Wind and solar growth save €12 billion since Russia invaded Ukraine

Russia's invasion of Ukraine revealed the high cost of relying on fossil fuel imports—but renewables growth helped avoid a worse crisis.

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50 TWh

Increase in wind and solar generation since the war began

€12 bn

Gas costs avoided through wind and solar growth

23%

Record share of EU generation from wind and solar

Wind and solar stepped up to cut gas costs by €12 billion

Russia's invasion of Ukraine revealed the high cost of relying on fossil fuel imports—but renewables growth helped avoid a worse crisis.

In the year following Russia's invasion of Ukraine, the EU has faced enormous pressure to mitigate energy security risks and protect itself against the soaring costs of fossil fuel imports.

Gas prices skyrocketed to an unprecedented high of €313 / MWh as Russia cut pipeline exports to the EU. This caused the cost of producing power from gas to reach over €650 / MWh. With coal prices also surging, the increased cost of fossil fuels pushed up electricity prices and triggered escalating inflation and a cost of living crisis across Europe.

This volatility added new urgency to move away from fossil fuels for power generation in the EU. But even before the full impact of newly announced policies comes into effect, wind and solar have played a vital role in achieving the primary objective of cutting Russian gas dependence.
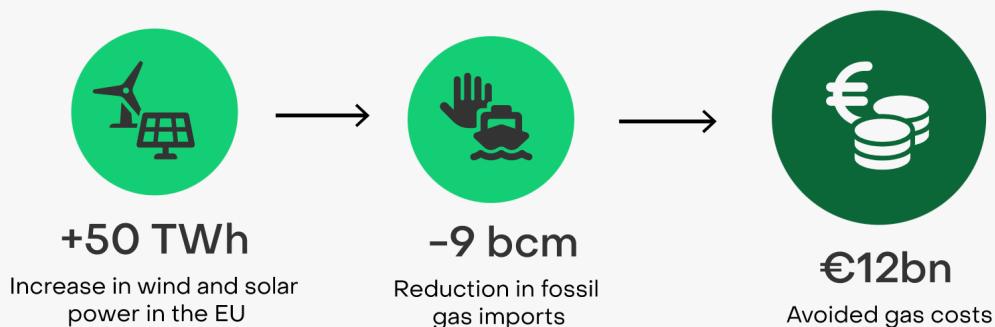
Record wind and solar

Boosted by growing capacity and favourable weather conditions, wind and solar produced a record level of EU electricity since the start of the war. Their combined generation was 546 TWh, an increase of 50 TWh (+10%) compared with the same period in 2021-22.

In total, wind and solar have accounted for 23% of total EU generation since the war began, for the first time overtaking the share of gas power, which provided 19%.

The record wind and solar generation helped the EU weather challenging conditions in the power sector. Alongside the rush to replace Russian gas, nuclear and hydro generation suffered significant shortfalls across the EU last year in the wake of drought impacts and plant closures. This created a large gap in generation, much of which was met by wind and solar and a fall in demand as fossil fuel prices spiked.

Growth in wind and solar has avoided €12bn in EU gas imports since Russia's invasion of Ukraine

Figures relate to year-on-year changes for the period Mar 2022 – Jan 2023

+50 TWh
Increase in wind and solar power in the EU

–9 bcm
Reduction in fossil gas imports

€12bn
Avoided gas costs

Source: Monthly electricity data, Ember
Cost calculations based on TTF Day Ahead prices from Montel

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Savings from avoided gas imports

With over a fifth of EU electricity coming from wind and solar, progress towards a clean energy system helped avoid an even worse crisis.

The 50 TWh annual increase in wind and solar alone reduced the amount of gas required for electricity generation by 90 TWh (9 bcm) and avoided gas costs of €12 billion, based on the average TTF day ahead price for the period.

Without the total 546 TWh of wind and solar generation, the EU could have required an additional 993 TWh (94 bcm) of gas to meet electricity demand since the start of the war. This equates to gas costs of €135 billion.

The EU has imported 330 bcm of gas since the war began, with 54 bcm (16%) coming from Russia. While total gas imports have only decreased by 5% (19 bcm) compared to the same period in the previous year, Russian imports have plummeted by 60% (82 bcm). Prior to the invasion of Ukraine, the EU relied on Russia for around 40% of its imported gas. This has dropped substantially to 16%.

Moving faster towards energy independence

Russia's war in Ukraine has fundamentally changed the EU's attitude to using fossil fuels for electricity. In response to the war, EU governments identified fossil fuels as a threat to

national security, energy affordability and climate goals. The solution to all three: build more clean power, faster.

European policy since the invasion reflects this new energy landscape. Most European countries [increased their renewable electricity ambitions](#) in response to the crisis, announcing higher targets, shorter project timelines and supportive policies. This is matched by increased urgency on the EU level as well. The European Commission's REPowerEU proposal aims to double solar capacity by 2025 under its 45% renewable energy target for 2030, and expects 69% renewable electricity by that date.

However, as the devastating war continues, this is no time for complacency. Targeting higher wind and solar shares is critical but, more importantly, these increased capacities must be delivered. Only then can Europe displace fossil fuels in order to achieve lasting energy security and independence.

> Russia's invasion of Ukraine shocked Europe into action. Suddenly, gaping vulnerabilities due to fossil fuel dependence became a stark reality. The last year has been a scramble to address these risks through an accelerated transition to a cleaner, more secure power system. At the year marker of Russia's devastating war in Ukraine, it remains critical that the EU rapidly expands solar and wind to attain permanent energy independence.

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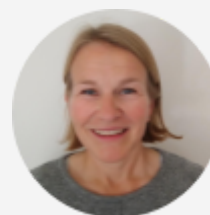
Methodology

Data

The EU electricity generation and fossil gas price data applied is for the period of 1 March 2022 to 31 January 2023, due to the current unavailability of generation data for February 2023.

Fossil gas price applied is the average Dutch Title Transfer Facility Day Ahead price for the relevant time period (€123 / MWh).

EU gas import data is from [Bruegel](#)

Conversions and calculations

1 Net Calorific Value = 0.9 Gross Calorific Value

Calorific value of gas = 37.83 MJ/m3

1 billion cubic metres = 10.51 Terawatt hours

Fossil gas plant efficiency rate = 55% (Lower Heating Value)

Fossil gas emissions intensity = 370g CO_2eq/kWh

Fossil gas generation cost calculations include gas costs and CO_2 costs but exclude any operational costs.

Acknowledgements

Image credit

Woman riding electric bike by a wind farm on the Schwaebische Alb; [Umomos](#)