EU FOSSIL FUEL IMPORTS AND CO2 EMISSIONS IN 2025

DEPENDENCE CONTINUES AS U.S. BECOMES LARGEST SUPPLIER

CREA

CREA is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions, to air pollution.

EU fossil fuel imports and CO2 emissions in 2025: Dependence continues as U.S. becomes largest supplier

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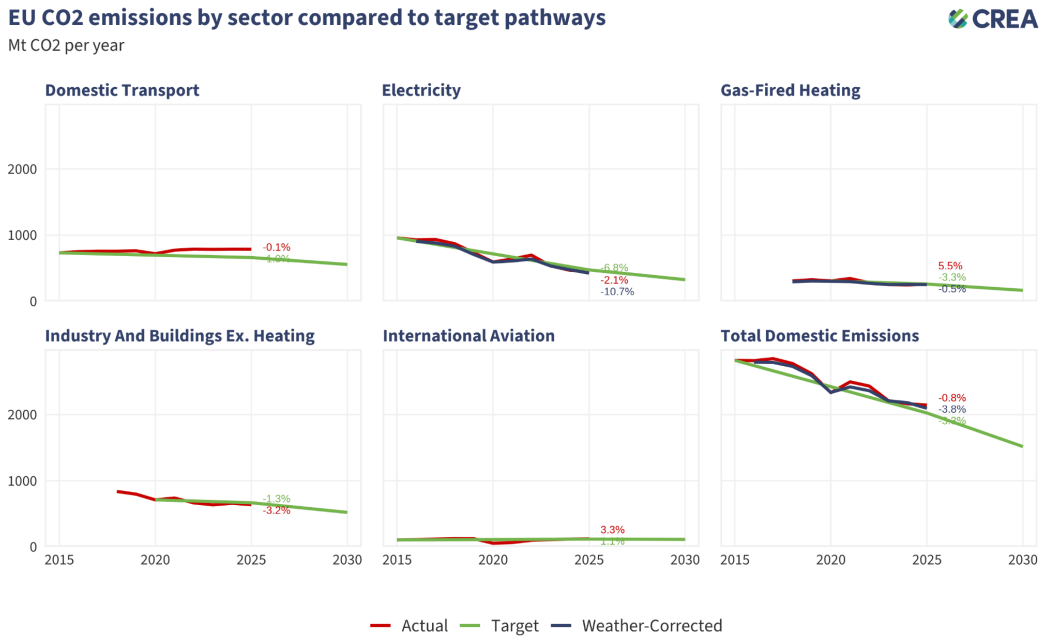
Key findings

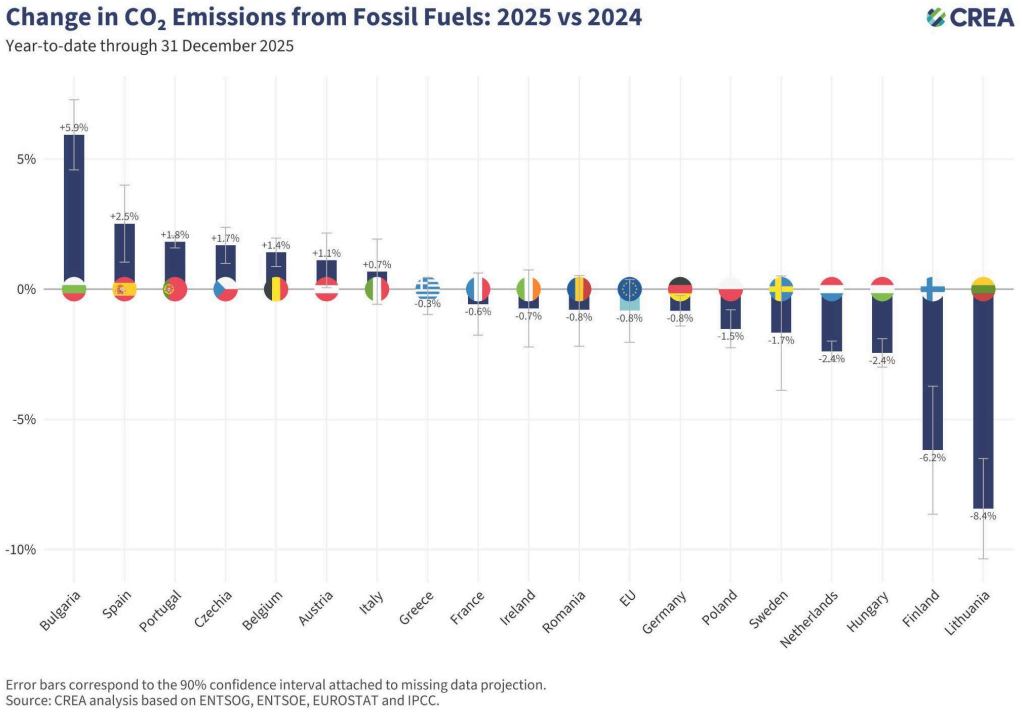
This report presents a detailed analysis of CO2 emissions and energy import trends in the EU, on country and sector level, building on near-real-time power and gas network data.

