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# The collapse of the green energy transition

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## Abstract

The goal of European politicians has for years been to achieve a complete phaseout of fossil fuel use within 2-3 decades. The energy in the future is almost exclusively to be produced by wind turbines and solar cells. A huge capacity has been built by now, but it is running into increasing difficulties. The economic situation, especially for offshore wind, has deteriorated sharply and the hourly prices of electricity fluctuate wildly; sometimes they are even negative. The expansion, particularly for wind, has slowed down to a considerable extent. Meanwhile, the problems of stability of the electrical system became apparent with the Spanish blackout in April. Hydrogen was foreseen to play a major role in the transition, but high costs have brought the development nearly to a standstill, with many projects cancelled or put on hold.

**Keywords:** Green energy transition; Wind turbines; Solar cells; Grid stability; Hydrogen

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## 1. Introduction

A few years ago, the ambitions for the green transition were enormous in Europe. Within a few years there would be a vast expansion of the capacity of wind turbines and solar cells, and they would power everything electrical and be the source of millions of tons of hydrogen, which could be used for energy storage or as a replacement for fossil fuels in areas where electrification would be difficult – e.g. like heavy transport, shipping and aviation.

## 2. The expansion

Five leading politicians from Northern Europe agreed in 2022 that Denmark, Germany, Belgium and The Netherlands in the North Sea would have a combined offshore wind-turbine capacity of 65 GW already by 2030 and no less than 150 GW in 2050 [1]. At present it is around 13 GW.

Meanwhile, extensive expansion of the solar cell capacity took place in Germany and Denmark. Germany now has more than 100 GW solar cells installed, which is roughly double the average consumption [2]. Denmark has reached a figure around 4 GW, which is roughly on par with the average load. Besides, Denmark has around 7.5 GW wind turbines, on land and at sea [3]. Germany has some 75 GW wind turbines, most of them on land.

## 3. The result, power prices

The result of these heavy build-ups has been an electricity market with huge swings in the supplies, ref. Fig. 1. A combination of fossil-fired power plants and import/export to neighbouring countries with alternative power sources, i.e. nuclear or hydroelectric, has been employed to salvage the situation and ensure a stable supply to the consumers.

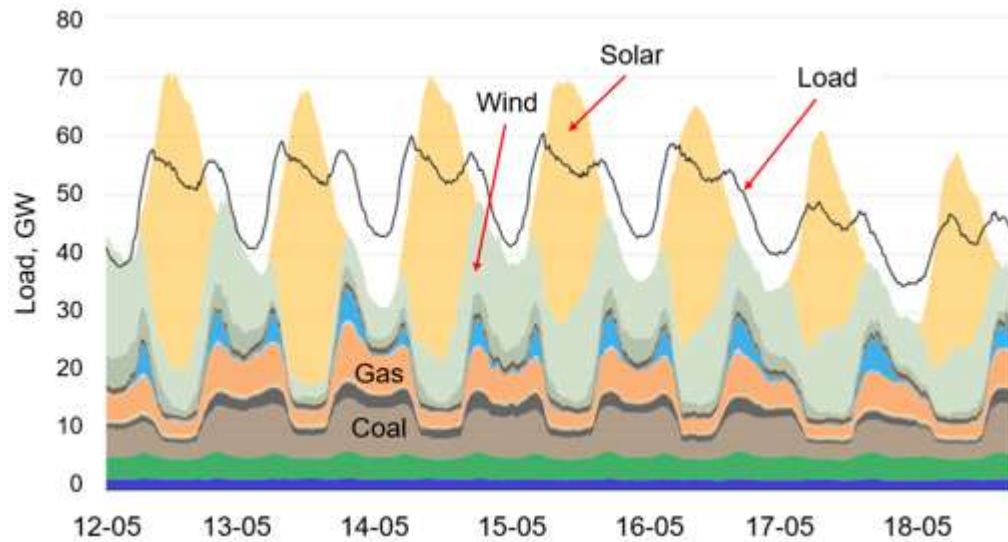


Figure 1: German power production in May, 2025. Diagram: Energy-Charts [4].

But one consequence has been wildly fluctuating power prices, as seen for Denmark in Fig. 2. It is apparent that the power price frequently drops below zero, meaning that the producers have to pay for delivering the power. In 2025 the number of hours with negative prices in the western part of Denmark had by the end of August already exceeded 400.

