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Winds of change in 2025

As the first quarter of this year comes to a close, the world is placing greater emphasis on wind energy as a key driver of the renewable energy transition. Once considered an expensive alternative, wind energy is now proving itself to be not just sustainable but also increasingly affordable, making it a cornerstone in the global shift towards renewables. But with political landscapes shifting and economies adjusting, what lies ahead for the industry?

The global wind power market is on an undeniable upward trajectory. In 2024, it was valued at USD 97.05 billion, with projections pointing to a compound annual growth rate (CAGR) of 4.9% from 2025 to 2030, according to Grand View Research. This steady growth signals that wind energy is firmly on track to become a cornerstone of the global energy landscape in the coming decades.

The driving forces behind wind power's surge

The major factor behind this rapid rise is the growing urgency to transition away from fossil fuels and toward renewable energy sources.

Wind and solar power, which were once viewed as expensive alternatives, are now not only more sustainable but also far more affordable than maintaining aging coal and gas plants.

The decrease in installation costs, coupled with improvements in turbine efficiency, has allowed wind power to reach cost parity with traditional energy sources. These developments have turned wind energy into a reliable and cost-effective alternative that's here to stay.

Another driving factor is the global political will to curb carbon emissions. The fight

against climate change is compelling governments worldwide to embrace cleaner energy solutions, and wind power is a critical part of that shift. Policies such as renewable energy targets, tax incentives, and feed-in tariffs are helping propel the industry forward, making it easier for investors and developers to fund wind energy projects.

These governmental incentives are coupled with significant advancements in turbine technology, which are lowering the cost of generation and improving efficiency, further strengthening wind power's competitive edge over fossil fuels.

Challenges to overcome: grid integration and storage

Despite the promising outlook, wind energy does face its own set of challenges. One of the most significant hurdles is grid integration. Wind energy is variable, and dependent on weather patterns and other natural factors, which makes it challenging to balance supply and demand on the grid. This often requires substantial upgrades to existing grid infrastructure to accommodate the energy generated by wind turbines.

However, the rapid advancements in energy storage technology and the rise of smart grids are beginning to mitigate these issues. By improving storage solutions and optimising grid management, these technologies are helping make wind power more reliable and easier to integrate into national and regional grids.

Onshore wind power: leading the charge

Onshore wind power is currently leading the way, accounting for 75.52% of the global wind power market in 2024, according to Grand View Research. This dominance can be attributed to the relatively low costs and ease of installation for onshore wind farms compared to their offshore counterparts. With the Levelized Cost of Electricity (LCOE) for onshore wind already falling below many fossil fuel sources, the cost-effectiveness of onshore wind is an attractive prospect for developers and investors.

A prime example of this growing market is the Buffalo Ridge Wind Farm in Minnesota, US. This facility generates enough electricity to power approximately 200,000 homes annually.

Onshore wind farms like this are being developed in many parts of the world, with their relatively quick installation timelines and low cost offering an appealing way for countries to increase their renewable energy capacity.

North America: steady expansion

In North America, the wind power market is poised for substantial expansion, particularly in the US and Canada. Both countries have implemented strong regulatory frameworks that incentivise wind energy development through tax credits, renewable energy targets, and supportive policies for developers. In Canada, the Glen Dhu Wind Project is an exciting development. This project will generate 400 MW, enough to provide clean energy to 100,000 homes annually.

In the US, the wind market is projected to grow significantly over the next few years and already provides a quarter of the electricity produced in eight states, the latest statistics from Clean Power suggest. Technological innovations, including the development of larger and more efficient turbines, are making wind power an increasingly viable source of energy in many regions. For example, the Alta Wind Energy Center in California generates a massive 1,500 MW of power, contributing

significantly to California's ambitious goal of achieving 100% clean energy by 2045.

However, the political climate in the US may influence the market's trajectory. One of Donald Trump's early presidential actions was to freeze both leasing federal areas for new offshore wind projects and issuing federal permits for projects that were already in progress. This executive order, along with Trump's longstanding opposition to wind energy, created significant uncertainty in the industry.