- Slow progress in reducing dependence on fossil fuels is harming the EU's economy and energy security. The EU spent more on **fossil fuel imports** than on clean energy investments in 2025, and the **average EU citizen spent EUR 880** on fossil fuel imports.
- The **U.S. became the largest supplier** of fossil fuels to the EU for the first time, with EUR 150 per EU citizen spent on imports from the country.
- The EU's CO2 emissions **fell by an estimated 0.8%** in 2025, falling short of the pace needed to meet 2030 emission targets for the second year in a row.
- Emissions fell 2.1% in power generation and 3.2% in industry, remained unchanged in transportation (-0.1%), and increased 5.5% in gas-fired heating.
- The increase in heating and small reduction in power sector emissions were both due to adverse weather (cold spells, and poor conditions for hydropower and wind power), while underlying **clean energy growth aligned** with EU targets for the third year.
- Rising **transport sector** oil consumption has thrown the EU **off track to 2030 energy and climate goals**. Emissions from fossil fuels were **4% above the pathway to targets**, entirely due to an increase in transport oil consumption over the past years. This brings into question the recent decision to postpone the phase-out of fossil fuel-burning vehicles.
- Investments in **wind power** are **lagging severely behind** the pace needed to meet EU 2030 goals. **Solar power** generation growth has exceeded targets but risks a slowdown unless barriers are tackled.
- The EU made progress in reducing **fossil gas use for heating** during the 2021–22 gas crisis engineered by Russia, but progress has since stalled, showing lack of effective policies.
- Closing the shortfall to the EU's 2030 targets for wind and clean transportation would have reduced both oil and gas consumption by **more than the total imports from Russia** in 2025. In other words, all of the oil and gas imported from Russia was used to cover the shortfall to these targets.
- The largest percentage reductions in emissions took place in **Finland (-6%), Hungary (-2%), the Netherlands and Sweden (-2%)**, while the largest increases were in **Bulgaria (+6%), Spain (+3%), Portugal (+2%), Czechia (+2%) and Belgium (+1%)**. The largest emission reductions in absolute terms came from **Germany, Poland and the Netherlands**, and the largest increases from **Spain, Bulgaria and Italy**.



Target: European Commission REG scenario: policy pathway consistent with European Green Deal objectives.
Percentages show year-on-year change for 2025.
Source: CREA analysis.

Figure 1 — EU CO2 emissions by sector compared to target pathways



Error bars correspond to the 90% confidence interval attached to missing data projection.
Source: CREA analysis based on ENTSOG, ENTSOE, EUROSTAT and IPCC.

Figure 2 — Change in CO2 emissions from fossil fuels by EU country: 2025 vs. 2024

Note: Only countries for which CREA's near-real time tracking of CO2 emissions achieves a close alignment with less timely datasets are included. The fall in Lithuania's emissions relates to shifts in truck refueling between countries rather than structural changes in fossil fuel use.

Emission changes in 2025

- **Adverse weather masks progress on energy transition:** The EU's CO2 emissions fell by an estimated **0.8% in 2025,** slowing down further from the 2.1% reduction in 2024.
- When controlling for weather variation, emission reductions accelerated in 2025. Without changes in weather year-to-year, emissions would have fallen 3.8% 2025, and 1.3% in 2024. The 2025 reduction is close to alignment with the 4.0% per year rate required in the next five years to meet the bloc's greenhouse gas emission targets.
- **Power sector** emissions fell slightly, by 2.1%, but only due to fuel-switching from coal to gas. Overall power generation from **fossil fuels** declined by just 1%, after a 9% fall in 2024, as hydropower and wind power generation fell due to poor conditions. Power generation from **gas** grew 7%.
- Oil consumption for **transportation** was unchanged year-on-year, albeit with major increases and decreases in individual countries. Slow progress on shifting to EVs and other cleaner transport modes is threatening the EU's progress towards 2030 climate and energy goals — the other sectors are on track to the targets but an increase in transportation emissions over the past years has pushed total emissions off track.
- The EU's total emissions from fossil fuels were **4% above** the pathway to targets, entirely due to an increase in **transport oil consumption** over the past years. This brings into question the recent decision to postpone the phase-out of fossil fuel-burning vehicles.
- **Industrial** fossil fuel use fell 3%, largely due to weakness in manufacturing.
- Gas consumption for **heating** increased 5.5%. The increase was due to colder weather, but controlling for weather variations, there has been no progress in reducing emissions from gas-fired heating for the past three years. The sector saw a significant reduction in 2021–22 due to the gas crisis manufactured by Russia, but the EU's policy measures in the sector have been insufficient, putting future targets at risk.

