Pros of wind farms

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In the race to reach net-zero emissions, countries around the world are looking to scale up renewable energy to substitute polluting fossil fuels. Wind power is among the most popular sources of renewable energy, and continued improvements in technology are contributing to its rapid expansion. What makes wind so popular right now and what are some of the main advantages of wind energy?

Thanks to research and improvements in technology, wind power is on the rise around the world and on track to become one of the most widely-used renewable energy sources. In 2020, onshore wind electricity generation experienced an 11% growth from the prior year. Wind capacity additions almost doubled, owing to a construction boom in China and the US, which combined accounted for nearly 80% of global wind deployment.

Despite the rapid and unprecedented growth, experts argue that more efforts are required. Under the net-zero emission by 2050 scenario, generation must increase an average of 18% per year within the current decade.

While wind has long served as a power source for humans, from sailors relying on it to power their ships across the sea to farmers using windmills to grind their grains and pump water. Today, smaller turbines erected in a backyard can power a single home or business, while large-scale wind farms can generate electricity to cover an entire country"s demand.

Wind energy comes from huge wind turbines that are sometimes as tall as the Statue of Liberty and have three 200-foot (60-metre)-long blades. When these spin with the force of the wind, they turn a shaft that is connected to a generator, producing electricity.

Currently, onshore is the most popular and widespread type of wind energy. Onshore refers to the power that is generated by wind turbines located on land driven by the natural movement of air. In 2020, its capacity additions almost tripled in China and doubled in the US.

When onshore was taking off in the 1980s, Denmark started exploring the idea of offshore wind farms - where turbines are installed in bodies of water to take advantage of the strong force of winds out at sea - and in 1991, the government built the world"s first offshore wind farm.

Despite being less widespread, offshore is rapidly gaining traction as it is considered by many as a much more efficient type of wind power thanks to the higher speed of winds, greater consistency, and lack of physical interference that land-based farms can present. The UK is recognised as the world leader in this technology. In 2020, offshore wind generated enough electricity to supply the needs of nearly 40% of the country"s homes and the government is now betting on this technology to reach net-zero emissions by 2050.

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As the name suggests, wind power is a resource that never runs out. Unlike fossil fuels, the production of which requires huge efforts, time, and expensive heavy machinery, renewables convert a natural resource - in this case, wind - directly into electricity without the need for fuel to power the turbines.

Because of the huge role they can play in the race to reach net-zero emissions in the coming decades and mitigate the devastating impact of global warming, governments around the world are now investing in renewables as never before. Currently, these clean sources of energy make up 26% of the world"s electricity today, but according to the International Energy Agency (IEA), their share is expected to reach 30% by 2024.

Another big factor that makes renewable energy much more attractive than coal, oil, and natural gas is the significant difference in emissions. Contrary to fossil fuels - which are the world"s largest emitter of planet-warming greenhouse gases - renewables are clean energy sources.

As a 2015 study by the US Department of Energy found, if 35% of the country"s electricity was wind-generated by 2050, electric sector greenhouse gas emissions would be reduced by 23%, eliminating 510 billion kilograms of carbon dioxide emissions annually.

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