EU Policy Factsheet

May 2024

Energy Transitions Commission

Phasing down fossil fuels in the EU

Overview

- **Limiting global warming requires a significant reduction in the use of fossil fuels. Studies show that it is technically and economically feasible to reduce fossil fuel demand by shifting to low-carbon energy sources like renewable electricity, low-carbon hydrogen, and in some cases, biomass, where it has been sustainably sourced.**
- **The EU has set ambitious energy demand reduction targets and adopted polices to decarbonise key sectors (e.g., power, industry, transport, buildings). However, by simultaneously pursuing new gas production and infrastructure, the EU is sending mixed signals to the market.**
- **The EU should commit to a stricter fossil fuel phase-out timeline and stop supporting new exploration of fossil fuels. Where possible, existing infrastructure should also have clear timelines for repurposing towards low-carbon uses.**
- **Regulations like bans on fossil fuel boilers and the sales of internal combustion engines provide a strong signal to move away from fossil technologies and towards new, lower-carbon options.**
- **Alongside this, scaling low-carbon investment in grids, renewables, and carbon capture is crucial to enable the switch to low-carbon energy sources.**

The phase-down of fossil fuels is necessary to limit global warming below 2°C.

Phase-out of all unabated fossil fuels and significant phase-down of fossil fuel use, and therefore production, are necessary to reach net-zero greenhouse gas (GHG) emissions in order to limit global warming. Recent technological and policy advances mean that it is technically feasible via:

- Reducing demand for fossil fuels across all sectors:
  - Globally, it is technically and economically feasible to reduce coal demand by 80–85% from 2022 levels, oil by 75–95%, and gas by 55–70%.
  - By 2030, significant decline should already have occurred, and by 2040 major reductions are possible with coal demand down by 50–75% from 2022 levels, oil by 40–60% and gas by 35–55%.[1]
- Increasing low-carbon supply via clean electrification, green hydrogen, and sustainable bioenergy, which respectively can make up 65–70%, 15–20% and 10–20% of final energy demand by 2050.
- A vital but limited role for Carbon Capture Utilisation and Storage (CCUS), to supplement emission reductions, but applied to the equivalent of just 5–15% of today's fossil fuel demand. Limits to the feasible scale-up of CCUS and carbon removals mean these alone cannot compensate for the slower phase-down of fossil fuels, and also cannot neutralise methane emissions associated with fossil fuel production.[2]

While the EU is sending increasingly clear long-term signals for demand reduction, it is still encouraging fossil fuel production, infrastructure, and use.

If the EU were to reach its existing 2030 targets, oil demand would drop by 16% and gas by 30%.[3] A 90% reduction in emissions by 2040, as proposed by the EU in 2024, would see fossil fuel use almost entirely displaced in key sectors. Already today, demand is being reduced across key emitting sectors:

Power sector (27% of GHG emissions[4]): In 2023, the power sector saw a record fall of 19% in fossil fuel generation and resulting CO_2 emissions, with renewables surpassing 40% of the EU electricity mix. Power sector emissions today have almost been cut in half (-46%) since their peak in 2007.[5]

Transport (29% of GHG emissions): Policy signals including a ban on sales of new internal combustion engine vehicles by 2035, commitments to increase availability of charging stations, and purchase incentives, are accelerating the rollout of EVs. Battery electric vehicles accounted for roughly 14.6% of car sales in the EU in 2023.[6] While synthetic fuel technologies and green hydrogen are still in the early stages of development, the EU has set clear targets for increasing the share of sustainable aviation fuels used in EU airports to 70%, and to decrease the greenhouse gas intensity of shipping fuels by 80%, by 2050.[7]

Buildings (11% of GHG emissions): The newly adopted Energy Performance of Buildings Directive (EPBD) commits EU countries to phasing out the sale of fossil fuel boilers by 2040, to reduce the average primary energy use of residential buildings by 20–22% by 2035, and to ensure that all new residential and non-residential buildings must have zero on-site emissions from fossil fuels by 2030, with a possibility for specific exemptions. Eight member states have introduced bans on gas boilers in new builds (e.g., Netherlands from 2018, Italy from 2022, France from 2023). Policy support (including regulation and subsidies) and high gas prices have been driving heat pump sales, which almost doubled between 2019 and 2022.[8] Although the renovation rate of buildings in the EU was only 1% in 2022, the EPBD commits Member States to ensuring that 55% of the decrease in energy use of buildings is achieved through the renovation of worst performing buildings.

