e. -44% to the 2005 level). Aviation emissions covered by the EU ETS were 5.1% higher compared to 2022, but 15.9% below the 2020 level.



In parallel, Germany has raised over EUR 32.20 billion in auction revenues since 2013 (EUR 7022 million in 2023), available for further climate action and energy transformation. Germany reported that an average of 100% of revenues was spent for climate and energy purposes over the same period. (*)

▲ (*) Germany reported spending EUR 623.3 million from its 2023 auction revenue to compensate for indirect carbon costs. This amount was deducted from Germany's total revenue for the purpose of calculating the amount Germany must spend on the purposes of Article 10(3). Germany's EUR 7.6 billion auction revenue co-funded EUR 18.5 billion in spending on Article 10(3) purposes and indirect carbon costs (Germany's total indirect carbon costs amounted to EUR 1.6 billion, with 37% of this figure attributed to the auction revenue in this table). The purpose reported in 2023 with the biggest allocation from the ETS revenue is promoting energy efficiency and renewable energy measures in the building sector, implemented by the Bundesministerium für Wirtschaft und Klimaschutz (EUR 11 049.5 million).

▲ (**) ETS emissions from aviation include flights within the European Economic Area (EEA) and outgoing flights to Switzerland and to the UK.

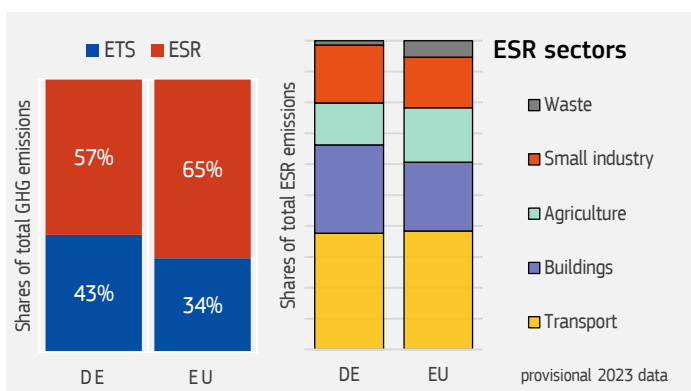
Verified ETS emissions (MtCO ₂ -eq)			
	2013	2022	2023
Power installations	359.0	243.6	190.1
<i>% change since 2013</i>	-	-32.1%	-47.0%
Industrial installations	122.1	110.3	99.3
<i>% change since 2013</i>	-	-9.6%	-18.7%
Aviation (**)	8.83	7.32	7.69
<i>% change since 2013</i>	-	-17.1%	-12.9%

5. Emissions in Effort Sharing sectors



In 2023, approximated emissions under the Effort Sharing Regulation (ESR), which excludes ETS and LULUCF emissions and removals, were 57% of total emissions in Germany compared to 65% for the EU.

In 2023, effort sharing approximated emissions in Germany were 395.0 MtCO₂eq, 2.9% lower than in 2022 and 13.7% below the pre-pandemic level.