The political turbulence in the US has stalled progress on renewable energy development, ultimately limiting offshore wind potential in favor of Europe and China, both of which are advancing in this area.

Asia Pacific: dominating the market

Figures from Grand View Research show that Asia Pacific remains the dominant region for wind power, accounting for an impressive 40.71% of global wind power revenue in 2024. The region's growing economies and strong government support for renewable energy are driving increased demand for wind power.

Notably, China stands out as the world's largest wind market. With its vast landmass and extensive coastline, China is an ideal location for wind energy projects, both onshore and offshore. The Yangjiang Offshore Wind Farm in Guangdong Province is one such project, capable of generating 2.2 GW of electricity.

India is another key player in Asia's wind energy growth. The Muppandal Wind Farm in Tamil Nadu is one of India's largest, contributing significantly to the country's renewable energy capacity. The Indian government has been pushing for a clean energy revolution, and with abundant wind resources, India's wind energy sector is poised for rapid growth in the coming years.

Europe: the offshore wind revolution

Europe has long been a leader in renewable energy, and the wind sector is no exception. Over the past few years, Europe has seen an unprecedented surge in offshore wind power development, led by the UK and Germany. These countries have set ambitious targets to expand offshore wind capacity, and they are making significant strides toward achieving those goals.

The UK's Hornsea One Offshore Wind Farm is one of the largest offshore wind farms in the world, with 174 turbines capable of generating 1.2 GW of electricity, enough to power more than one million homes.

Similarly, Germany is making waves in offshore wind development with the He Dreiht Wind Farm, which is expected to generate 1.5 GW when it comes online in 2026. These projects demonstrate Europe's dedication to harnessing the power of offshore wind to reduce carbon emissions, ensure energy security, and create jobs in the clean energy sector.

Emerging markets: South America and the Middle East

In South America, Brazil is leading the way in wind energy development. The Lagoa do Barro Wind Complex in Piauí, Brazil, is one of the country's largest wind projects, with a capacity of 195 MW. This project demonstrates Brazil's growing commitment to renewable energy as part of its energy transition strategy. Countries such as Chile and Colombia are beginning to invest in wind energy projects too, including Chile's Cerro Almirante Wind Project, as they seek to diversify their energy mix and reduce their dependence on fossil fuels.

In the Middle East, countries that have historically relied on fossil fuels are slowly beginning to embrace wind energy. Egypt's Gabal El-Zeit Wind Farm is the largest onshore wind farm in the region, with a capacity of 580 MW, making it a clear signal of the country's commitment to clean energy. Similarly, Morocco is making progress with the Tarfaya Wind Farm, which contributes 301 MW to the national grid. These developments highlight the potential for wind energy to provide sustainable, renewable power in regions traditionally dominated by oil and gas.

The future of wind power

Wind energy is no longer just an environmentally friendly solution; it is a significant economic driver. In the US, the wind power sector supports over 300,000 jobs across all 50 states, and globally, wind energy's job creation potential is increasing. With advances in turbine technology, declining installation costs, and continued government support, the future of wind power is incredibly promising.

Wind energy will continue to grow at an accelerated pace, as technological innovations lower costs and improve efficiency. As turbines get bigger and more powerful, and as energy storage solutions continue to evolve, wind power will increasingly become a more cost-competitive and reliable energy source compared to fossil fuels.

With countries around the world adopting wind energy and projects popping up in every corner of the globe, the outlook for the sector has never been brighter. Wind energy's ability to meet global energy demands while reducing carbon emissions is solidifying its role as a central player in the global energy transition.

By 2030, the global wind power market could be worth over USD 150 billion. The wind is picking up, and we're on the brink of a greener, more sustainable future. The question is: are we ready to harness its full potential?

pes.eu.com/wind

References:

¹ <https://www.grandviewresearch.com/industry-analysis/wind-power-industry>

² <https://cleanpower.org/facts/wind-power/>