



Everest & Company Consulting

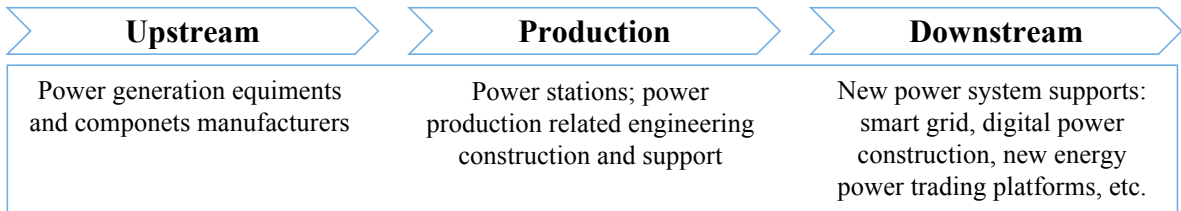
Overview: New Energy Industry in China

With a focus on Clean Power: Wind and Photovoltaic



Supply Chain

Wind and Photovoltaic Power



For analysis purpose, this overview refers to the above new energy industry structure.

Politics

Favorable policies promote nationwide installation

Oct 2021 National Energy Administration

14th Five-Year Modern Energy System Planning

To accelerate the construction of distributed wind power and photovoltaic power in load centers and surrounding areas.

Oct 2021 The State Council

Action Plan for Carbon Dioxide Peaking Before 2030

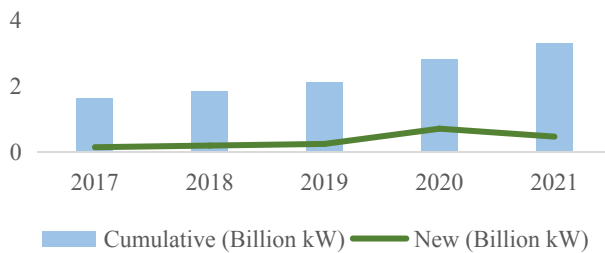
By 2030, the total installed capacity of wind and photovoltaic power should be at least 1.2 billion kW.

To promote the distribution of wind power and photovoltaic power generation in China, encourage the increase of installation volume, also stabilize the production of the new energy industry supply chain.

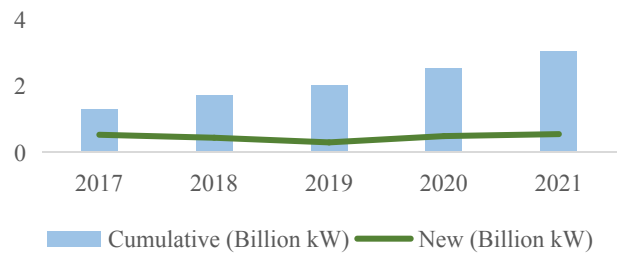
Industry Size

Installation, power generation keeps increasing

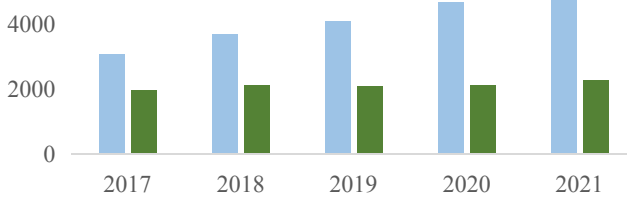
2017-2021 Installed Capacity (Wind)



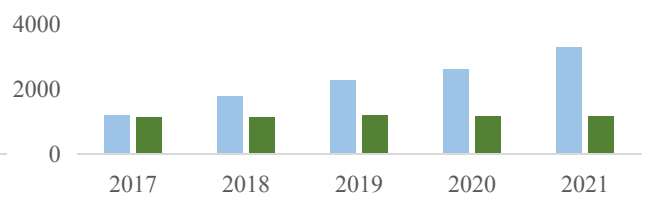
2017-2021 Installed Capacity (PV)



2017-2021 Power Generation (Wind)



2017-2021 Power Generation (PV)



■ Power Generation (Billion kWh) ■ Utilization Hours (Hour)

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Source: National Energy Administration.

2022 Q1&Q2 Cumulative Installaion

Wind 3.42kW

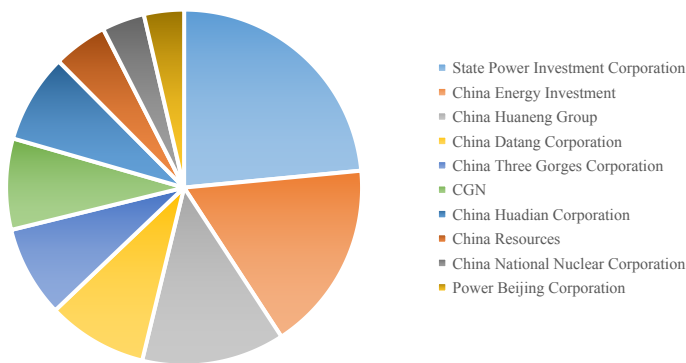
Photovoltaic 3.36kW

Given the 2030 installed capacity goal of 12 billion kW for both wind and photovoltaic power, the new installed capacity should be no less than 7200 kW each year. **The industry size will continuously expand based on this goal, including the upstream, production, and downstream.**

Competition

High concentration rate, less competition yielding more profit

2021 Wind and PV Installation Top 10 (%)



Source: Company Annual Reports.

2021 Wind Installation Top 5 (%)



2021 PV Installation Top 5 (%)



Technology

Component technology progress, utilization hours increase

In 2021, the mass **production efficiency of photovoltaic cells exceeded 23%**, among which the photoelectric conversion efficiency of **N-type single crystal cells significantly improved**, which is expected to become one of the leading development directions of battery technology. Photovoltaic technology innovation continues, power generation efficiency continues to improve, the utilization hours continue to improve. With the continuous advancement of upstream PV module technology innovation, **the revenue growth of PV operating companies will not stagnate** after the peak installed capacity growth.

The capacity of the fan and the diameter of the impeller show a trend of **large-scale development** that improves the power generation of the fan. **The tower height further increases**, promoting the improvement of wind power generation efficiency, and the characterization result is the increase in wind power utilization hours. Among wind turbine types, in addition to doubly-fed and direct drive, which are relatively mature mainstream routes, **the semi-direct drive has also become the focus** of research and development of wind turbine manufacturing companies.

Chance

Multiple investment chance in the growing industry

1 Component: Tungsten Wire

Tungsten wire diameter refinement has improved economic efficiency, and tungsten wire for photovoltaics is in short supply. Xiamen Tungsten's 20 billion meters/year fine tungsten wire production capacity is all released and is planned to be used entirely in the photovoltaic field. Chinatungsten High-Tech's 10 billion meters of cut tungsten wire for a photovoltaic project was put into production, and the company's annual production and sales volume of fine tungsten wire for photovoltaic is expected to be around 2 billion meters. **As the installed capacity of PV increases, the demand for tungsten wire will continue to increase, and there will be a bigger gap in production capacity waiting to be filled.**

2 Production: Installed capacity

According to the policy requirements, in 2030, wind power and photovoltaic installed capacity need to reach 1.2 billion kW. The current consumption shows that there are **still vacancies due to the high growth of the distributed market. Household installed demand emerged**, while in the countryside clean energy construction policy to promote the installed demand to show high growth, the future market size will usher in tremendous growth.

3 Technology: Distributed Type

Distributed wind power's **construction period is short, and the development method is more flexible**. The National Energy Administration stated the goal to promote the construction of distributed wind power.