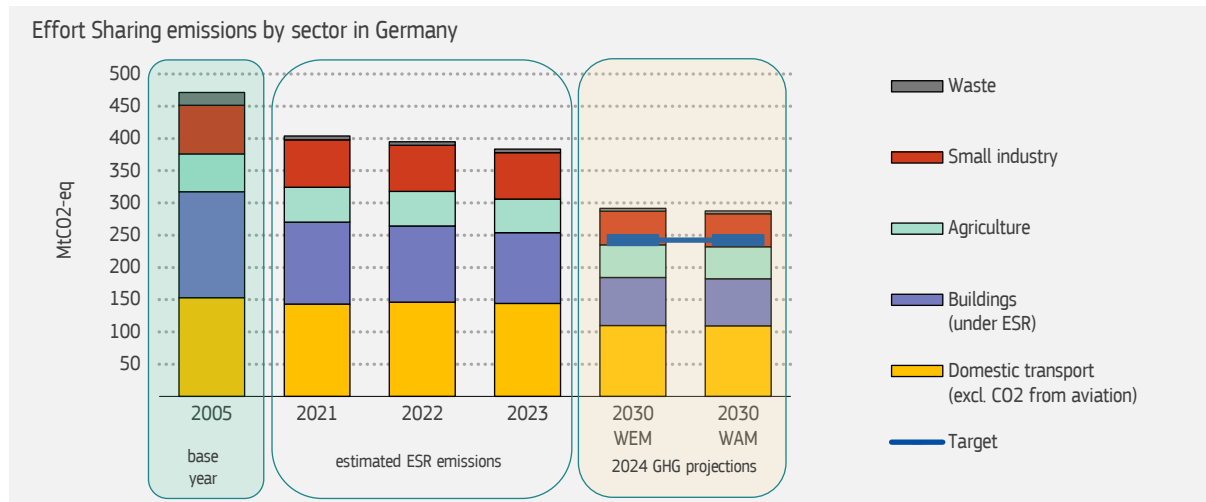


▲ Notes: (1) Small industry includes emissions from energy industries, manufacturing and construction, and industrial processes, that do not fall under the EU Emission Trading System. (2) Transport includes emissions from domestic transport activities, excluding CO₂ emissions from aviation. (3) Buildings includes emissions for heating buildings under the ESR.



In 2023, the largest contribution to the absolute change in ESR emissions came from buildings, for which emissions decreased by 7.0%, and transport, with emissions decreasing by 1.4% compared to 2022.

In 2023, buildings accounted for 29% of total ESR emissions in Germany, and transport accounted for 38%.



▲ Note: (1) 2023 ESR emissions are based on approximated inventory reports and the European Environment Agency (EEA)'s calculation of ESR emissions. The approximated emissions can, therefore, deviate from Member States' reported emissions. (2) Projections as reported by Member States under Reg. (EU) 2018/1999, compiled and checked by the EEA. (3) WEM = with existing measures, WAM = with existing and additional measures.

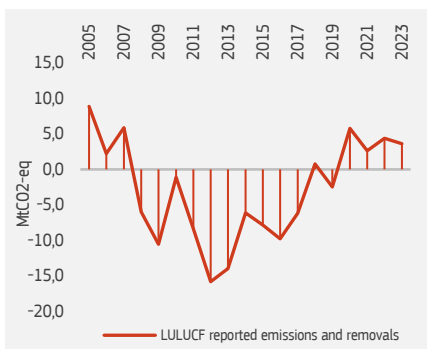
The Effort Sharing Regulation (ESR) sets the 2030 ESR emission reduction target for Germany to 50%, compared to 2005 levels. In 2024, Germany updated GHG projections. Latest GHG projections submitted by Germany under the existing measures scenario (WEM) point to a 40% decrease in ESR emissions by 2030 compared to 2005 levels, less ambitious than its ESR emission reduction target by 10 percentage points. Considering the impact of additional measures (WAM), projected ESR emissions point to a 41% decrease, less ambitious than its ESR emission reduction target by 9 percentage points.

6. Land Use, Land Use Change and Forestry (LULUCF)

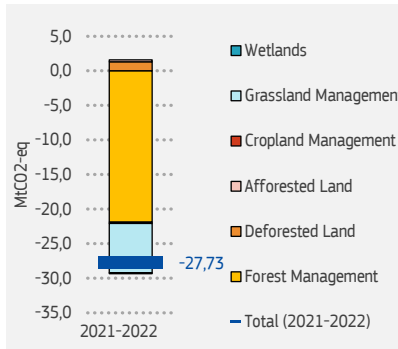


Based on final inventory data, in 2022, Germany reported net emissions of 4.38 MtCO₂-eq in the land use, land use change, and forestry sector (LULUCF). Based on approximated data, in 2023, net emissions from the LULUCF sector were 3.61 MtCO₂-eq.

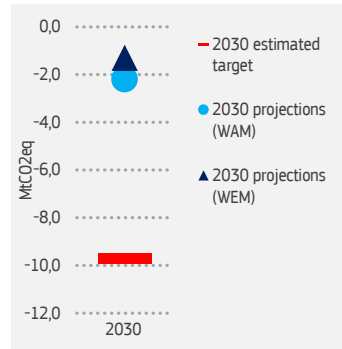
1) Reported LULUCF net emissions and removals