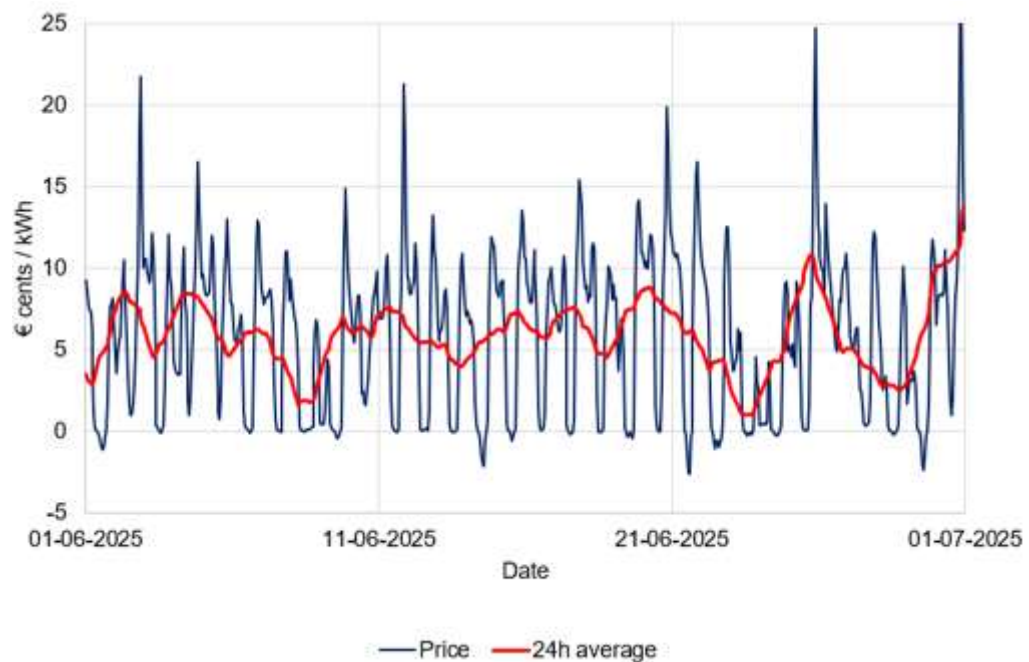


Figure 2: Power prices in Denmark (excl. tariffs & taxes), June 2025. Data from Energinet [5].

The negative or low prices animate some producers to stop their production and the result is that in summertime, around midday, when the solar cells produce vast amounts of electricity, both Germany and Denmark almost daily end up with widespread close-down – or curtailment – of wind-turbine and larger solar-cell parks.

While consumers might be happy with low power prices, they constitute a serious problem for the producers, who lose significant amounts of income, just as their installations produce the most. This phenomenon is known as “cannibalism”.

#### 4. Investor worries

The uncertainty regarding future income has made investors more wary of embarking on new projects. An example was seen in Denmark, in December 2024. 3 GW offshore wind was put up for auction by the Danish government. The terms were strict, no support was offered, on the contrary, the bidders were asked to present their offers for yearly concession payments to the government. To the apparent surprise of the Danish Energy Agency, nobody wanted to bid. Afterwards a consultant investigated the case and interviewed the wind-turbine operators who were expected to bid. What had scared them away was not so much the concession payments, they could always have bid one euro per year. The reason was primarily the market prices of electricity which would not cover the financial and operating costs of the parks, and besides the fear of cannibalism which would further undermine the project economy [6].

The government now intends to hold new auctions and this time it will be with a guaranteed payment for all power, produced or curtailed, to the tune of 10 eurocents or more per kWh.

Thereby, all notions of wind power being among the cheapest sources of electricity are effectively buried.

Denmark is not the only country where offshore wind auctions have ended without bids, table 1 shows a selection of other failures in 2024 and 2025. It is by now clear that the wind capacity by 2030 will be nowhere near the grand visions of 2022.

Table 1: Failed auctions, with planned capacities, 2024-25.

| Country         | year | GW  |
|-----------------|------|-----|
| UK ("AR5")      | 2023 | 4   |
| UK ("AR6")      | 2024 | 6*) |
| Denmark         | 2024 | 3   |
| The Netherlands | 2025 | 2   |
| Germany         | 2025 | 2.5 |

★) Bids for 3.4 GW, no bids for 6 GW

#### 5. Grid stability and the blackout in Spain

Another manifestation of the problems with the green transition is the growing worries about the stability of the power supply. The basic philosophy of an electric grid is that the consumers draw whatever amount of power they need, and then it is the task of the producers to keep up the supply, and to fine tune it to the variations in the consumption. This was manageable with a supply based on power plants fired with fossil fuels. Now the situation is reversed. Solar- and wind-produced power is generated completely independently of the consumption and introduces major variations in the supply. These variations then have to be smoothed over by other means. This is a major headache for the energy distributors. So far, they have been successful in Northern Europe, but according to the reports there has been some close calls [7]. However, Spain, which has had big ambitions with wind turbines and especially solar cells, ended up having a serious incident in April 2025.