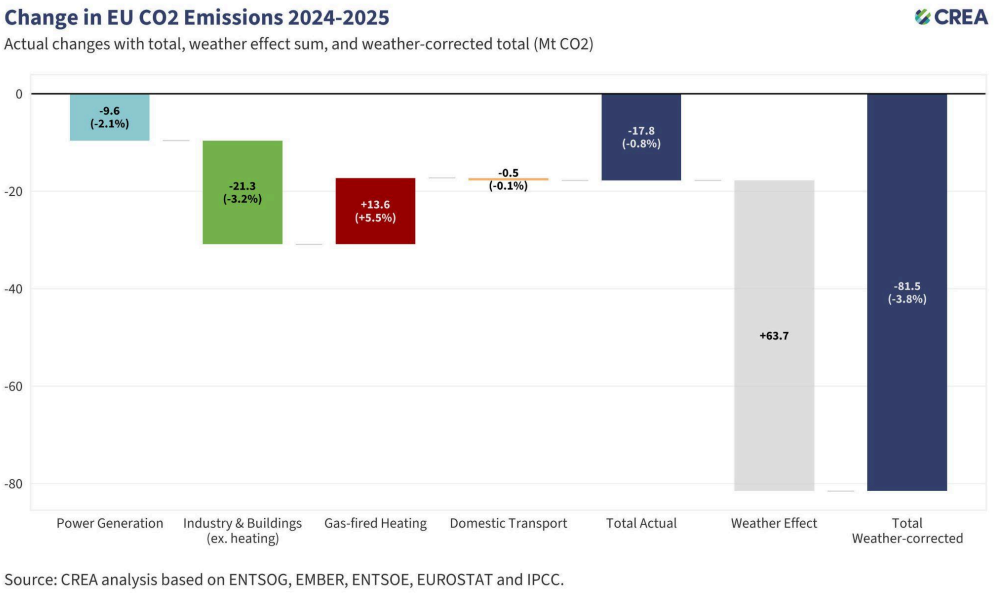


Figure 3 — Changes in EU CO2 emissions in 2025, by sector, and the effect of weather variations

Clean energy and electrification are behind targets

Realizing the EU's climate targets, improving energy security and enabling economic growth require major increases in clean energy supply, as well as electrification — the replacement of fossil fuel use with clean electricity.

The EU's rate of clean energy additions, and the pace of electrification, from 2020 to 2025 were too slow to support the energy transition in the long term. In particular, wind power additions, EV sales and heat pump sales are far below levels needed. Solar power additions saw strong growth in 2023–24 but are now cooling.

The EU Commission projected in 2021 that the Union would need to increase annual power generation from solar and wind by 450TWh from 2020 to 2025 to align with the 2030 climate and energy goals. However, an increase of only 310TWh was realized — a shortfall of 30%.

Some of the shortfall in new clean power generation was made up for by a smaller than projected fall in nuclear power generation. This helped reduce CO2 emissions and fossil fuel imports, but in the longer term, squeezing more generation from existing reactors is no substitute for building new clean power capacity.

The lagging adoption of EVs and other cleaner mobility has seen the EU's transport oil consumption continue to increase, keeping the Union dependent on imported oil and endangering 2030 climate targets.

The slow pace of electrification has resulted in slower electricity demand growth than would be the case under a rapid clean energy transition. This makes power sector emissions look artificially good despite smaller clean energy additions than projected.

Wind power installations in 2025 were 16.5 GW, an increase of 5 GW over 2024 but significantly less than the 25 GW/year needed to support the EU's energy security and climate goals, based on modeling by the European Commission. The EU solar market recorded its first annual contraction since 2016, declining slightly to 65.1 GW of installations in 2025 from 65.6 GW. The contraction means that the 2030 target for solar is at risk.

Wind and solar power investments are held back by heavy permitting processes, as well as grid bottlenecks and sluggish progress on electrification to drive power demand. Solar power, in particular, also requires increased investment in energy storage to unlock future growth.

Heat pumps are the key solution for decarbonizing heating in buildings that currently rely on gas or other fossil fuels for heating. Heat pump sales are also lagging behind targets despite a 9% increase in the first half of 2025 — this was just a partial rebound from a 22% drop in 2024. 7 million units per year need to be installed through 2030 to align with the EU's climate targets; 2024 sales were just 2.3 million.

Closing the gap to clean energy targets could have eliminated oil and gas imports from Russia entirely

Installing wind power in line with the EU's 2030 goals could have cut gas consumption in the power sector by more than the entire gas imports from Russia in 2025, and reducing oil consumption in transportation in line with the EU's 2030 goals would have avoided oil consumption equal to four times the oil imports from Russia in 2025. In other words, all of the oil and gas imported from Russia was used to cover the shortfall to these targets.

