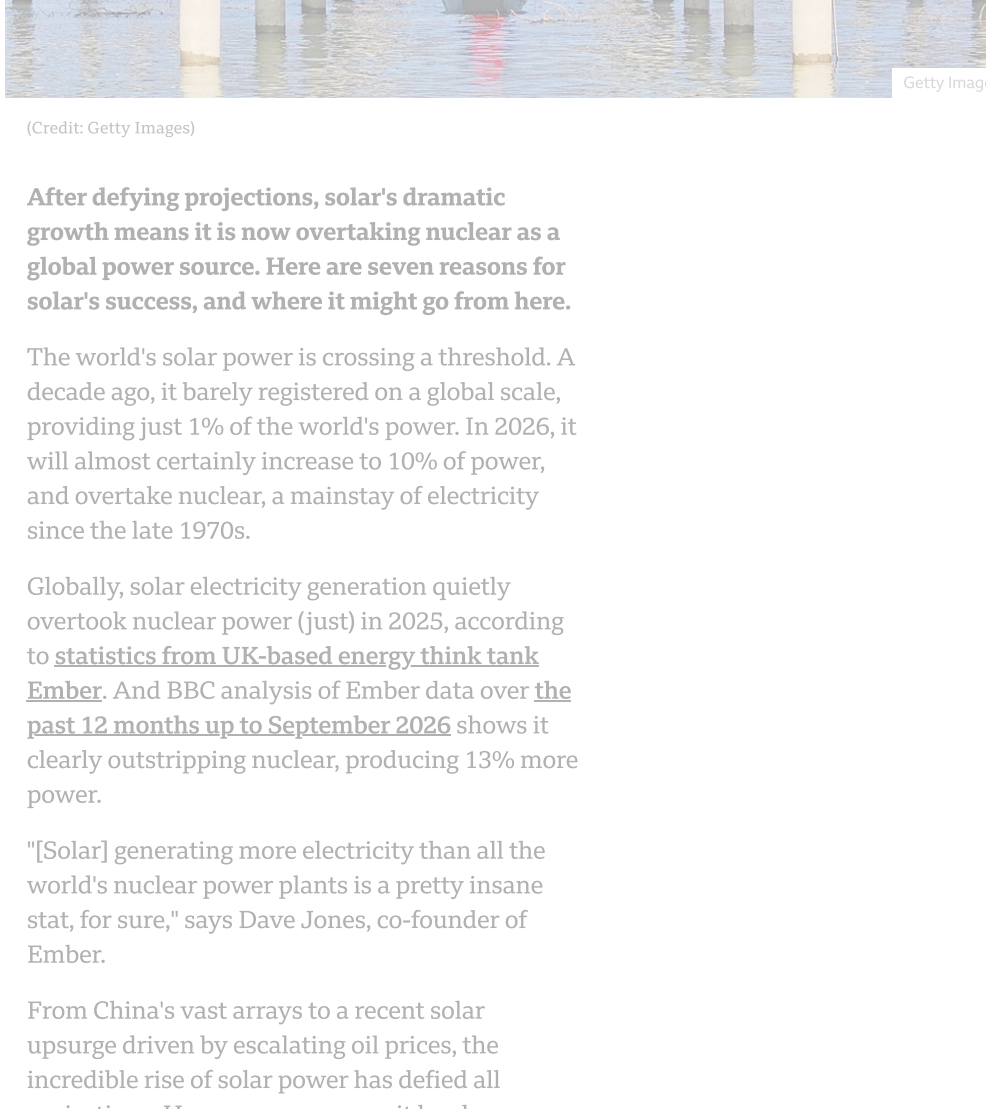


It's offensively cheap: How solar power is quietly becoming bigger than nuclear

2 min ago

Jocelyn Timperley

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(Credit: Getty Images)

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After defying projections, solar's dramatic growth means it is now overtaking nuclear as a global power source. Here are seven reasons for solar's success, and where it might go from here.

