

Poland's energy transition and the challenge of 'ghost' projects

Poland's energy transition is gaining momentum, largely driven by renewable energy and grid investments. But given that coal units' capacity will be reduced in the 2030s, investments in alternative sources must accelerate. And 'ghost' projects in wind, solar, and energy storage need to be addressed to unlock real investments



A wind farm in the Polish countryside

Poland's (clean) energy investments are gaining momentum

Poland's energy transition is gaining momentum, driven by rapid growth in renewables, major grid upgrades, and preparations for its first nuclear plant. This shift is especially important amid the Middle East conflict and subsequent fossil fuel shock. With coal capacity set to decline in the 2030s, investment in alternative sources must accelerate – and project selection needs to be smart to avoid stranded assets. Crucially, the large backlog of 'ghost' wind, solar, and storage projects must be resolved to unlock real investment in the years ahead.

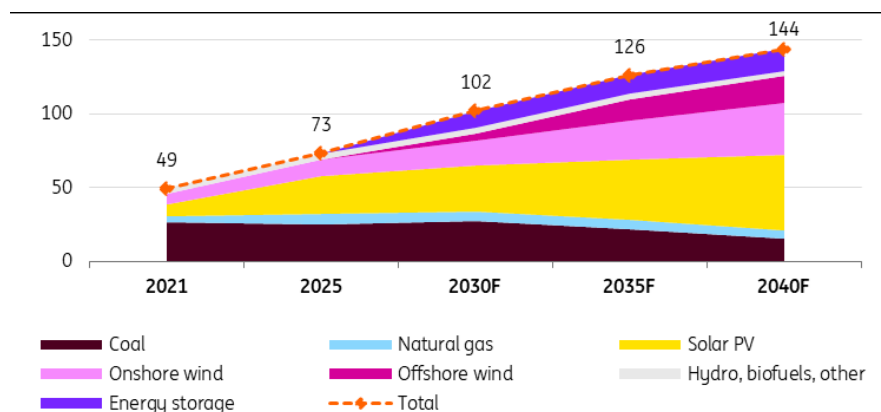
After years of underinvestment, caused by a confusing energy strategy, lack of political will, and other barriers, Poland's energy investments are finally gathering pace. We have [written about this](#)

previously. Poland attempted to align two conflicting goals: preserving conventional generation (and coal mines), while meeting the EU's energy and climate goals, and coping with high EU Emissions Trading System (ETS) costs.

Even though we still lack an ambitious version of Poland's National Energy and Climate Plan (NECP), the action of the Polish Power Grid (Polskie Sieci Energetyczne, PSE) and power distribution companies have unlocked investments in power grids, and in wind, solar, and natural gas projects.

In recent years, power capacity has been rising at an impressive pace, and this should continue until 2040. As of end-2025, Poland's net power capacity reached nearly 73GW, up from 49GW in the early 2020s, driven mainly by intermittent sources – solar photovoltaic and onshore wind. According to the latest PSE strategy, the share of renewable energy sources (RES) in the power generation mix is set to increase from 29% in 2025 to 66% in the mid-2030s.

Poland's net power capacity by fuel, in GW



Source: Polish Power Grid (Polskie Sieci Energetyczne, PSE)

Today's power system still relies on conventional, mainly coal units, but this will change by 2040

Poland has secured two important decisions from the European Commission regarding its first nuclear project and the continued operation of coal fired units. In December 2025, the Commission approved the public aid framework for Poland's first nuclear plant, now in its final design phase, although it is not expected to begin operating until 2036.

Separately, in mid 2025, Poland received approval to extend the operation of ageing 200MW coal fired units on national security grounds. These obsolete units – together totalling around 10GW – were granted public aid and allowed to run until the end of 2028. Without this exemption, they would have been forced to shut down on 1 July 2025 due to exceeding the 550 gCO₂/kWh emissions limit. What happens after the three year extension remains uncertain.

Poland may continue operating its five modern large coal units, with a combined capacity of roughly 3GW, until 2035. However, these units are subject to EU rules on power capacity markets and the internal electricity market agreed in 2018-19.