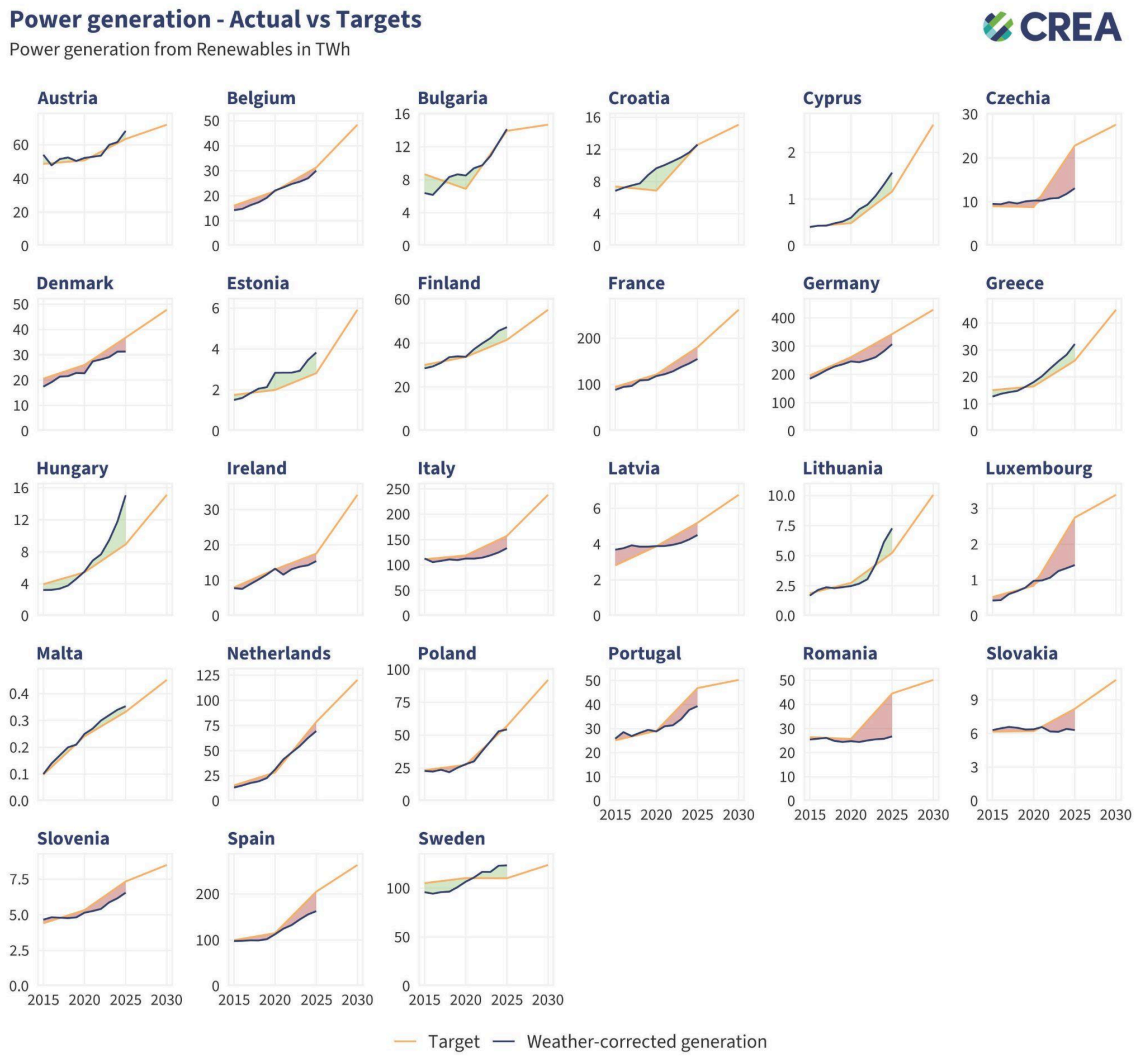
Target: European Commission REG scenario: policy pathway consistent with European Green Deal objectives.
Source: CREA analysis.

Figure 4 — Renewable and nuclear power generation in the EU compared to a pathway consistent with the European Green Deal

Clean power generation growth by country

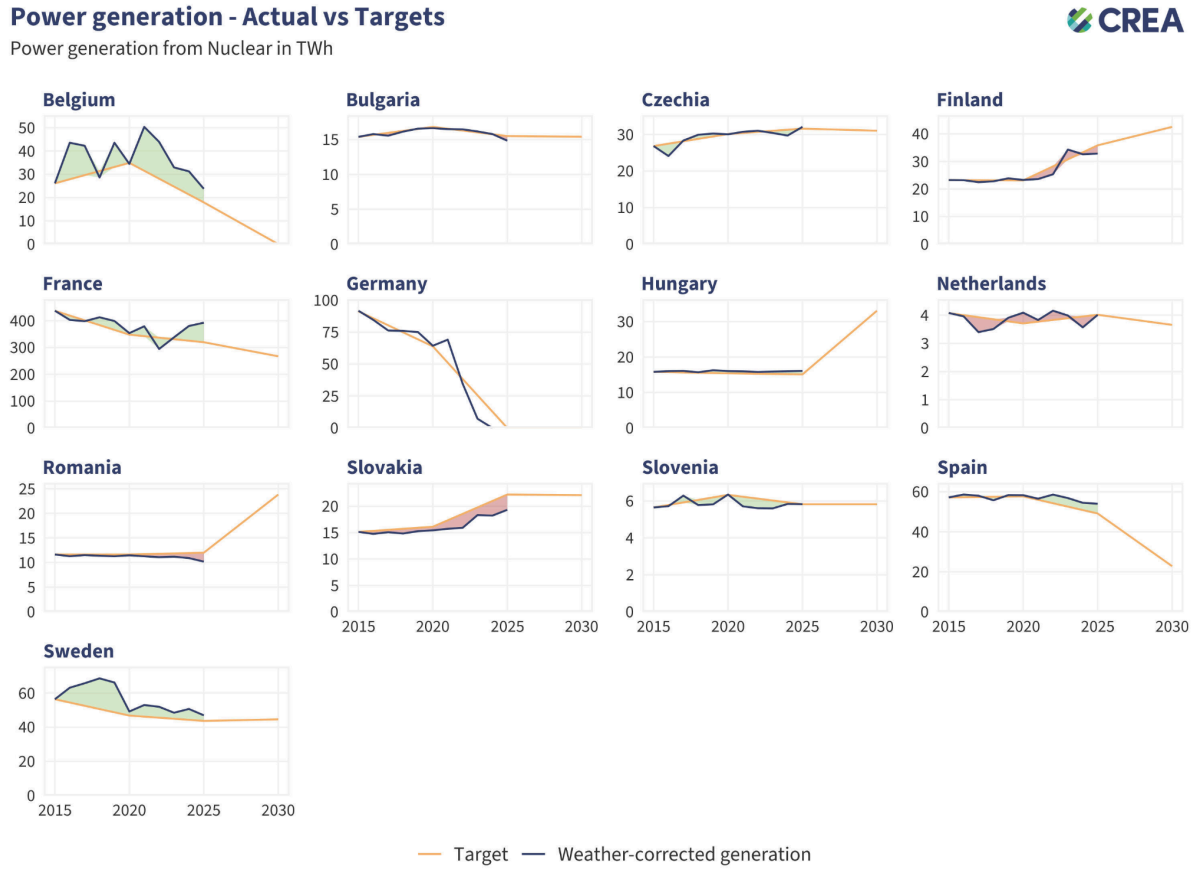
In terms of the growth in renewable power generation, Estonia, Finland, Greece, Lithuania and Sweden achieved larger increases than projected by the EU Commission, in scenarios designed to meet the EU's 2030 energy and climate targets. Countries with significant shortfalls were: Czechia, France, Germany, Hungary, Italy, Latvia, Luxemburg, Portugal, Romania, Slovakia, Slovenia and Spain.

