

## Bnef lcoe update 2023

BloombergNEF's global benchmark costs for solar have risen over the last six months. The average fixed-axis solar project is estimated to be a modest 2% more costly. The typical solar project with trackers has risen by a more substantial 12%. These projects are common in the US, and developers here have faced rising labor, balance of plant and financing costs.

Logistics prices have continued to fall from their record highs, offering a welcome relief to project developers and manufacturers who have struggled under high prices in the last two years. Shipping rates from Asia peaked in September 2021 but are now back to early 2020 levels. Shipping routes from Asia are critical to deliver solar panels, inverters, batteries and other components.

Compared to the end of 2022, equipment costs for fixed-axis solar are down 2% due to lower polysilicon prices, while lower lithium carbonate prices have reduced battery storage equipment costs by 1%. Meanwhile, BNEF analysis shows that equipment costs for onshore wind farms are 3% higher, while offshore wind farms are 1% higher on average. American and European wind turbine manufacturers have still been feeling the effects of the commodity squeeze of the past year.

Financing costs have risen and offset some of the gains from lower equipment costs. The weighted average cost of capital (WACC) for new wind projects is 6.4%, almost 50 basis points higher than last year and puts financing costs back to where they were in 2017. This rise was not matched on the equity side and sponsors have shown restraint so far to increase return rates.

Amar Vasdev, lead author of the report said, "Equity investor interest remains strong and expected rates of return have not increased as fast as interest rates. Renewable power projects are considered a safe asset class and with the right power purchase agreement can even provide a hedge against inflation. As central bank interest rates come down, we may also see a wave of refinancing for the current crop of projects."

Matthias Kimmel, Head of Energy Economics at BNEF, commented: "China has invested a lot into its local supply chain over the last decade-and-a-half, resulting in a highly active renewables industry with cut-throat competition. The country has long been a leader in solar manufacturing, but now we're also seeing diverging paths when it comes to cost declines for wind turbines. The US and Europe have lagged behind and now need to play catch-up".

Still, the last few years of turmoil have been an exception to otherwise consistent project cost declines over a longer time period. The LCOEs of utility-scale solar, onshore and offshore wind have fallen by 58-74% over the decade to 2023, and BNEF expects these cost reductions to continue in the long run thanks to continuing technology improvements, greater economies of scale and reduced financing costs.



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BloombergNEF (BNEF) is a strategic research provider covering global commodity markets and the disruptive technologies driving the transition to a low-carbon economy. Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition. We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities. Sign up for our free monthly newsletter ->

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It's been a mixed year for the race to reach net-zero emissions. While combating climate change has been near the top of the agenda, governments, companies and individuals have been more focused on how to deal with surging inflation and an energy crisis sparked by Russia's invasion of Ukraine.

Against that turbulent backdrop, progress worth celebrating has been made. There are more electric cars on the world's roads than 12 months ago, more solar panels and wind turbines in operation and development, and more ambitious policies have been set out - not least the landmark climate legislation passed in the US in the summer.

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