Industry (20% of GHG emissions): Recent policy incentives, including high EU Emissions Trading System (ETS) carbon prices between 2021 and 2023, have begun to encourage industries to pollute less by investing in cleaner technologies and trading emission allowances. Progress is underway – in the EU, 50 projects in hard to abate sectors[9] are operational or under development.[10] While carbon prices have fallen in 2024, the phase-out of free allocations and the establishment of the Carbon Border Adjustment Mechanism could continue to drive investment in in low-carbon technologies.

Alongside these targets, Europe is also expanding new fossil fuel production and use.

Amidst of growing concerns around meeting short-term energy security needs, and long-term concerns around securing the supply chains needed to grow low-carbon technology, not committing to a strict timeline for fossil fuel phase-down is sending mixed signals to industry and Member States. This is in turn leading to a fractured policy landscape, compromises and delays. For example:

- 70% of the growth in oil production in the United States between 2021 and 2022 was directed towards Europe. Fossil fuel companies will spend $223 billion over the next decade on developing and operating new gas extraction sites to supply Europe.[11]
- Fossil fuel subsidies in the EU have remained stable over the last decade (around €50 billion per year),[12] and sharply increased in 2022 crisis (€120 billion to shield consumers from high prices).[13]
- Germany approved the operation of a new liquefied natural gas terminal in 2024, which will be operational for several decades.[14]
- Between 2021 and 2024, at least six EU Member States chose to delay previously agreed coal phase-out dates.
- Major EU parties are pledging to revisit the 2035 ban on sale of cars with internal combustion engines.[15]

The EU must send a stronger policy signal to commit to the phase-down of fossil fuels and to transform fossil fuel infrastructure for low-carbon uses.

First and foremost, there is no need for new exploration of oil and gas resources in the EU, or globally.[16] While there will be a limited role for gas during the transition, the EU must avoid locking in the use of fossil fuels by diverting investment from necessary zero- or low- carbon solutions.

The average age of a European fossil-based power plant is 28 years (33 for coal-fired plants and 17 for natural gas plants) against an average technical lifetime of around 50 years.

Existing plants and those under construction or being planned could emit most of the EU carbon budget unless they are retrofitted with CCUS or retired early.[17]

As outlined in the EU Taxonomy for sustainable investment, which encourage investment in fossil fuel pipelines only where there is commitment to transition to low-carbon gas by 2035, the EU must commit to clear plans for a sequenced and economically and socially just decommissioning and repurposing of gas infrastructure.

Committing to fossil-fuel phase down will help the EU to harness and correctly scale necessary transition solutions, including key cross-cutting technologies.

- **Regulation:** Although the EU has set comprehensive targets for scaling up low-carbon alternatives to fossil fuels, opportunities to support fossil fuel phase-down through regulation have proved more controversial. The bans on the sale of ICE vehicles in 2035 and fossil fuel boilers in 2040 should be maintained, and the EU should take further steps to set clear timelines for phasing out fossil-using technologies and decommissioning fossil infrastructure such as coal.
- **Robust grids and zero-carbon infrastructure:** Building a modern, interconnected, and high-capacity electricity grid across the EU is critical to enable large-scale integration of renewable energy sources like wind and solar. Investing in infrastructure for clean energy transportation and storage is also crucial. This includes pipelines for transporting captured carbon (for CCUS) and hydrogen, as well as improved energy storage solutions.
- **Carbon capture and removals:** The 2024 Industrial Carbon Management Plan and adoption of the Carbon Removal Certification Framework is an encouraging start, but the EU must ensure that carbon capture and removal goals are proportionate and effective, leading to a significant scale up of these technologies this decade.
- **Low-carbon hydrogen:** Definitions for low-carbon hydrogen were expected in 2023, but have been postponed. The EU must accelerate defining and certifying low-carbon hydrogen to accelerate deployment.