Nuclear power generation exceeded the Commission's projections in Belgium, France, Spain and Sweden, while falling short in Slovakia. The exceedances were however due to slower-than-projected declines rather than absolute increases.



Target: European Commission REG scenario: policy pathway consistent with European Green Deal objectives.
Source: CREA analysis.

Figure 5 — Renewable power generation in EU member states compared to a pathway consistent with the European Green Deal



Target: European Commission REG scenario: policy pathway consistent with European Green Deal objectives.
Source: CREA analysis.

Figure 6 — Nuclear power generation in EU member states compared to a pathway consistent with the European Green Deal

The costs of the EU's fossil fuel dependence are mounting

Sluggish progress on reducing fossil fuel dependence is harming the EU's economy and energy security. The average EU citizen spent EUR 880 on fossil fuel imports in 2025. The import bill fell 13%, but only due to a fall in oil prices — at constant prices, the value of imports would have been unchanged.

The EU's dependence on imported fossil fuels leaves it exposed to volatile global markets and geopolitical risks, directly contradicting its goals to improve energy security.

The EU invested EUR 330 bn in clean energy in 2025, according to IEA estimates. Although this represents an improvement over previous years, EU spending on imported fossil fuels—totalling EUR 396 bn—still towered over clean energy investments.

Belgium, the Netherlands, Czechia, Poland, and Cyprus recorded the largest increases in fossil fuel imports in 2025, although part of these volumes were re-exported to other Member States or to third countries. Germany reported the largest drop in fossil fuel import volumes in 2025, followed by Italy, Portugal, Spain, and Bulgaria.

The EU spent EUR 17.1 bn on fossil fuel imports from Russia, down from EUR 24.8 bn in 2024. Of this, EUR 7.4 bn was spent on LNG, EUR 4.9 bn on pipeline gas and EUR 4.8 bn on oil. Three countries — Slovakia, Hungary and Belgium — spent over 100 EUR per person on fossil fuel imports from Russia. Hungary and Slovakia have increased their imports of Russian crude oil through the Druzhba pipeline by 8% in 2025 compared to the prior year, as the two nations continue to contravene the energy sanctions. The purpose of the exemption in the EU's ban on Russian crude oil was to provide landlocked states reliant on pipeline Russian crude with extra time to reduce dependence; instead, imports have risen.

Belgium was the third largest per capita importer of Russian fossil fuels in 2025. The country's imports of Russian fossil fuels (comprising entirely of LNG) increased by 67%, valued at EUR 2.2 bn. On top of this, Belgium has been criticised for opposing the use of billions of euros of Russian frozen assets to support Ukraine. In 2024, the Belgian state collected EUR 1.7 bn in tax revenue from interest on Euroclear's frozen Russian assets.

The EU's progress towards eliminating fossil fuel imports from Russia is mixed. Pipeline gas imports fell 55% year-on-year as Ukraine stopped transiting Russian gas through its territory. In contrast, LNG imports did not fall at all and crude oil imports only fell 13%.

While the EU Council and Parliament agreed in December 2025 to phase out Russian fossil fuels by the end of 2027, flows that are not legally prohibited by the EU have remained stable or even increased. For example, the final operating pipeline transporting Russian gas to Europe, TurkStream, carried record quantities to the EU in 2025.

Europe's EUR 1 tn shift to LNG was an emergency response to Russia's energy blackmail ahead of the 2022 invasion of Ukraine. The short-term fix may harden into a lasting strategy that maintains geopolitical and market vulnerabilities.

In 2025, the U.S. became the largest exporter of fossil fuels to the EU, for the first time. The bloc increased its reliance on the USA, which provided 19% of the EU's total fossil fuel imports — a 7% year-on-year increase in import volumes from the USA, driven by rising LNG exports. The rise in LNG exports also drove up U.S. gas prices and led to a rise in U.S. coal-fired power generation, increasing power sector emissions.

The increased reliance on the U.S. could leave importers exposed to energy insecurity if trade tensions rise again, as we saw in early 2025. Instead of shifting the risk of energy security threats from one nation to another, the EU needs to do more to end fossil fuel imports altogether.

