

EU electricity transition continues as solar overtakes coal in 2024

The transition of the EU electricity sector maintained momentum in 2024, despite challenging political and economic conditions. Solar power grew strongly and overtook coal power for the first time. Another year of coal and gas decline – the fifth year in a row for gas – cut EU power sector emissions to below half their 2007 peak and further reduced reliance on imported fossil fuels. Significant progress was made over the last EU political cycle, but delivery needs to be accelerated to maximise gains in energy security and competitiveness.

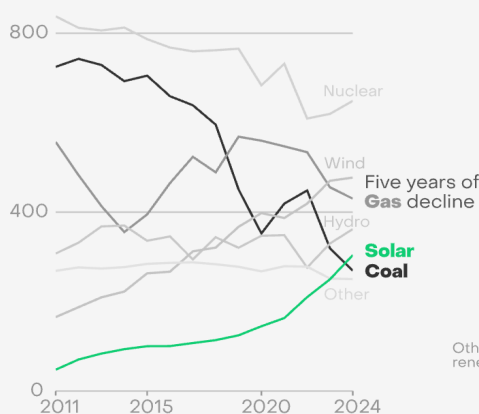
The European Green Deal has delivered a deep and rapid transformation of the EU power sector. Driven by expanding wind and solar power, renewables have risen from a share of 34% in 2019 to 47% in 2024, as the fossil share declined from 39% to a historic low of 29%. Solar remained the EU's fastest growing power source in 2024, rising above coal for the first time. Wind power remained the EU's second largest power source, above gas and below nuclear.

The significant progress has brought benefits beyond reducing emissions. Structural

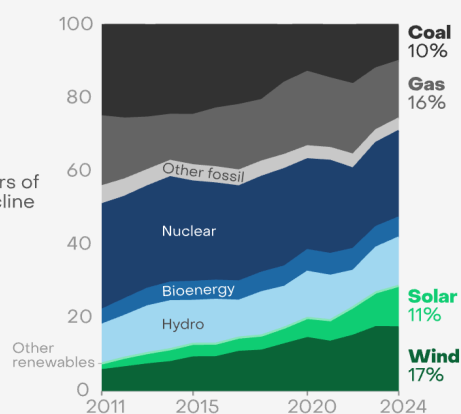
growth in wind and solar power has reduced the EU's fossil import bill and the bloc's vulnerability to imported gas. Progress made in the first five years of the European Green deal should inspire confidence in what can be achieved by 2030. An acceleration in delivery is needed in order to fast track benefits for households and businesses alike.

Solar overtakes coal generation in the EU for the first time in 2024

Electricity generation (TWh)



Share of generation (%)



Source: Yearly electricity data, Ember
'Other' includes bioenergy, other fossil and other renewables

Building on the momentum of the EU's electricity transition in the next five years

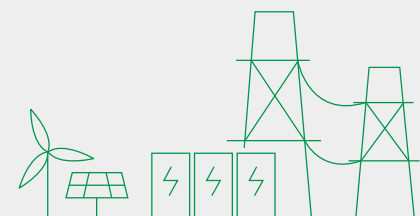
Policies that sustain wind and solar growth, clean flexibility and electrification are needed to deliver energy security and competitiveness for generations to come.

There are compelling reasons to accelerate cleaning up the EU power sector. Wind and solar growth can drive down energy prices and lower dependence on expensive and risky fossil fuel imports, especially from Russia. Renewable energies are also [overwhelmingly popular](#) with European citizens.

Three key areas require attention in order to unlock further progress towards a cleaner, cheaper, and more secure energy system:

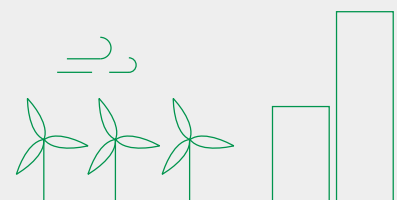
1

Accelerate the roll-out of clean flexibility solutions, such as batteries, grids and demand flexibility



2

Double the pace of wind power deployment



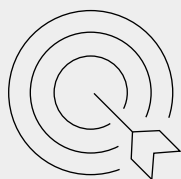
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Set a strong electrification agenda for the EU