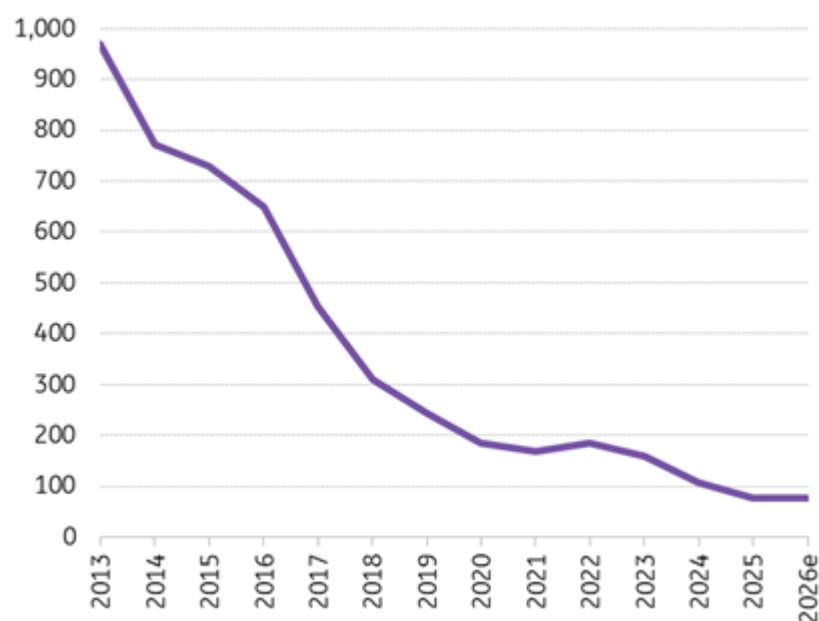
Can Poland survive without power system disruptions until the mid-2030s and avoid excessive electricity bills? The short answer is yes, but it will require removing obstacles to invest in energy infrastructure and storage. Although wind and solar energy are the cheapest currently in Poland

(high EU ETS prices make conventional projects expensive), there are costs in dealing with their intermittency. However, these costs do not compare to the potentially huge costs of a blackout. According to PSE, a one-day-long blackout would cost Poland PLN40 billion, which is 1% of annual GDP.

What are the options for ensuring the stability of the Polish power system?

Out of Poland's current market spot price of about PLN500 per MWh, around PLN80-100 can be attributed to the costs of the RES profile. These sources provide cheap (or even zero variable cost) energy when the wind blows and the sun shines, but otherwise remain idle. Storage can help smooth these fluctuations, though it has historically been costly and still faces technical limits, especially for long duration needs. However, storage costs have been falling rapidly, making RES plus storage an increasingly viable solution.

Global costs of utility-scale 4-hour battery storage, \$ per MWh, (2025 real)

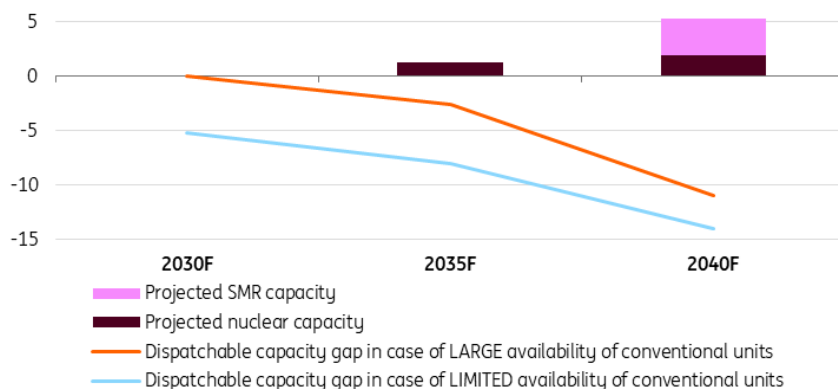


Source: BNEF data.

What alternatives can ensure the stability of the power system?

According to the PSE's scenario analysis, in the optimistic scenario of **significant** availability of conventional power units, a deficit in net dispatchable capacity may occur only in 2035 and reach 2.5GW and then widen to about 11GW in 2040. But in the scenario of **limited** availability of conventional units, the deficit in net dispatchable capacity of 5GW emerges already in 2030 and then widens to 8GW in 2035 and 14GW in 2040. These dates seem distant, but given long lead investment times in energy projects, the decisions are quite urgent.

PSE's extreme scenarios of required net dispatchable capacity, and assumed capacity of nuclear projects (large nuclear project and SMRs), in GW



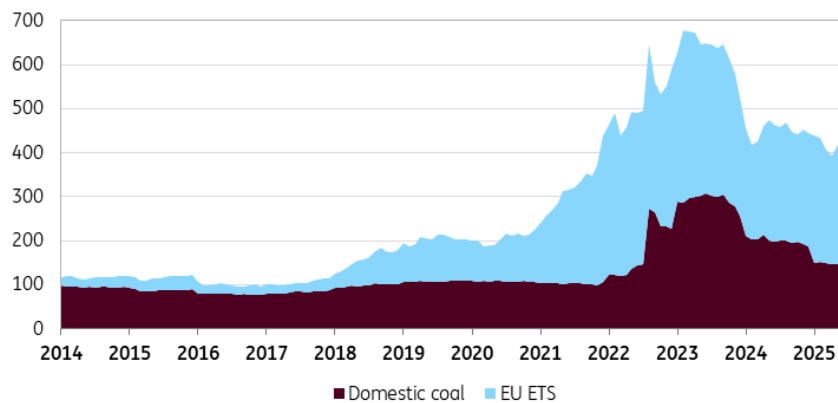
Source: ING estimates based on the Polish Power Grid (Polskie Sieci Energetyczne, PSE).