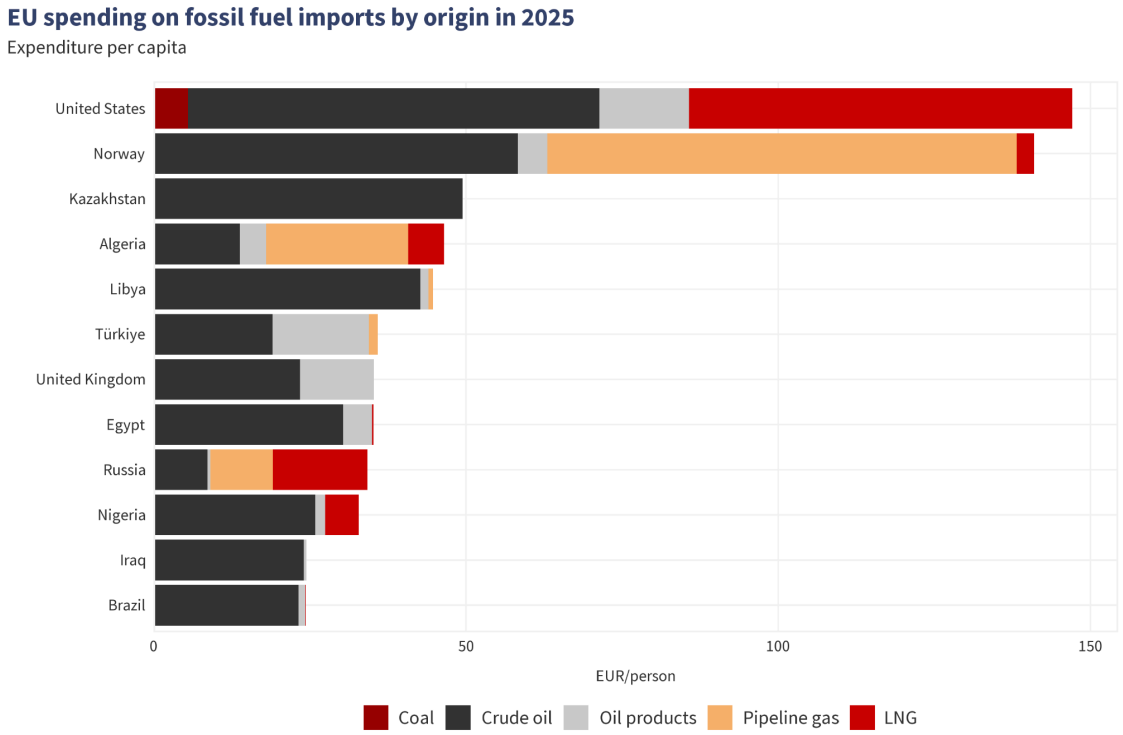


Figure 7 — EU spending on fossil fuel imports, country of origin and fuel in 2025, per capita — largest exporters

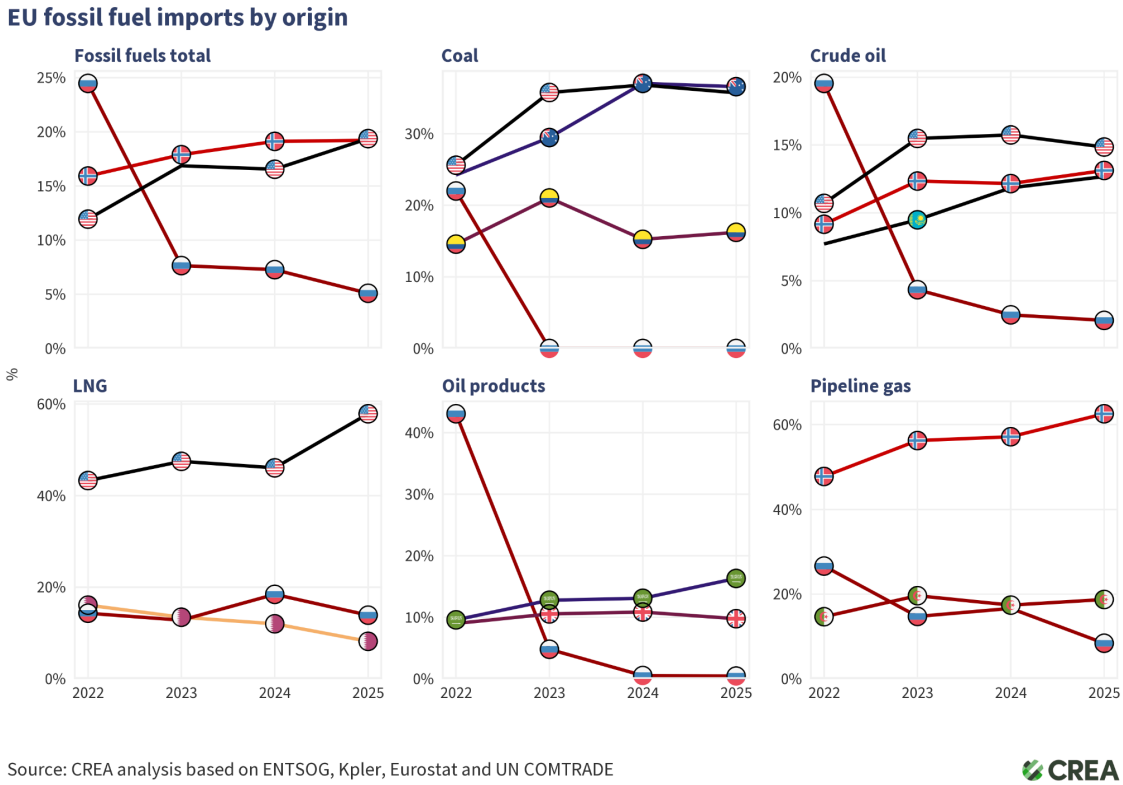


Figure 8 — EU spending on fossil fuel imports by country of origin and fuel

Identifying the leaders and laggards

The largest percentage reductions in emissions took place in **Finland (-6%), Hungary (-2%), the Netherlands (-2%), and Sweden (-2%)**, while the largest increases were in **Bulgaria (+6%), Spain (+3%), Portugal (+2%), Czechia (+2%), and Belgium (+1%)**. The largest emission reductions in absolute terms came from **Germany, Poland, and the Netherlands**, and the largest increases from **Spain, Bulgaria, and Italy**.

