

Wind energy costs approach nonrenewable levels

22 January 2016, by Angus Mcneice



The Shepherds Flat Wind Farm is an 845 MW wind farm in the U.S. state of Oregon. Credit: Steve Wilson / Wikipedia.

Wind energy and other renewables can now supply electricity at highly cost effective levels—and it's happened so rapidly that public perception is yet to catch up

All too often, conversations on [renewable energy](#) meander toward the same end: green technology is a nice thing, though it has to become economically viable before widespread adoption becomes the norm.

According to analyst Michael Taylor, this may have been the case 30 years ago, however today wind energy and other [renewable technologies](#) are producing electricity at costs that are comparable to their nonrenewable counterparts.

"Renewable power generation technologies can now provide electricity at very competitive levels," says Taylor, a senior analyst at the International Renewable Energy Agency's (IRENA) Renewable Energy Cost Status and Outlook division.

"Yet despite these facts, many of the world's decision-makers have yet to grasp how competitive renewables have become. Often, vested interests lead to propagation of the myth of 'costly' renewable energy. In other cases, the change has simply come so fast, and so unexpectedly, that public information has yet to catch up."

According to IRENA's estimates, the levelized cost of energy (LCOE) of onshore wind in Europe fell by as much as 65% between 1988 and 2014. LCOE is a metric used to measure the cost of a generator's energy, calculated by taking the system's expected lifetime cost and dividing it by the system's predicted power output.

LCOE generated from wind is now below €0.05/KWh in high resource areas, on a par with the average cost of coal-fired power (€0.049/KWh), while gas-fired power is slightly lower at €0.041/KWh.

Benefits of renewable power such as the absence of exposure to fuel price volatility are not accounted for in such calculations, nor are environmental factors.

"If the environmental and health costs of fossil fuels were properly priced at realistic levels, the situation would be even more favourable for wind," says Taylor.

Taylor says the main drivers for improvements in the levelized cost of wind power have been the growth in the scale of the wind market from a cottage industry to a major industrial sector with a number of global players. This has allowed economies of scale to be exploited, resulted in more efficient and competitive supply chains, and encouraged competition to drive down costs. At the same time, technology improvements have also had a large impact.

Future cost reductions in wind energy will largely

hinge on driving down operation and maintenance (O&M) costs, which currently account for between 20-25% of the LCOE of an onshore wind project.

"Reducing the need to replace components and to extend the periods between scheduled maintenance reduces operating costs and thus the cost per MWh," says Fernando García Ayerra, chief engineer of technological development at Gamesa.

"The European [wind energy](#) sector and, more specifically, the turbine manufacturers, must continue to optimize wind turbine technology and O&M services in order to deliver the most competitive products and technologies and services, both for onshore and for offshore."

The wind turbine company is partner on the project WINDTRUST, which aims to improve the reliability and longevity of wind turbine components. They are developing a specific use of carbon fiber in the blades, which increases blade lifetime and reduce blade weight.

The use of a blade protective coating will lower maintenance requirements, ensure a longer lifetime and less down time, while optimized power electronics reduce the probability of breakdown and reduce repair times through a lower number of components and interfaces.

According to Taylor, future cost reduction opportunities will increasingly come from a balance of project costs, O&M and financing [costs](#).

"The European [wind](#) sector needs to continue to invest in R&D, look increasingly to efficiency opportunities in the supply chain, as well as looking to O&M cost reductions. It is also critical that policy settings provide long-term stability for industry to plan and operate in," he concludes.

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