The world's solar power is crossing a threshold. A decade ago, it barely registered on a global scale, providing just 1% of the world's power. In 2026, it will almost certainly increase to 10% of power, and overtake nuclear, a mainstay of electricity since the late 1970s.

Globally, solar electricity generation quietly overtook nuclear power (just) in 2025, according to statistics from UK-based energy think tank Ember. And BBC analysis of Ember data over the past 12 months up to September 2026 shows it clearly outstripping nuclear, producing 13% more power.

"[Solar] generating more electricity than all the world's nuclear power plants is a pretty insane stat, for sure," says Dave Jones, co-founder of Ember.

From China's vast arrays to a recent solar upsurge driven by escalating oil prices, the incredible rise of solar power has defied all projections. Here are seven ways it has become an apparently "unstoppable force" – and what the future looks like from here.

1. An underestimated force

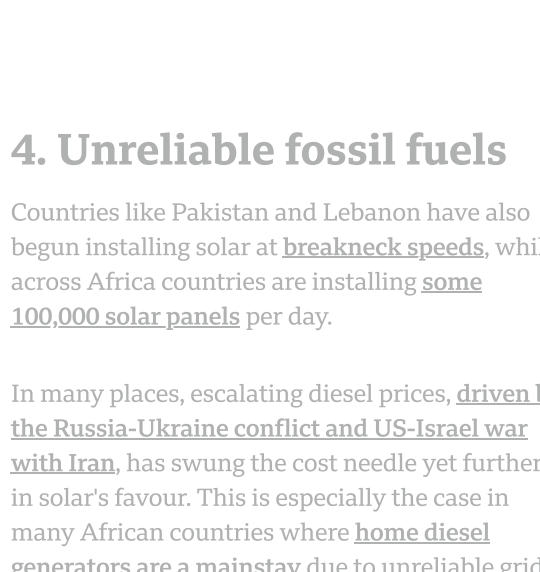
"Solar is now the engine of the power transition," says Jan Rosenow, a professor of energy and climate policy at the University of Oxford in the UK.

Solar has become the **fastest-growing source of new electricity in history**, and by far the largest source of new electricity globally. In 2025, it met three-quarters of the growth in the world's demand for electricity, overtaking wind power generation (wind power is also growing, just a little more slowly).

44 *That's where solar's going, to not just be king of electricity, but king of energy* – Dave Jones

"It wasn't expected," says Rosenow. Mainstream projections, he says, have underestimated solar year after year. Outlooks such as those from the International Energy Agency (IEA), an influential intergovernmental organisation based in Paris, "assumed linear growth and slowly falling costs, and got both wrong".

Over 2025, multiple sources indicate **solar electricity generation will almost certainly far exceed nuclear globally**. Nuclear's electricity generation has remained more or less constant since 2000, while solar's has increased some 2,700-fold.



Ember data shows solar electricity generation currently surpassing nuclear in 2025. In 2026, it will almost certainly have overtaken it (Credit: Ember/BBC)

2. 'Offensively cheap'

Solar, a mature technology for some 15 years now, became the **cheapest electricity in history** in 2020. Since then, solar has scaled, efficiency has risen, and the amount of **silicon and silver** used in panels has gone down, leading prices to fall yet further, says Jones.

"Massive Chinese manufacturing scale and current overcapacity have pushed module prices to record lows," says Rosenow.

In particular, a **large fall in the price of panels in 2023-24** pushed us into the current era of what Jones calls "offensively cheap" solar. "A panel in itself is just so unbelievably cheap," he says. "It's well under \$100 (£75)... and that's going to keep you generating electricity for 30, 40 years without any input at all."

Of course, it's not just in purely economic terms that solar is bringing down costs. Researchers have calculated the US rising wind and solar generation brought it \$249bn (£186bn) in **climate and health benefits between 2019 and 2022**.