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[1] ETC (2023), *Fossil fuels in transition: Committing to the phase-down of all fossil fuels.*
[2] Ibid.
[3] E3G (2022), *Repowering towards EU gas demand reduction.*
[4] EEA (2021), *EU Greenhouse Gases tracker.* Note: Remaining 13% emissions from agriculture and waste.
[5] Ember (2024), *European Electricity Review 2024*.
[6] European Automobile Manufacturers' Association (2024), *New car registrations: +13.9% in 2023; battery electric 14.6% market share.*
[7] Compared to a 2018 baseline.
[8] EHPA Market Tracker (2023), *European Heat Pump Market and Statistics Report 2023.*
[9] Aluminium, Cement, Chemicals, Steel, Aviation, Shipping, and Trucking.
[10] Mission Possible Partnership Global Project Tracker (2024), available at: https://www.missionpossiblepartnership.org/tracker/.
[11] GlobalWitness (2024), *European demand driving $1 trillion spending on gas production worldwide this decade.*
[12] Including direct payments, tax preferences, income and price support mechanisms to producers, consumers, and research.
[13] ESABCC (2024), *Towards EU climate neutrality*.
[14] Reuters (2024), *Germany's Mukran LNG terminal receives operating permit.*
[15] Politico (2024), *Major EU parties are pledging to revisit the 2035 ban on sale of cars with internal combustion engines.*
[16] ETC (2023), *Fossil Fuels in Transition.*
[17] IEA (2023), *CCUS in clean transition, Regional opportunities.*

Energy Transitions Commission

FOSSIL FUELS IN TRANSITION

Any credible plans to achieve 1.5°C or well below 2°C will require a significant reduction in fossil fuel demand

FOSSIL FUELS ARE RESPONSIBLE FOR THE MAJORITY OF GLOBAL EMISSIONS

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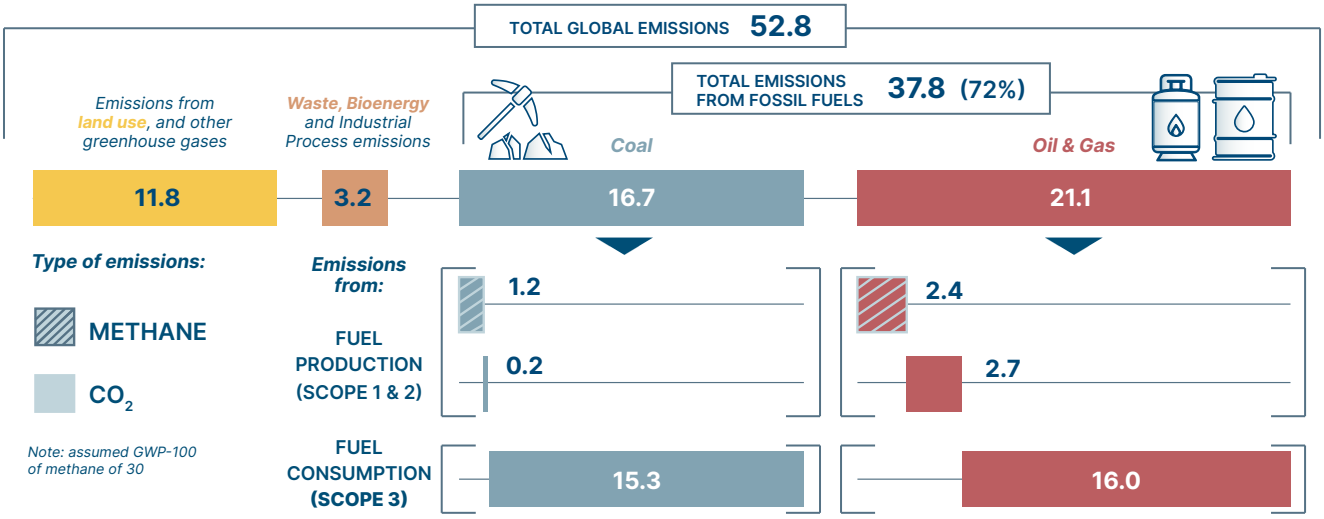
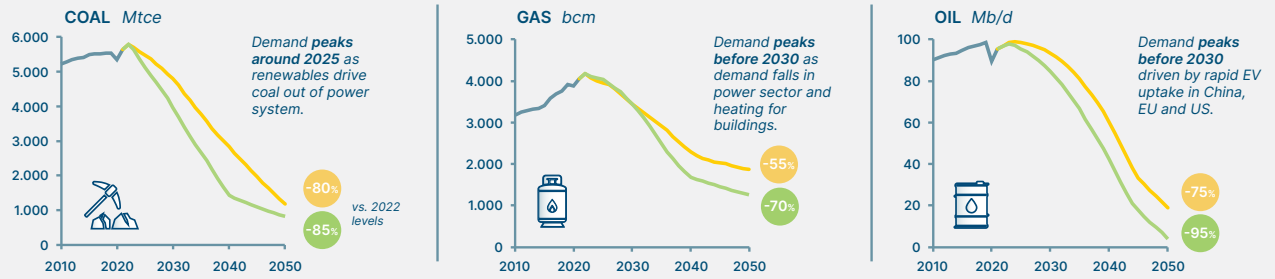


