



Renewable energy 55 kWh

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In 2022, the global weighted average levelised cost of electricity (LCOE) from newly commissioned utility-scale solar photovoltaics (PV), onshore wind, concentrating solar power (CSP), bioenergy and geothermal energy all fell, despite rising materials and equipment costs.

For newly commissioned onshore wind projects, the global weighted average LCOE fell by 5% between 2021 and 2022, from USD 0.035/kWh to USD 0.033/kWh; whilst for utility-scale solar PV projects, it decreased by 3% year-on-year in 2022 to USD 0.049/kWh. For offshore wind, the cost of electricity of new projects increased by 2%, in comparison to 2021, rising from USD 0.079/kWh to USD 0.081/kWh in 2022.

China was the key driver of the global decline in costs for solar PV and onshore wind in 2022, with other markets experiencing a much more heterogeneous set of outcomes that saw costs increase in many major markets.

The economic benefits of solar and wind technologies - in addition to their environmental benefits - are now compelling. Owing to soaring fossil fuel prices, the 2021-2022 period saw one of the largest improvements in the competitiveness of renewable power in the last two decades.

In 2010, the global weighted average LCOE of onshore wind was 95% higher than the lowest fossil fuel-fired cost; in 2022, the global weighted average LCOE of new onshore wind projects was 52% lower than the cheapest fossil fuel-fired solutions.

However, this improvement was surpassed by that of solar PV. This renewable power source was 710% more expensive than the cheapest fossil fuel-fired solution in 2010 but cost 29% less than the cheapest fossil fuel-fired solution in 2022.

The fossil fuel price crisis of 2022 was a telling reminder of the powerful economic benefits that renewable power can provide in terms of energy security. In 2022, the renewable power deployed globally since 2000 saved an estimated USD 521 billion in fuel costs in the electricity sector.

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Amongst the different sources of renewable electricity generation, concentrating solar power and offshore wind were the most expensive in 2023, with an average cost of 11.7 and 7.5 cents per kilowatt-hour, respectively. In contrast, onshore wind electricity generation cost an average of 3.3 cents per kilowatt-hour that year.



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