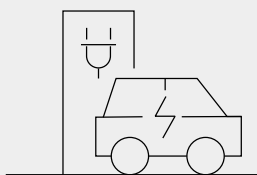


The following recommendations can provide guidance for policymakers towards achieving these goals:

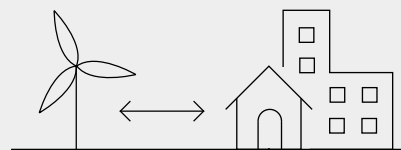
The [roadmap to ending Russian energy imports](#) and the 2040 climate target proposal should clearly signal the pivotal contribution of wind power



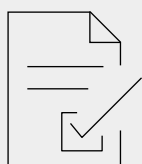
The Electrification Action Plan should enable [smart electrification](#) that helps consumers reduce their bills and improves the business case for renewables



National governments need to finalise [spatial energy plans](#) and remove overly restrictive minimum distance rules for wind farms



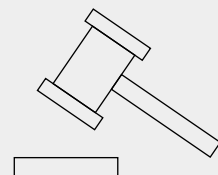
Permitting reforms for renewables need to be implemented, following [already established examples](#)



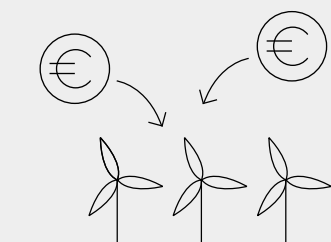
Existing electricity market rules need to be implemented to [improve market access](#) and [remove barriers](#) to accelerated deployment of clean flexibility, with a focus on battery storage and demand-side flexibility



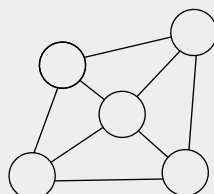
Renewables auctions with [improved designs](#) need to be executed on time, which is essential to guarantee the necessary pace of wind deployment



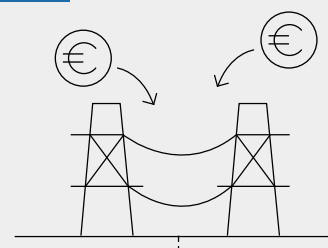
Continued support should be provided to the European wind industry, including through [cross-border investments](#)



A [one-stop-shop for grids](#) should be considered at the EU level, which would streamline access to finance for grid investments, enabling beneficial [regional connectivity](#)



The existing [grid policy framework](#), including anticipatory grid investments, should be implemented without delay, ideally through a [dedicated task force](#)



Key trends in the EU's electricity in 2024

01

Solar overtakes coal

Solar was the fastest growing EU power source in 2024; capacity additions hit a record high and generation was 22% higher than in 2023. Solar (11%, 304 TWh) overtook coal (10%, 269 TWh) for the first time in 2024, meaning coal has fallen from being the third largest EU power source in 2019 to the sixth largest in 2024. This trend is widespread; solar is growing in every EU country, while coal is becoming increasingly marginal. More than half of EU countries either have no coal power or a share below 5% in their power mix. Accelerated clean flexibility and smart electrification are needed to sustain solar growth.

02

Gas declined five years in a row

Gas power generation declined for the fifth year in a row – despite a small rebound in electricity demand. Combined with another coal decline, this cut total power sector emissions in 2024 to below half of their 2007 peak. This sustained decline has played a key role in reducing total EU gas consumption by 20% in the past five years: about a third of this decline occurred in the power sector. Without wind and solar added in 2024, EU gas consumption for power would have been 11% higher.

03

Wind and solar avoided €59 billion in fossil fuel imports since start of Green Deal

In five years of the European Green Deal, a surge in wind and solar generation is the main reason for declining fossil generation. Without wind and solar capacity added since 2019, the EU would have imported 92 billion cubic metres more of fossil gas and 55 million tonnes more of hard coal, costing €59 billion. To maximise future benefits, Member States must continue to implement reforms to accelerate wind power deployment, as delivery currently risks falling short despite cost competitiveness.

European Electricity Review 2025 [Click here to download.](#)



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