Reducing emissions from fossil production is important, but reducing fossil fuel demand is crucial

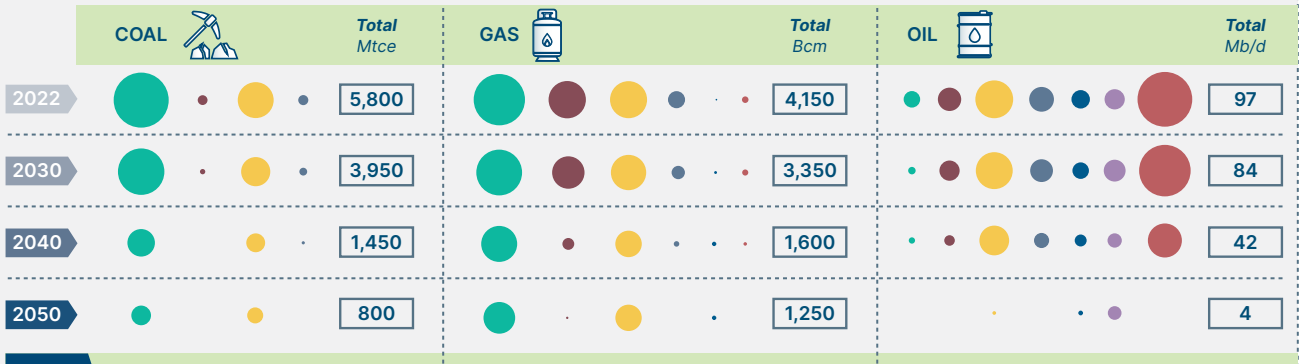
FOSSIL FUEL DEMAND TO 2050 IN ETC SCENARIOS

Scenarios: HISTORIC ETC - ACF ETC - PBS



ANNUAL FOSSIL FUEL DEMAND BY SECTOR IN PBS SCENARIO

Use sectors: Power · Buildings · Industry · Other · Shipping · Aviation · Road transport



KEY ACTIONS:

- **3x** total renewables capacity can displace 1,000 Mtce of coal in power by 2030
- **3x** renewables and **3x** installed heat pumps in buildings can displace around 600 Bcm of gas by 2030
- Growing passenger EV fleet to over 300m helps displace **5 Mb/d** of oil by 2030

Energy Transitions Commission - November 2023

Read full report:

Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels