

Title: The Commercial Value and Future Business Trends of Wind and Solar Power Generation as New Energy in the Chinese Market

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ABSTRACT

With the transformation of the global energy structure and the introduction of the carbon neutrality strategy, the strategic position of new energy in China has become increasingly prominent. As core components of new energy, wind power and solar power have made significant progress in recent years in terms of installed capacity, technological advancements, and commercial operation models. According to data from the National Energy Administration of China, by the end of 2023, China's installed wind power and photovoltaic capacity will exceed 430GW and 520GW, respectively. These totals have consistently ranked first in the world for many consecutive years, becoming a key force in driving China's green energy transformation. Against the backdrop of the dual carbon goals, the new energy industry not only carries the mission of reducing dependence on fossil energy and lowering carbon emissions, but also fosters enormous commercial value and industrial opportunities.

In terms of market size, China's wind power and photovoltaic industry chains have formed a complete closed loop, from upstream equipment manufacturing, midstream project development and construction, to downstream power operations. Taking wind power as an example, leading companies such as Goldwind Science & Technology, Envision Energy, and Mingyang Smart Energy have achieved global competitiveness and continuously innovated in wind turbine manufacturing efficiency and operation and maintenance service models. The photovoltaic industry, represented by companies such as Longi Green Energy, JA Solar Technology, and Tongwei Co., Ltd., maintains global leadership in silicon wafers, solar cells, and modules.

From a commercial perspective, the development of new energy is driving synergistic growth across the entire supply chain. For example, the construction of wind farms and photovoltaic power stations has directly boosted demand for related industries such as steel, cement, energy storage equipment, and grid upgrades. It has also significantly contributed to local economic development, job creation, and energy security. According to the 2023 China New Energy Industry Development Report, every 1GW of new energy capacity installed will drive approximately 15 billion yuan in investment and create over 3,000 direct and indirect jobs.

In terms of future trends, the development of wind power and photovoltaics will face several key directions. First, technological innovation remains the core driving force. For example, the commercialization of ultra-large-capacity wind turbines, photovoltaic TOPCon, and HJT high-efficiency batteries will continue to reduce the cost per kilowatt-hour. Second, the deep integration of new energy with energy storage, hydrogen energy, and smart grids will become a key path for industrial upgrading. Third, the improvement of green finance and carbon trading markets will provide a broader

capital space for new energy investment. Fourth, the internationalization layout is accelerating. Chinese companies are actively investing in wind and solar projects in countries along the Belt and Road Initiative, not only promoting local energy transformation but also enhancing the global influence of China's new energy industry.

Keywords: New energy, Wind power generation, Solar power generation

