



# Most efficient renewable source of energy

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The International Energy Agency (IEA) reports that more renewable energy capacity will be added globally in the next five years than since the first commercial renewable energy power plant was built more than 100 years ago.

The IEA says: "Renewables -- including solar, wind, hydropower, biofuels and others -- are at the centre of the transition to less carbon-intensive and more sustainable energy systems.

"The deployment of renewables in the power, heat and transport sectors is one of the main enablers of keeping the rise in average global temperatures below 1.5°C.

"In the Net Zero Emissions by 2050 scenario, renewables allow electricity generation to be almost completely decarbonised. Meanwhile, renewable transport fuels and renewable heat contribute to significant emissions reductions in transport, buildings and industry.

"The electricity sector remains the brightest spot for renewables with the strong growth of solar photovoltaics and wind in recent years, building on the already significant contribution of hydropower.

"But electricity accounts for only a fifth of global energy consumption and finding a greater role for renewable energy sources in transportation and heating remains critical to the energy transition."

Toyota has been at the forefront of hydrogen fuel cell technology development for more than three decades. The company's flagship fuel cell vehicle, the Mirai, launched in 2014 and demonstrates Toyota's commitment to this zero-emission technology.

Toyota's fuel cell technology extends beyond passenger vehicles. The company has developed fuel cell systems for various applications, including forklifts, buses, trucks and even stationary power generators. Toyota is also actively involved in promoting hydrogen infrastructure development and has begun producing fuel cell modules in Europe to meet growing demand.

Nel ASA has emerged as a leading player in the green hydrogen industry, specialising in the development and production of advanced electrolyser technology. The company offers both alkaline and Proton Exchange Membrane (PEM) electrolyzers, which are crucial for producing renewable hydrogen at scale.

Tidal energy harnesses gravitational forces from celestial bodies to generate power from ocean tides. It is highly predictable and can complement other renewable sources during low production periods.



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Wave energy captures energy produced by surface waves on oceans and large lakes. This technology is still emerging but holds great promise for future renewable energy generation. Companies such as Ocean Power Technologies are developing systems that convert wave motion into usable electricity.

Ocean Thermal Energy Conversion (OTEC) utilises temperature differences between warm surface water and colder deep water to generate electricity. Although still largely experimental, it represents a significant opportunity for sustainable power generation in tropical regions.

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