2) Period 2021-2025 with accounting rules



3) Progress towards 2030 target





▲ Notes: (1) Figure 1 shows net reported emissions and removals for the LULUCF sector. Net removals are expressed as negative numbers and net emissions as positive numbers. (2) Figure 2 shows the accounted emissions and removals for the LULUCF sector in 2021 and 2022. Computation of the accounts per land use category, applying the standardised rules in the LULUCF Regulation (EU) 2018/841. The input data for this analysis have been extracted from the EU Greenhouse Gas Inventory Report 2024 for 1990-2022 based on final Member States' inventory submissions under the EU Governance Regulation (EU) 2018/1999. (3) Figure 3 shows projected progress with existing measures (WEM) and with additional measures (WAM) in relation to the national 2030 target. The LULUCF Regulation sets out binding national 2030 targets for each Member State encompassing all emissions and removals in the LULUCF sector (Art. 4.3). The targets are specified in Annex IIa of the LULUCF Regulation. Individual targets are derived from the EU-wide target of -310 MtCO₂-eq net removals by 2030, Member States' average historic net removals from their GHG inventories for the years 2016, 2017 and 2018 and the countries' share of total EU managed land area.

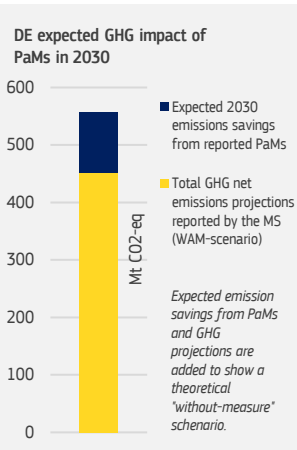
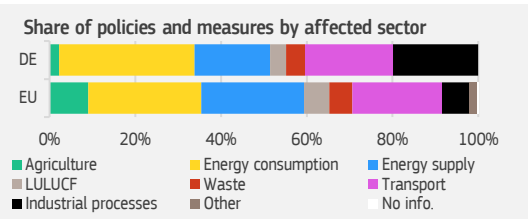
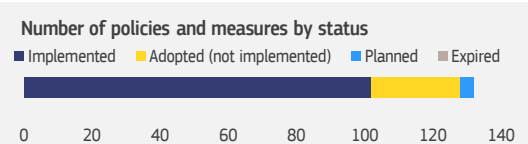
With current LULUCF accounting rules – with a limited scope – applicable to the period 2021 to 2025, the provisional ‘accounted’ balance for 2021 and 2022 using the 2024 GHG inventory submission produced an accounted credit of 27.7 MtCO₂-eq.

Forest Management and Grassland Management were the dominating land activities, with accounted net removals of 21.9 and accounted net removals of 7.2 MtCO₂-eq, respectively.

Latest LULUCF projections for Germany show net removals in 2030 of 1.3 MtCO₂-eq with existing measures (WEM) and 2.2 MtCO₂-eq with additional measures (WAM), leaving a gap of around 7.5 MtCO₂-eq to the estimated 2030 net removal target of 9.7 MtCO₂-eq.

7. Policies and measures

This section uses data reported every two years by EU Member States on their national greenhouse gas policies and measures (Article 18 of the Governance of the Energy Union and Climate Action Regulation). The EEA performs specific quality checks on the submissions by Member States to ensure the accuracy of the reported information on policies and measures. Nonetheless, the analysis suffers from the lack of completeness of reported data.



In 2023, Germany reported 136 single policies and measures (PaMs), representing an increase of 74% compared to 2021. As of 2023, none of the reported PaMs are planned but not yet implemented.

Ex-ante emissions savings

For 41% of its single and group PaMs, Germany estimates the expected emission reduction effect for the year 2030. It does the same for 40% of PaMs in 2040. By implementing these PaMs, Germany estimates emission savings of 104.7 MtCO₂-eq in 2030, and of 180.0 MtCO₂-eq in 2040.

Investments needs

Germany estimates the investment need for 8% of its single and group PaMs. It estimates the initial investment requirement at EUR 23700 ml. Actual investments up to and including 2021 amount to EUR 23100 ml., with EUR 600 ml. remaining to be implemented at this date.

More information and visualisations are available at the EEA [integrated national energy and climate policies and measures data viewer](#).