Nuclear energy cannot be treated as an alternative in the medium term, given that the large project is to be finalised by mid-2030. Also, the Small Modular Reactor (SMR) projects – though promising in Poland and worldwide – are still not available much quicker and are rather an option for large industrial companies or for heating. According to a PSE analysis, the nuclear units can fill the gaps in dispatchable capacity only partly; the capacity in small modular reactors (SMR) of 1.25GW is to be available in 2035, while jointly with the large nuclear, it is to provide 5.3GW in 2040.

The alternative to the RES+storage option is natural gas peakers – power units meant to be used only in peak demand hours (about one-quarter of available hours per year), which could be efficient but are not cost-effective. Such an option would not result in lower electricity bills. This option would also require higher gas imports. Currently, around 80% of Poland's gas consumption is imported (Baltic Pipe from Norway and LNG from the US, Qatar, and other places). Another obstacle to this option is a long queue for gas-fired power installations stemming from a huge pipeline of investment globally in data centres and AI.

The same cost inefficiency applies to the system based on coal-fired units. As per their cost structure, a large part constitutes the costs of carbon permits. Naturally, these costs are driven by EU Allowance's prices (EUAs), which were highly volatile recently and traded around €65 per ton of CO2 in mid-March. These costs constitute around two-thirds of the total cost of electricity production from coal.

Approximate cost of fuel and EU ETS allowances in electricity production from coal, (PLN per MWh)

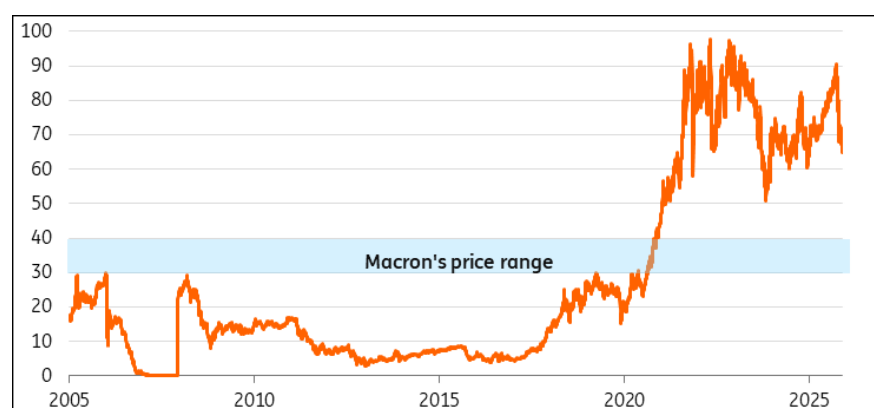


Source: IMF estimates based on data from InStrat think tank.

In recent weeks, the EU ETS market has come under pressure and is awaiting a review by the European Commission. Sentiment has been affected by comments from German Chancellor Friedrich Merz (with the ETS question becoming the elephant in the room), French President Emmanuel Macron (who argued that speculation is occurring in the ETS market and that prices should be closer to €30-40), and Italian Prime Minister Giorgia Meloni's decision to remove carbon costs from power bills.

As we outlined in our [recent comment](#), EU carbon prices have slid amid policy noise and fund selling. Earlier this week, Commission President Ursula von der Leyen signalled the need to better address excessive price volatility and ensure short term price stability in the EU carbon market.

Prices of EU's carbon permits from EU ETS implementation in 2005, in €/tCO2



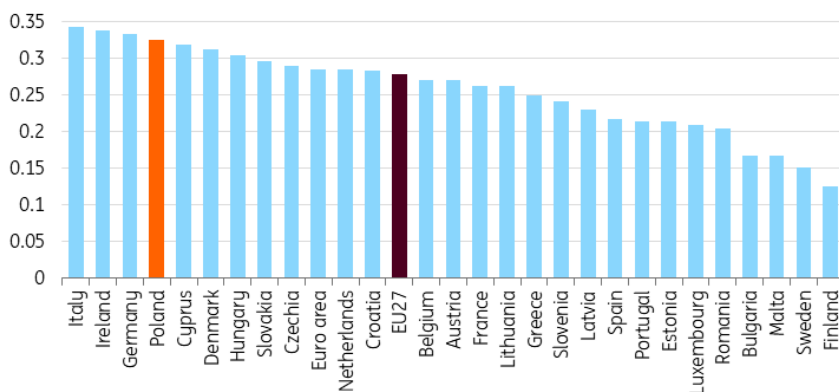
Source: MacroBond.

