INTERNATIONAL SUSTAINABLE
DEVELOPMENT OBSERVATORY
ECONOMY DEPARTMENT

Analysis of Wind Energy Market 2024

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Wind Energy Market Overview

The global wind energy market has experienced significant growth over the past decade, driven by countries' efforts to shift towards cleaner energy sources. Wind power has emerged as a prominent player in the renewable energy sector, offering a sustainable and environmentally friendly solution by utilizing the wind to generate electricity without depleting finite resources or causing harm to the ecosystem.

Technological advancements have enhanced the efficiency and cost-effectiveness of wind turbines, making wind power a competitive alternative to traditional fossil fuels. Beyond its environmental advantages, the wind energy industry has stimulated economic development by creating employment opportunities and attracting investments in infrastructure.

Governments worldwide are setting ambitious targets for renewable energy adoption, anticipating a continued rise in the demand. The versatility of wind energy allows for various applications, ranging from residential and commercial electricity generation to supporting remote communities and Fast-paced industrial operations.

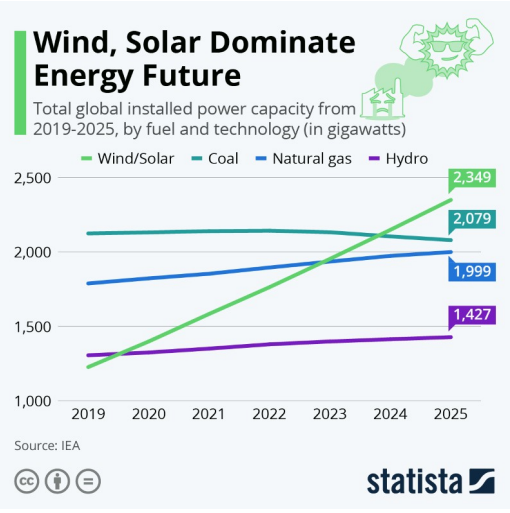
By leveraging natural resources, wind energy presents a sustainable option to meet the increasing energy demands of a rapidly evolving society. As we envision a future powered by clean and renewable sources, wind energy emerges as a beacon of hope for a greener and more sustainable world.

1. Global Wind Energy Growth

The wind energy sector is poised for significant expansion. **Solar photovoltaic (PV) and wind additions are projected to more than double by 2028**, reaching an impressive capacity of nearly **710 GW**.

In our accelerated case, onshore wind and utility-scale solar PV exhibit the largest upside potential. Simplifying permitting processes and enhancing auction designs can accelerate deployment.

By 2025, wind generation is expected to surpass nuclear electricity generation.

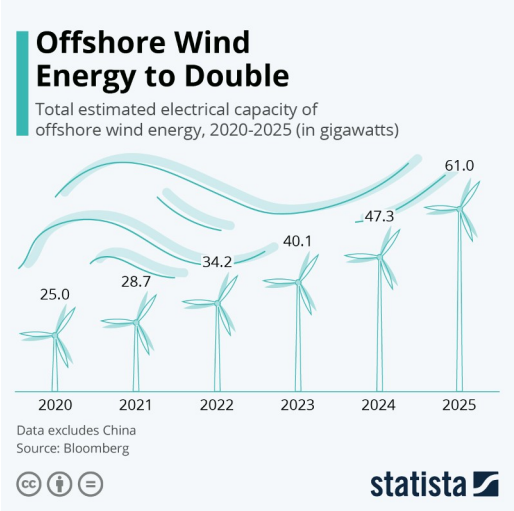


ht tps://www.statista.com/chart/23455/wind-solar-capacity-outlook/

2. Onshore Wind

In 2023, onshore w**ind capacity additions are set to rebound by 70%,** reaching a record **107 GW.** This growth is attributed to delayed projects in China due to Covid-19 restrictions.

Europe and the United States will also witness faster expansion as supply chain challenges push project commissioning from 2023 to 2025.



https://www.statista.com/chart/23334/offshore-global-wind-energy-estimates/

3. Offshore Wind

Offshore wind holds remarkable potential. **Geospatial analysis reveals that close-to-shore sites globally could provide nearly 36,000 TWh** of electricity annually, close to the projected global electricity demand for 2040.

However, several challenges must be overcome, including government policies and technological advancements.

4. Efforts Needed

In 2022, **wind electricity generation increased by a record 265 TWh** (up 14%), **reaching over 2,100 TWh**. To align with the **Net Zero Emissions by 2050** Scenario, annual generation growth r**ates need to increase to about 17%.**

As for the impact on nature, apart from **innovations such as bladeless wind energy or vertical turbines**, there are many other aspects where the industry is actively working to **minimize the impact of wind energy on wildlife**.

One key area of focus for the wind energy industry is the siting of wind farms. **By carefully selecting locations for wind turbines, developers can avoid sensitive habitats and migration routes of birds and other wildlife**. Additionally, **technologies such as wildlife detection systems and curtailment strategies are being implemented to reduce the risk of bird and bat collisions with turbines.**

Furthermore, **ongoing research and collaborations between the wind energy sector and conservation groups are helping to better understand and address the potential impacts of wind energy on wildlife.** By proactively engaging in dialogue and implementing best practices, the industry is striving to coexist harmoniously with nature while continuing to provide clean and renewable energy to meet our growing needs.

5. Market Segmentation

The wind energy market is divided into offshore and onshore types, and industrial, commercial, and residential end-users.

Major players are using acquisitions, agreements, and partnerships to maintain intense competition in the market, resulting in more competitive prices.

It is expected that in the near future, wind and solar energies will develop mixed alternatives linked to self-consumption. This is because wind energy acts as a safeguard for solar energy, as their optimal climatic conditions are almost opposite.

Conclusions

Wind energy is pivotal in the global shift towards sustainable energy sources, offering a means to curtail carbon emissions effectively. The ongoing advancements in technology and policy frameworks underscore the growing significance of wind power in revolutionizing our clean energy sector.

Innovations such as AI-powered optimization, floating offshore wind farms, predictive maintenance strategies, and cutting-edge turbine designs are not only enhancing the efficacy of wind energy but also expanding the potential applications while minimizing the impact on nature and other human activities surrounding wind power stations.

Sources:

1. Allied Market Research
2. IEA - Wind Overview
3. WWEA - Half-year Report 2023: Additional Momentum for Windpower in 2023
4. Business Wire - Global Wind Energy Market
5. Business Wire - Global Wind Power Industry Report 2023