

Interesting facts about renewable energy

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Renewables are inexhaustible sources of energy. Unlike fossil fuels, the production of which requires huge efforts, time, and expensive heavy machinery, they convert a natural resource - like sun, wind, water, or biomass - directly into electricity. Another big factor that makes renewable energy much more attractive than coal, oil, and natural gas is their significantly smaller environmental footprint. Renewables are not only cleaner but also cheaper and easier to produce than any fossil fuel. Here are 7 interesting renewable energy facts about the current state of the market and what role these clean sources will play in the future.

In 2021, all mainstream clean energy sources - hydroelectric, solar, wind, biomass, and geothermal- generated a combined 38% of the world's electricity, marking a record year for clean energy sources. They surpassed the amount of energy produced from coal - which stopped at 36.5% in the same year despite a record 9% rise, the fastest yearly growth in coal energy generation since 1985.

Nevertheless, the vast majority of global electricity still came from non-renewable sources. In 2021, global electricity demand grew by 5.4%, the biggest increase since 2010. Despite a record rise in wind and solar power generation, clean electricity has not been deployed quickly enough to keep up with the rapid increase of global demand, most of which was met once again by fossil fuels. Coal generation alone accounted for 59% of the total rise. This, experts argue, shows how far off-track the electricity transition is.

In 2021, the fastest-growing sources of clean energy were wind and solar, whose share doubled since the Paris Agreement was signed in 2015. Within just one year, the latter rose by 23% from 2020 levels, while electricity generated by wind turbines experienced a 14% increase. For the first time, solar panels and wind turbines generated over 10% of the global electricity demand. According to research by Ember, these two clean energy sources experienced an average of 20% compound growth per year. In order to meet the 1.5C pathway by 2030, Ember's researchers argue, such high growth rates need to be maintained throughout the current decade.

The European Union hit a record 12% in solar power production from May to August 2022, and 13% from wind. What's more, 19 of the bloc's 27 member states have achieved record wind and solar power generation since March of this year. The growth in renewable energy capacity has saved the EU approximately EUR99 billion (US\$97 billion) in avoided gas imports between March and September, the report found.

The statistics were revealed in the 2022 State of the Energy Union report, published yesterday by the European Commission. Data suggests that the bloc managed to increase its share of renewables in the electricity mix to 43% in the second quarter of 2022, outplaying fossil fuels, which stopped at 36%. Poland saw the greatest increase in renewables (48.5%) between March and September compared to last year.

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Norway is by far the largest clean energy producer, followed by Brazil with 84.1% and New Zealand with 80%. 50 countries have now crossed the 10% wind and solar mark, with seven new countries doing so in 2021 alone: China, Japan, Mongolia, Vietnam, Argentina, Hungary, and El Salvador. The fastest switch to wind and solar took place in the Netherlands, Australia, and Vietnam. All three nations managed to shift over 8% of their total electricity demand from fossil fuels to wind and solar between 2020 and 2021. Vietnam alone experienced unprecedented growth in solar energy, which grew by over 300% in a single year.

Lacking far behind are Asian countries like China and India. Despite China contributing the biggest growth in solar and wind energy capacity in the past few years, it has also experienced a record rise in coal in 2021 for the fifth year in a row. China was the only country to significantly increase nuclear power production. Similarly, India is also big on fossil fuels: it is the world's second-largest coal power generator and relies on this energy source to cover 74% of its total electricity demand.

According to the International Renewable Energy Agency (IRENA), renewables were the world's cheapest energy source in 2020. The Agency's latest report showed that the cost of renewable technologies - especially concerning wind and solar energy - is falling significantly. The rapid drop in costs of these technologies in recent years has enabled countries around the world to increase their renewable energy production capacity. This, coupled with high fossil fuel prices, improves the competitiveness of these two renewable sources further.

In its World Energy Outlook 2020 report, the International Energy Agency (IEA) confirmed that solar power schemes now offer the cheapest electricity in history and predicted that by 2050, renewable energy generation will keep growing, with solar power production skyrocketing and becoming the world's primary source of electricity. Solar energy is indeed praised for the relatively marginal operation and maintenance costs of panels. In 2020, the average cost of solar photovoltaics - once considered a financial burden - was 7% less than the previous year. Furthermore, the cost of large-scale solar projects has plunged 85% in the past decade, and those of concentrating solar power (CSP) - an approach to generating electricity through mirrors - dropped by 16% in 2020.

Similarly, wind power is also experiencing rapidly declining costs. In 2020, onshore wind power dropped by about 13% while offshore wind costs decreased by about 9%. With the IEA estimating that costs of wind power could drop by as much as 40% over the next decade based on current technology and market growth, projected offshore wind energy has the potential to generate 425,000 TWh of electricity in a year worldwide, which is more than 18 times the current global electricity demand. Likewise, onshore wind energy capacity is projected to increase by 57% by 2024.

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