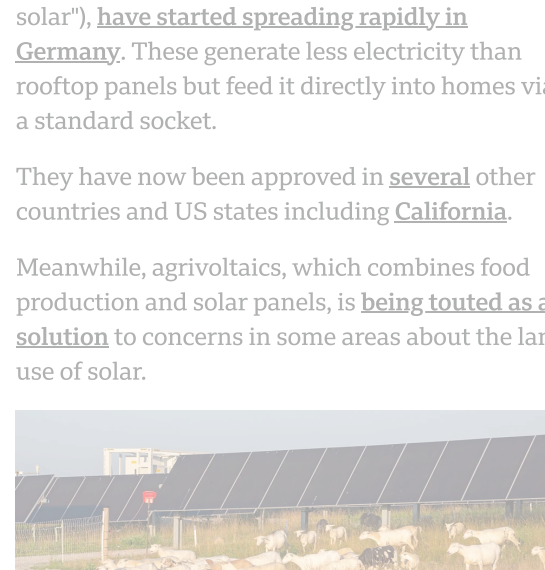
3. Global uptake

China is still the world's biggest solar power by far but is by no means the only player.

Despite the US imposing a **variety of tariffs on solar**, it remains the **second country when it comes** to installations, which are still skyrocketing – especially in states won by **President Trump in 2024**. In fact, the US now has **enough solar to power more than one-third of its households**.

"Tariffs and other federal policies that constrain renewable energy growth are certainly expected to raise costs and slow expansion relative to what we otherwise would have seen," says Alicia Zhao, an expert in US mitigation pathways at the University of Maryland.

"However, economics are a key part of why solar has been able to grow so quickly. Even with rising costs, solar is still one of the cheapest sources of new power in the US. And it is getting built regardless of political lines."



China's internal solar boom is now slowing down, but its cheap electricity exports to other countries are still increasing (Credit: Getty Images)

India, meanwhile, is **moving away from fossil fuels far faster than China did**, and new solar has met **50% of its rise in power demand** in the past two years.

In Australia, **over four million homes** now have rooftop solar; well over a third of all households.

4. Unreliable fossil fuels

Countries like Pakistan and Lebanon now **begin installing solar at breakneck speeds**, while across Africa countries are installing **some 100,000 solar panels** per day.

In many places, escalating diesel prices, **driven by the Russia-Ukraine conflict and US-Israel war** with Iran, has swung the cost needle yet further in solar's favour. This is especially the case in many African countries where **home diesel generators are a mainstay** due to unreliable grids.

Rooftop solar panels, nearly all of them imported from China, have now **taken off** as an alternative.

Ethiopia has even banned the import of petrol and diesel cars in a bid to tackle oil dependency and pollution, says Jones.

Solar is also rapidly providing new electricity where **fossil-based grids can't keep up** with demand. Pakistan, for example, has become a surprising poster child for the solar revolution due to its **extraordinarily rapid rise in installations**. In 2019, solar provided less than 2% of its electricity; now it's 24%, driven by costly, unreliable grid electricity combined and cheap solar imports from Pakistan.

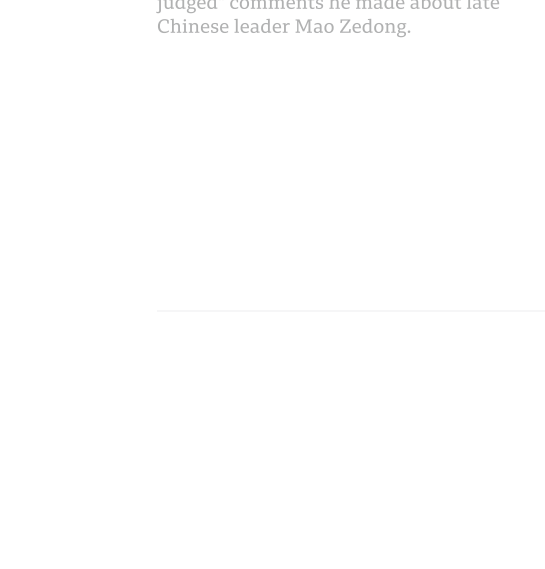
"What's really incredible in Pakistan is... generally most of the solar boom has been out of people's pockets," says Jones. "People can afford it, without needing to take out loans."