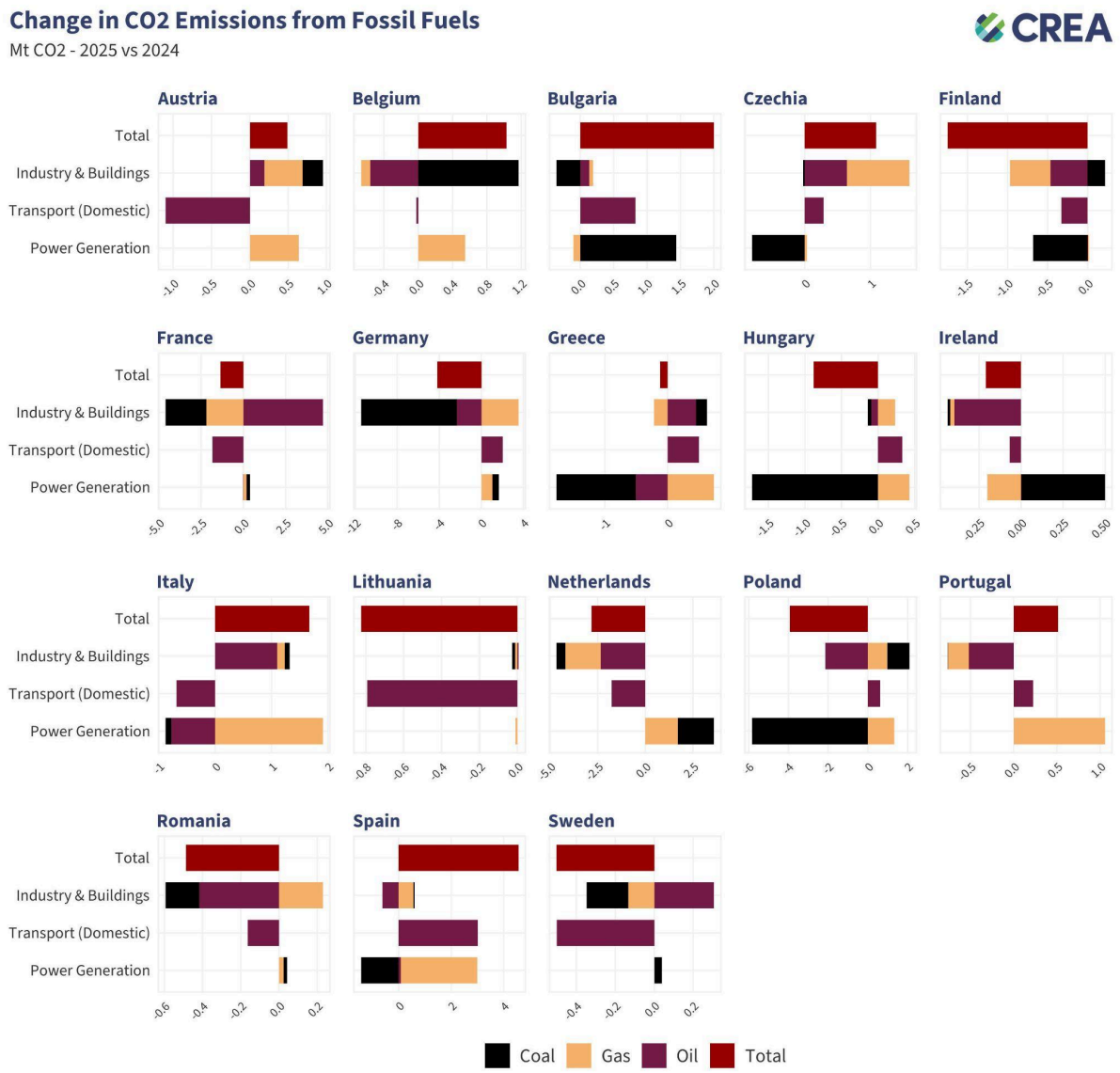
Main drivers of emission reductions by country:

- Finland: Fall in coal-fired power generation, and in oil and gas in industry; transport oil consumption fell too
- Hungary: fall in coal-fired power generation
- Sweden: fall in coal and gas use in industry, and in transport oil consumption
- Germany: fall in coal and oil consumption in industry
- Poland: fall in power generation from coal
- Netherlands: fall in all fossil fuels in industry and buildings; fall in transport oil consumption; increase in coal- and gas-fired power generation

Main drivers of emission increases by country:

- Bulgaria: increase in coal-fired power generation
- Spain: increases in gas-fired power generation and oil in transport
- Italy: increase in gas-fired power generation and in oil consumption
- Portugal: increase in gas-fired power generation
- Czechia: increases in oil and gas consumption in industry and buildings; a fall in coal-fired power generation
- Belgium: increase in coal consumption in industry and gas-fired power generation

Our data shows a major reduction in Lithuania's emissions, by 8%, but this is entirely due to the fall in diesel deliveries to distributors, our proxy for diesel consumption, caused by an increase in taxes on diesel and a shift to trucks refueling in other countries, not reflecting an actual reduction in emissions for the most part.