The country was boasting that its electricity supply almost entirely was based on solar and wind. This was also the case in the morning of April 28<sup>th</sup>, where growing instabilities in the frequency and voltage of the power occurred, and remediation proved increasingly difficult, see Fig. 3. The

system finally crashed right after noon, resulting in a major blackout and 50 million people were left without power [8], which unfortunately also caused some fatalities. The conclusion upon thorough investigations was that Spain had too few spinning power plants (i.e. gas or nuclear powered) in operation [9], and the inverters of the solar or wind-turbine parks could not ensure the stability. Ever since the blackout, the country has kept far more spinning capacity in operation.

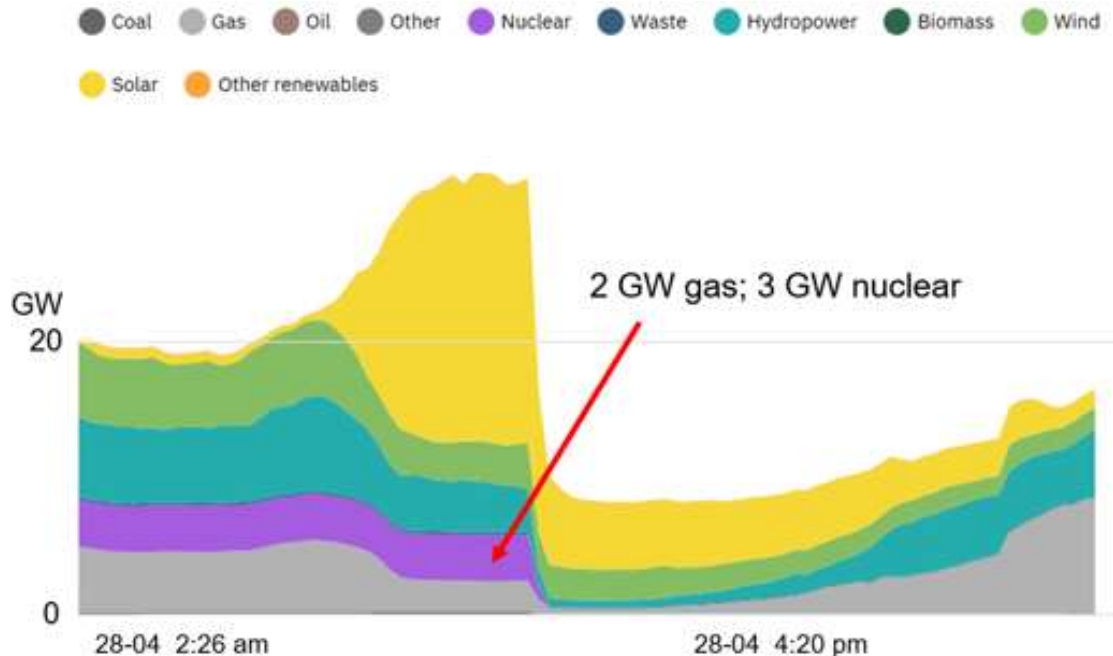


Figure: 3: Power production in Spain on the day of the blackout. Diagram: Energy Monitor [10].

By now it is being realised, that solar and wind never will be able to provide 100% of the electricity. Germany in fact is still relying heavily on its coal- and gas-fired plants, also to cater for periods without sunshine or wind. The result is that the country has seen no reduction in its CO<sub>2</sub>-emissions from power production since 2018, in spite of the heavy build-up of wind and solar [11].

## 6. Hydrogen

The vision of the various countries is, as mentioned, invariably centred on the notion that vast amounts of electric power will be used for hydrogen production. It has, however, for long been apparent that the hydrogen produced by electrolysis of water will be very expensive, and not at all competitive with hydrogen made from natural gas. What is worse, the “green” hydrogen is even less competitive with the natural gas itself, which e.g. is used for heating processes in the industry [12].

Hence, there is very little interest, e.g. among industrial energy users, in switching over to hydrogen. As a result, a number of grand schemes for building hydrogen manufacturing plants and pipelines for transport of the gas have been cancelled or postponed indefinitely [13]. In Denmark, a company which was to manufacture the electrolyzers recently went bankrupt. There was simply no interest in the machines [14].

At present only a handful of hydrogen plants are in operation in Europe, most of them just of pilot scale. They produce hydrogen or the derived Power to X fuels, intended to replace petrol, diesel, bunker oil etc. Needless to say, these fuels are horrendously expensive; the plants are dependent on government subsidies, or rich client companies wishing to flag a “green” profile.

## 7. Conclusion

The green energy transition in Europe has slowed down, almost to a halt, and any further progress depends on governments still willing to throw more taxpayer money into the abyss. The situation is in no way improved when looking at the world outside Europe, where Asia, South America and Africa keep increasing their use of fossil fuels, and the U.S., under Donald Trump, is doing its best to stop the transition in its tracks.