A similar story has been seen in several other "sun belt" countries, from Lebanon to Nigeria. "Solar" lets households act without waiting for governments or utilities," says Rosenow. "In uncertain times, that speed and independence is extremely valuable."

5. Battery revolution

Solar power, of course, can only be produced during the day when the sun is shining. To turn it into electricity that can be dispatched at any time, it needs to be paired with batteries.

Fortunately, batteries have been having their **own cost revolution**, transforming their ability to support the solar rollout. "Solar plus storage is now routinely cheaper than new fossil plants in many regions," says Rosenow. Batteries have largely solved the daily problem of shifting midday sun into the evening."



Solar has gone from Pakistan's fifth-largest electricity source in 2020 to its largest in 2025, says Rosenow (Credit: Alamy)

In California, for example, solar and batteries **met on average over a quarter of electricity demand** from 19:00-21:00 (the evening peak) over the first half of 2026. US states such as Vermont are **now rolling out grid-integrated systems** of home batteries, often paired with solar.

Barriers still remain for longer-term storage of solar across seasons, cloudy periods and monsoon seasons, though, both Rosenow and Jones say. It means the integration of solar into the wider electricity system still matters, says Rosenow.

6. Electrify everything

Solar is seen as a key part of the push towards **electrification**, reducing fossil fuel use in areas that previously didn't use electricity, such as via electric cars. Electrification has been chosen as a major theme at **this year's UN climate talks in Turkey**.

"That's where solar's going, to not just be king of electricity, but king of energy," says Jones.

Still, it all requires a plan, Julia Souder, chief executive of the Long Duration Energy Storage Council, a global executive-led non-profit established at COP26, **warned recently**. "There is an inherent danger in uncontrolled electrification, and adding massive new loads without built-in flexibility creates a fragile system," she wrote in a blog for international policy network Ren21. "Electrification is not automatically resilient."

The limits on solar are now grids, storage and how fast we electrify demand, says Rosenow – not panels or cost. "The bigger question is no longer whether solar grows but whether our power systems and institutions can keep up."

In the US, data centres and electrification mean power demand is growing for the first time in decades, says Zhao, with energy security a **national priority**.

"Renewables already make up over 90% of new capacity in the US," she says. "This need for secure, quickly deployable electricity could create a critical opportunity for [further] renewable energy growth even without support from the current federal government."

7. Expanding tech

In the past few years, **plug-in panels** (or "balcony solar"), have **started spreading rapidly in Germany**. These generate less electricity than rooftop panels but feed it directly into homes via a standard socket.

They have now been approved in several other countries and US states including California. Meanwhile, agrivoltaics, which combines food production and solar panels, is being taken up. A solution to concerns in some areas about the land use of solar.



In Kentucky, US, a solar ranch pairs a local turbine to grow his sheep among its solar panels, producing pasture-fed meat while keeping grass and weeds down (Credit: Getty Images)

Other technologies from **floating and "mirror"** solar plants to **perovskite panels** and solar windows could all see growth in coming years.

What's next for solar

In 2026, the world's solar capacity will go on rising, but the rate of expansion may slow down for the first time ever, says Jones.

This is down to China: last summer, it changed its regime for managing and supporting new solar installations, leading to a burst of installations in 2025 to fall under the old price regime. Elsewhere, it's a different picture. "If you exclude China, there's more panels being installed this year than last year," says Jones.

By 2030, the IEA thinks solar power generation will have reached double that of 2025's levels, with solar overtaking hydro to become the **Y**



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There has been a lot of bad news about the climate recently. It's now incredibly likely the 1.5C global limit set in Paris in 2015 will be breached, the world is seeing rising climate impacts and is edging towards several climate tipping points this century.

But the solar success story shows we are also making progress in ways that were never anticipated. A decade ago, "no one was getting close to expecting that to happen", says Jones, noting that the growth in clean electricity has directly translated to fewer coal plants being built.

"Now, worst cases [of climate change] are somewhere between 2.3C of warming, rather than 4C of warming."

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