8. Climate-neutrality dashboard



	GHG intensity of GDP (2023)	Projected net GHG emissions by 2030 (tonnes CO2eq per capita)	ESR target vs MS projections (to 2005 level, ppt, "*" = gap)	LULUCF target vs MS projections (tCO2eq/Km2 of land, "*" = gap)	Share of gross final consumption of energy from renewable sources	Projected net GHG emissions by 2050 (tonnes CO2eq per capita)	Overshoot vs. non-linear benchmark (2023-2050)	Target year for climate neutrality (officially reported or "*" other sources)	Legal status of the climate-neutrality target (based on the Net-Zero Tracker)
Germany	204	5.3	-9.3	-99	21%	1.8	-4%	2045	In law
EU27	206	5.0	-6.5	-22	23%	3.3	39%	2050	In law

Changes compared to the 2023 edition

Germany									
EU27									

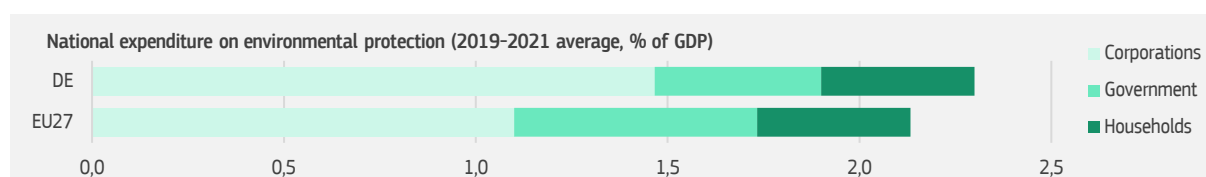
The bars inform whether the indicator has improved or worsened compared to the 2023 edition of the dashboard and the relative magnitude of the change.

▲ The table above represents an extract of the Climate Neutrality Dashboard as reported in the staff working document accompanying the Climate Action Progress Reports 2024. (1) GHG intensity of GDP (gCO₂-eq/EUR2015) uses net GHG emissions (i.e. including LULUCF and excluding international aviation). Real GDP and population data from Eurostat. (2) GHG emission projections as submitted in 2023 (or updated in 2024) by Member States under Art. 18 of the Governance Regulation considering additional measures (WAM). EU Population in 2050 is based on the latest Eurostat population projections. Agriculture and forest land are based on the Eurostat land use statistics. (3) The overshoot against a non-linear indicative benchmark compares the cumulative projected GHG emissions (excluding LULUCF) with an indicative pathway to climate neutrality based on the scenarios proposed by the European Scientific Advisory Board on Climate Change, and then distributed across Member States according to the country's share of EU emissions in the core policy scenario supporting the initiatives delivering the European Green Deal. Projections consider, where available, the impact of both existing and additional policies and measures. (4) Target dates to achieve climate neutrality as in the NECP progress reports or, with an asterisk "**", when from other unofficial sources (Net-Zero Tracker: <https://zerotracker.net/>).

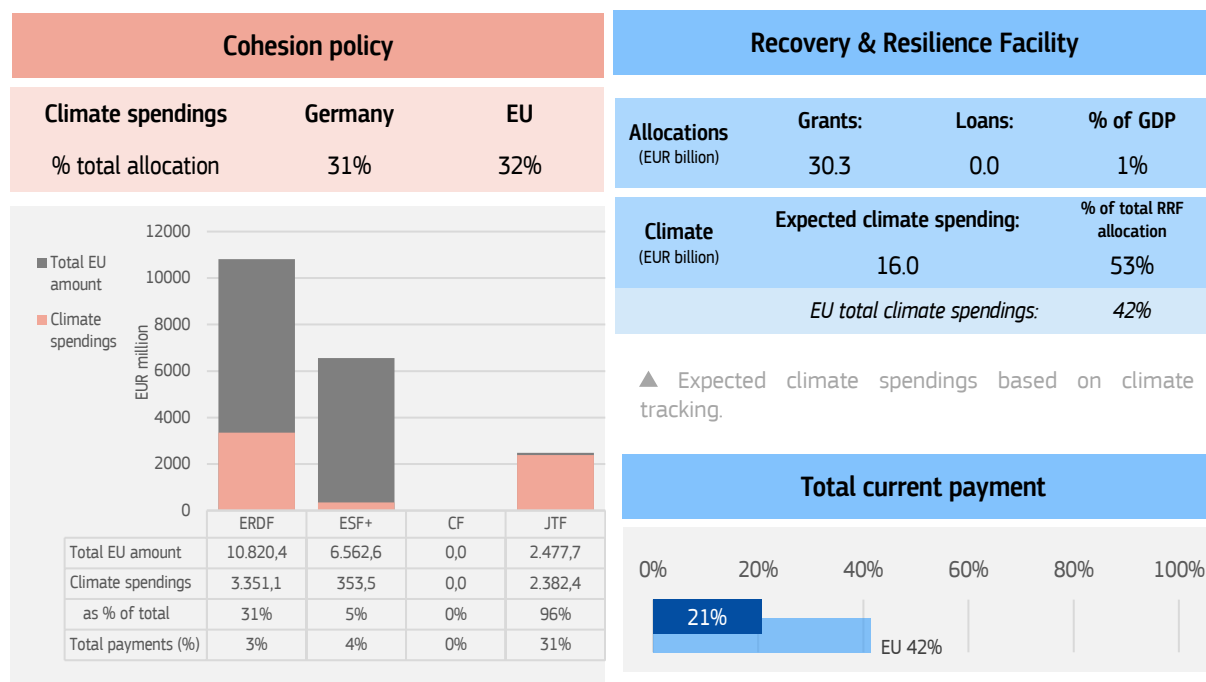
Climate-Neutrality Levers				The Climate-Neutrality Dashboard now includes a set of seven new complementary indicators, or levers, to put some light into the level of GHG emissions in Member States:
	EU27	DE	change compared to 2023 for DE	
Zero-Emission Energy	55%	45%	●	Share of RES and nuclear in gross electricity and heat production
Greening Industry	43%	39%	●	Share of RES and electricity in FEC in manufacturing and construction
Sustainable mobility	130	134	●	Average CO ₂ emissions of new cars sold
Energy efficient buildings	3.9	4.4	●	FEC in buildings, gOE per m ² *HDD and CDD
Waste prevention	511	627	●	Municipal waste generation per capita, kg
Climate investment	0.6%	0.5%	●	Private Investment in climate change mitigation purposes, % of GDP
Sustainable consumption	13.9	14.1	●	Bovine meat consumption per capita, kg



