

The cost of generating renewable energy has fallen - a lot



How hard are the winds of change blowing? Image: REUTERS/Yves Herman?

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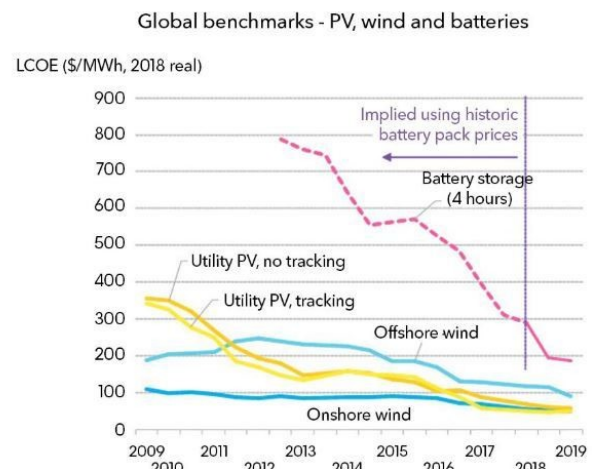
It's the moment the global sustainable energy market has been waiting for. Battery technology, the essential element in ensuring continuity of supply from weather-dependent sources such as wind and solar, has suddenly become cost competitive.

For lithium-ion batteries, the 'levelized cost of electricity' (LCOE) - the total cost of building and operating an electricity-generating plant - has fallen by 35% since the first half of 2018, [analysis by research company BloombergNEF](#) (BNEF) shows.

At the same time, the LCOE for offshore wind has dropped by 24%. Onshore wind and solar's benchmark costs fell 10% and 18% respectively from last year.

“Looking back over this decade, there have been staggering improvements in the cost-competitiveness of these low-carbon options, thanks to technology innovation, economies of

scale, stiff price competition and manufacturing experience,” says Elena Giannakopoulou, head of energy economics at BNEF.



Source: BloombergNEF. Note: The global benchmark is a country weighted-average using the latest annual capacity additions. The storage LCOE is reflective of a utility-scale Li-ion battery storage system running at a daily cycle and includes charging costs assumed to be 60% of whole sale base power price in each country.

Image: BloombergNEF

Powering change

Since 2010, the benchmark price for solar has dropped 84%, offshore wind by more than half and onshore wind by 49%. The price of lithium-ion battery storage has dropped by more than three quarters since 2012.

Batteries provide the opportunity to cover peaks in demand and to bridge periods when the wind is calm and the sun does not shine. Until now, gas and coal-fired power stations have filled the gaps. But battery storage is increasingly being added to solar and wind plants to help maintain supply.

Earlier this year, Abu Dhabi switched on what it said was [the world's largest virtual battery plant](#), able to store 648 MWh to balance demand on the grid and keep the city supplied for up to six hours in the event of a generating outage.

[The World Economic Forum's Global Battery Alliance](#) says a low-carbon future is unthinkable without batteries, describing them as a core technological enabler for the [Fourth Industrial Revolution](#). Batteries could be harnessed to help 1 billion people globally who lack access to electricity, the Alliance says.

Looking offshore

"Solar and onshore wind have won the race to be the cheapest sources of new 'bulk generation' in most countries," says Tifenn Brandily, energy

economics analyst at BNEF. "But the encroachment of clean technologies is now going well beyond that, threatening the balancing role that gas-fired plant operators, in particular, have been hoping to play."

Offshore wind, once relatively expensive compared to onshore wind or solar, has seen a sharp reduction in capital costs thanks in part to the use of much larger turbines, more than halving its benchmark cost. The UK has the world's largest offshore wind capability with 34% of global installed capacity.



Image: Global Wind Energy Council

"The low prices promised by offshore wind tenders throughout Europe are now materializing, with several high-profile projects reaching financial close in recent months," says Giannakopoulou. "Its cost decline in the last six months is the sharpest we have seen for any technology."

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