Europe is now at a crossroad. The decision is whether to continue along a path leading nowhere or to abandon the belief in solar and wind as saviours of the climate and humanity, and instead adopt a more sober approach to the issue of our future energy supply.

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## References

1. Energiwatch, May 17th 2022. <https://energiwatch.dk/article14028591.ece>
2. Canne, Christoph: *Instabil, ineffizient und unbezahlbar trotz Ausbau – die Energiewende stürzt Deutschland ins Stromchaos*, Apollo-News, July 2025. <https://apollo-news.net/instabil-ineffizient-und-unbezahlbar-trotz-ausbau-die-energiewende-stuerzt-deutschland-ins-stromchaos/>
3. Folketingstidende, R13, May 2025. [https://www.folketingstidende.dk/samling/20241/redegoerelse/R13/20241\\_R13.pdf](https://www.folketingstidende.dk/samling/20241/redegoerelse/R13/20241_R13.pdf)
4. Energy-Charts. <https://energy-charts.info/charts/power/chart.htm?l=de&c=DE>
5. Energinet. <https://energinet.dk/>
6. Boston Consulting Group: *Kommercielle nøgelfaktorer irt. udbud af havvind*, March 2025 <https://ens.dk/media/6478/download>
7. Energinet: To ekstremdøgn bød på vanvittige prisstigninger og bragte elsystemet tæt på kanten, June 2023. [https://energinet.dk/om-nyheder/nyheder/2023/05/24/to-ekstremdog-n-bod-pa-vanvittige-prisstigninger-og-bragte-elssystemet-taet-pa-kanten/?fbclid=IwAR0b4oY5HE1tjBILTlIe\\_MfDUPVKt5-104W2XtOo1J9WwlwiOIXKSkh4](https://energinet.dk/om-nyheder/nyheder/2023/05/24/to-ekstremdog-n-bod-pa-vanvittige-prisstigninger-og-bragte-elssystemet-taet-pa-kanten/?fbclid=IwAR0b4oY5HE1tjBILTlIe_MfDUPVKt5-104W2XtOo1J9WwlwiOIXKSkh4)
8. ENTSO-E: *28 April 2025 Blackout*. <https://www.entsoe.eu/publications/blackout/28-april-2025-iberian-blackout/>
9. Schernikau, Lars: *Blackouts, what causes them?* May, 2025. <https://unpopular-truth.com/2025/05/16/blackouts-what-causes-them/>
10. Energy Monitor. <https://www.energymonitor.ai/power/live-eu-electricity-generation-map/>
11. Bosse, Frank: *Deutschlands Energie (und damit Umwelt-) Politik am Scheideweg*, Klimanachrichten, May, 2025. <https://klimanachrichten.de/2025/05/25/deutschlands-energie-und-damit-umwelt-politik-am-scheideweg/>
12. Homewood, Paul: *Updated hydrogen costings*, June 2024. <https://notalotofpeopleknowthat.wordpress.com/2024/06/10/updated-hydrogen-costings/>
13. Klimanachrichten: *Schwierige Zeiten für Wasserstoff*, August 2025. <https://klimanachrichten.de/2025/08/05/schwierige-zeiten-fuer-wasserstoff/>
14. Seligmann, Laura Nørkjær: *Nu er det officielt: Green Hydrogen Systems er gået konkurs*, Euroinvestor, June 2025.

[https://www.euroinvestor.dk/nyheder/nu-er-det-officielt-green-hydrogen-systems-er-gaaet-konkurs?gaa\\_at=eafs&gaa\\_n=ASWzDAimwIw9VeZZhz-veKLEJKCBbGRv6vWa5T2pSD1rH6lBeh87T-1YNmCUTOivAggg%3D&gaa\\_ts=68bd6c1a&gaa\\_sig=yw3tN1dnxHvvoPeMIidU3ct3WmnoGHUbs49N3ZvuPdTmo-dajtvMIJwCnQ6TnxvAA3zJoAoyCX0KHWvegbnl0rg%3D%3D](https://www.euroinvestor.dk/nyheder/nu-er-det-officielt-green-hydrogen-systems-er-gaaet-konkurs?gaa_at=eafs&gaa_n=ASWzDAimwIw9VeZZhz-veKLEJKCBbGRv6vWa5T2pSD1rH6lBeh87T-1YNmCUTOivAggg%3D&gaa_ts=68bd6c1a&gaa_sig=yw3tN1dnxHvvoPeMIidU3ct3WmnoGHUbs49N3ZvuPdTmo-dajtvMIJwCnQ6TnxvAA3zJoAoyCX0KHWvegbnl0rg%3D%3D)