Those who advocate for the reliance on coal in Poland's future energy system should keep in mind that coal is currently being extracted from levels below 1,000 meters, that taxpayers need to collect around PLN10 billion per year to subsidise mining, and it takes around seven years of investments to start mining in new walls.

Polish grids aim to be net-zero-ready by 2035

The latest PSE’s goal of readiness of the national power system to operate in a net-zero electricity mix by 2035 sounds rational. This has been articulated by the PSE in its recent [strategy](#) and a new 10-year draft investment [plan](#) 2027-36. This means a clear direction towards a net-zero energy system, as maintenance of two parallel energy systems would be very costly, and would push Poland’s high electricity bills up even further. In the second half of 2024, Poland’s electricity prices for business were among the highest in the EU, comparable to German levels, and only slightly lower than in Italy and Ireland.

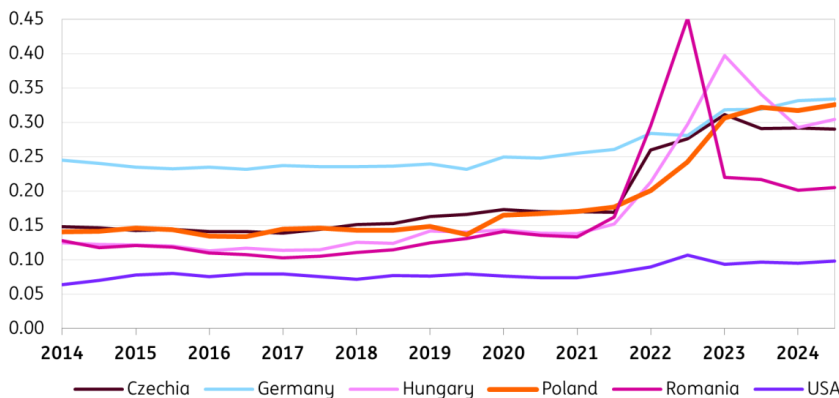
Electricity prices for business, in € per KWh, 2H 2024



Source: IMF (2026) based on Eurostat data: average of IA, IB and IC consumption bands.

At the same time, they were three times higher than in the US, which provokes competitiveness concerns, especially for energy-intensive industries.

Electricity prices for business in selected countries, in € per KWh



Source: IMF (2026) based on Eurostat data: average of IA, IB and IC consumption bands; average of commercial and industrial rates for the US.

A first step in the pursuit of the PSE’s strategy is unlocking ‘ghost’ projects

Unlocking so called ‘ghost’ energy projects is essential for Poland to progress toward a low carbon power system. These projects exist only on paper, raising doubts about whether the intention is to

genuinely build new RES or storage capacity, or simply profit from holding a grid connection slot. As a result, they clog the investment pipeline and distort the grid operator's view of future infrastructure needs. This is particularly important given that distribution and related fees already make up around 40% of electricity bills – and this share is set to rise.

Nominal capacity of renewable energy and storage projects to be connected to the power grid, as of Dec-25, in GW

Network	Project stage	PV	Onshore wind	Offshore wind	Energy storage	Total
Transmission network	Connection agreements	7.5	2.1	8.5	9.2	27.3
	Connection conditions issued	28.7	25.4	8.8	59.0	121.9
Distribution network	Plans for connection to low and medium voltage grids					
TOTAL		60.7	32.2	17.3	94.8	205.0

Source: ING based on the Polish Power Grid (Polskie Sieci Energetyczne, PSE).

The overall nominal capacity of RES and storage projects to be connected to the grid is 205GW, which is about three times more than Poland's current net power capacity. The total capacity of these projects is obviously artificially inflated. According to PSE Chair Grzegorz Onichmowski, in the current circumstances, the development of wind projects takes nine years in Poland, which is far too long. The construction of a gas power plant takes about five years. This shows that decisions are urgent. The regulator proposed a method to select the real projects and proposed legal solutions in the new energy law, which is currently being processed in Parliament.

Similar initiatives, aimed at rooting out the so-called ghost or zombie projects clogging up the process of connecting to the network, were implemented in the UK in December 2025. Under the new rules, Britain's National Energy System Operator will prioritise grid connection for the most viable power generation and storage projects. Projects with planning permission, land rights and alignment with national energy goals will be fast-tracked for connection.

Adopting similar legal solutions in Poland should be high on the government's priority list, not only in the current context of high energy commodity prices due to the war in the Middle East. Without filtering of the zombie energy projects, the implementation of new energy investments (read: power system stability) is at risk. Poland needs modern energy units in place, not on paper.

Poland's progress in greening its electricity generation mix has been impressive in recent years, but key milestones are pending in order to advance investments in power grids and energy supply. As a first step in the implementation of its ambitious long-term strategy, 'ghost' energy projects need to be addressed. Poland's energy transition is complex and needs to be broken down into smaller, manageable steps.

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