9. Financing climate action



▲ Source: Eurostat - https://ec.europa.eu/eurostat/databrowser/view/env_ac_epneis1__custom_13909199/default/table?lang=en.



▲ The chart presents information on investment plans from adopted programmes in 2021-2027 period. It shows only EU contribution. Payments include pre-financing and interim payments.

Source: <https://cohesiondata.ec.europa.eu/>

Innovation and Modernisation Fund

Innovation Fund (portfolio of signed projects)

	n.	EUR million
Small-scale projects	2	6.5
Large-scale projects	9	863.3
Auction projects	0	0.0

Modernisation Fund

	n.	EUR million
List of confirmed or approved investment proposals		
	non-beneficiary	

Project examples funded by cohesion policy 2014-2020

Transport	30 new trams, Dresden	EUR 109.7 ml.
Energy efficiency	Retrofitting of gas lights to LEDs, Berlin	EUR 36.3 ml.
Buildings	New passive educational building, Trier	EUR 31.9 ml.
Power grids	Expansion of district heating in Cologne	EUR 27.3 ml.

▲ Source: https://ec.europa.eu/regional_policy/projects_en



Major Innovation Fund projects

EVEREST	Improved calcination and carbon capture for the lime plant	Cement & lime	EUR million 228.7
GeZero	Implementing a full CCS chain in the cement plant	Cement & lime	EUR million 190.9
C2B	Carbon2Business	Cement & lime	EUR million 109.8

- ▲ Three projects with the highest contribution from the Innovation Fund.
 Source: Innovation Fund Project Portfolio - Innovation Fund - Portfolio of signed projects | Sheet - Qlik Sense (europa.eu)

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Every year, the European Commission publishes the EU Climate Action Progress Report: an annual report on progress towards the EU's emission reduction targets. The report covers actual (historic) emissions and projected future emissions for the EU as a whole and for every EU Member State. It also includes information on different climate policy areas, EU legislative progress, climate finance and adaptation.

With the annual report, the Commission delivers on obligations set out in the [Governance Regulation](#), including to assess progress with the EU 2030 climate target.

You can see latest EU Climate Action Progress Report here: [Implementation for a clean and competitive EU economy](#)



“The EU is leading the way in the clean transition, with another year of strong greenhouse gas emission reductions in 2023. The EU now represents 6% of global emissions. At COP29, we once again demonstrated to our international partners that it is possible to take climate action and invest in growing our economy at the same time. Sadly, the report also shows that our work must continue, at home and abroad, as we are seeing the harm that climate change is causing our citizens.”

Wopke Hoekstra

Commissioner for Climate Action
European Commission

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