Source: CREA analysis based on ENTSOG, ENTSOE, EUROSTAT and IPCC.

Figure 9 — Changes in CO2 emissions in 2025 by country, sector and fuel

Policy recommendations

Remove barriers to economically attractive clean energy investments: The EU needs an urgent permitting reform to enable solar, wind and grid investments. These are essential for the energy transition, as well as for energy security and competitiveness, including enabling investment in low carbon industry and data centres.

Pave the way for energy storage: Remove barriers to deployment and ensure that energy storage can compete on a level playing field with incumbent technologies to provide grid flexibility and stability. Deployment of energy storage is the key to unlock the potential for rapid clean energy growth and ensure grid stability.

Accelerate electrification in transport, heating and industry: Phase out new fuel-burning cars and heating boilers and promote the shift to heat pumps by cutting red tape, improving grid and charging infrastructure, increasing clean electricity supply and, when needed, using taxes and incentives. Breaking the structural dependence of these sectors is crucial for energy security, and switching from the production of fuel-burning to electric vehicles is essential for the competitiveness of the EU's auto industry.

Close loopholes in the sanctions and end imports of Russian fossil fuels: End Hungary and Slovakia's unnecessary imports of Russian crude via the Druzhba pipeline, and implement legally binding targets to taper imports down to zero by the end of 2026.

Prevent the re-exportation and relabelling of Russian refined fuels from storage terminals such as those in Turkey. The EU must tighten the bans on Russian gas and on oil products made from Russian crude to prevent circumvention.

Clearly define, or remove, the 'emergency' clause in the REPowerEU regulation so that gas market tightness can't be used as a pretext to reintroduce Russian gas.

About CREA EU CO2 Tracker

The EU CO2 Emission Tracker is an initiative by the Centre for Research on Energy and Clean Air (CREA) to produce timely and publicly available data on Europe's CO2 emissions. By monitoring and analysing emissions across the power sector, transport, industry, and buildings, the CO2 Tracker aims to help decision-makers, researchers, and wider society understand the latest trends and respond effectively to climate challenges.

The project welcomes collaboration with partners — whether government bodies, think tanks, civil society organisations, or academic institutions.

Data is updated daily on our tracker webpage:
https://energyandcleanair.org/product/eu-co2-emission-tracker/

Methodology

CO2 emissions

The CREA CO2 emission tracker builds on fossil fuel consumption from EUROSTAT's Supply, Transformation, and Consumption data[1] and then applies IPCC emission factors[2] to estimate associated CO2 emissions.

However, this data comes in with a lag of several months. We are able to track emissions in near-real time by filling in the most recent periods using daily power generation and gas consumption data from ENTSO-E and ENTSOG. Missing data is filled in by using various proxy datasets (e.g. ENTSOG, AGSI, ENTSOE, EMBER, industrial production) and/or ad-hoc heuristics.

The CREA CO2 Tracker covers CO2 emissions resulting from the combustion of fossil fuels. It does not include industrial process emissions that are not stemming from fossil fuels, nor does it include agricultural emissions or emissions related to land use, land-use change, and forestry (LULUCF). Unless otherwise stated, emissions from international aviation and international maritime transport are excluded from the analysis.

Due to the challenges of apportioning fossil fuel flows within countries, the EU-level emission estimates are more robust than country-level estimates. We include country-level results only for countries for which our estimates achieve a close alignment with Global Carbon Budget data.

The current report data was built with version 1.1 of the CREA CO2 Tracker. For more details, see the full methodology documentation.

Fossil fuel trade

The data on the EU's fossil fuel imports in this report is built on the Russia Fossil Tracker, a project led by CREA to highlight Russia's fossil fuel revenues that enable their invasion of Ukraine.

To gather information about fossil fuel flows for different commodities, we use a variety of data sources that differ depending on commodity type, transport type, and location. The table below contains a summary of the data sources and more details are available about these data sources in the relevant sections below.

For datasets affected by a significant lag (for example, Eurostat and customs), we assume constant flows since the latest available data.

CREA CO2 emissions methodology data sources					
	Crude oil	Oil products	Fossil Gas	LNG	Coal
Seaborne	Kpler	Kpler	N/A	Kpler	Kpler
Pipeline (Europe)	Eurostat	Eurostat	ENTSOG	N/A	N/A
Pipeline (Turkey)	N/A	N/A	Eurostat	N/A	N/A
Pipeline (China)	Kpler + Customs	N/A	Customs	N/A	N/A

To estimate prices of fossil fuel trades, we first derive historical monthly average prices for imports to the EU from Eurostat and UN Comtrade, since the trade values are indicated both in volume and monetary terms. We then fit models between these historical prices and average monthly spot prices for the current and previous months (commodity pricing includes: Brent crude oil, Title Transfer Facility gas, Newcastle steam coal, Asian LNG, Amsterdam-Rotterdam-Antwerp coal). Prices are collected from OilPrice.com, Energy Information Administration, and Intercontinental Exchange; their pricing models are built for main trading partners individually, and for the rest of the world as a whole.

We calculated the value of fossil fuel imports per person using UN population data for 2024 from World Bank Open Data.

For more details, see the full methodology documentation.