



Sustainable Development of the Power Sector for a "Beautiful China"

Power Sector Roundtable Serial Reports

September, 2019

Meeting the "Three-Step" Power Demand Forecast in the New Era

China's electricity consumption will peak in 2050, when it becomes a modern and powerful socialist nation.

In 2020, China will
**become a "well-off society"
in an all-round way**

National Electricity Consumption
reaches 7,500 TWh

Population: **1.41 Billion**
GDP per capita: **11,000 USD**
Electricity consumption per capita:
5,000 - 5,500 kWh

In 2035, China will
**basically achieve
modernization**

National Electricity Consumption
reaches 10,500 TWh

Population: **1.37 Billion**
GDP per capita: **25,000 USD**
Electricity consumption per capita:
7,500 - 8,000 kWh

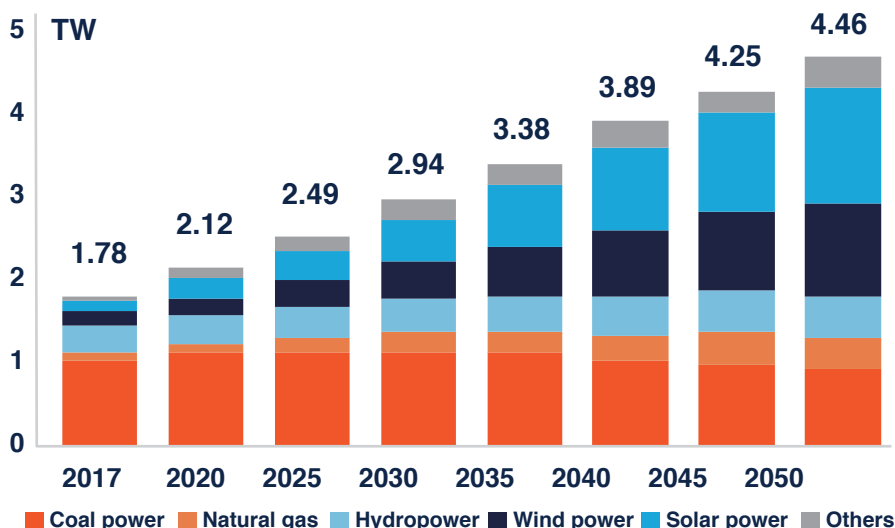
In 2050, China will
**become a modern and
powerful socialist nation**

National Electricity Consumption
reaches 11,000 TWh

Population: **1.25 Billion**
GDP per capita: **40,000 USD**
Electricity consumption per capita:
8,500 - 9,000 kWh

Building the Power Supply System Needed for a "Beautiful China"

The power supply undergoes continuous optimization, with a clear trend of substitution by clean energy.



Installed Capacity

- The growth in installed capacity for coal power will stabilize, then decrease in 2035.
- The growth in installed capacity for hydropower will slow down, but continue to increase steadily.
- New opportunities in the development of natural gas will enable installed capacity to continue to increase.
- The scale of renewable power generation continues to expand, with wind and solar power generation developing rapidly.
- Demand side resources play an important role in shifting peaks, filling valleys, and co-ordinating the power supply.

National power generation will continue to grow, and the proportion of clean power generation will continue to rise.

Power Generation

- Coal power will gradually adopt a supporting role in ensuring a stable power supply, and shift peak load in the auxiliary power system.
- Nuclear power will comprise 27.2% of new power generation, and account for 11.4% and 13.6% of total power generation by 2035 and 2050, respectively.
- Hydropower has developed steadily and will comprise 13.04% of new power generation by 2050.
- Wind power will comprise 41.3% of new power generation, becoming an important part of non-fossil power.
- Solar power will develop rapidly, and comprise 51.7% of new power generation.

Coal power

Nuclear power

Hydropower

Wind power

Solar power

Others



Advancing the Strategic Deployment for the Power Sector

Development Mechanism for RE

The Guaranteed Purchase Agreement System for RE

- For the new projects, abolishing the mandatory acquisition system and allowing RE to participate fairly in electricity trading.
- For the existing projects, continuing the blanket guaranteed acquisition system.

The RE Quota and Green Certificate Systems

- Requiring the main body of power market to meet the quota by purchasing green certificates from new energy power generators in order to achieve win-win situation as well as relieving financial pressure on RE subsidies

Incentive Control Measures

- Linking the grid-connected rate of RE to the permitted revenue of power grid enterprises.
- Establishing the management method of RE grid-connected operation and preemptive dispatching.
- Strengthening the regulation of RE dispatching.

Finance and Taxation Mechanisms

- Determining the progress of subsidy declining annually and improving the core competence of RE market.
- Establishing a long-term subsidy management mechanism and considering the capacity, subsidy standards, and preferential policies.
- Establishing the levying standard of RE development fund based on the social cost of coal-fired power.

Development Model of RE

- Combination the market choice and government regulation

Flexibility of Power System

- Energetically developing the energy storage technology and demand side resources.

Market Mechanism

Market-oriented Trading Mechanism

- Gradually transforming from "Unilateral Transaction" to "Bilateral Trans-provincial Transactions".

Peak-valley Price

- Establishing the peak-valley dynamic pricing mechanism.
- Enlarging the implementation scope of peak-valley price on sales side.
- Rationally determining and dynamically adjusting the peak-valley period.
- Expanding the peak-valley price difference and fluctuation range.

Ancillary Service Market

- Encouraging the participation of energy storage equipment, demand-side resources and third parties in providing ancillary services.

Spot Market

- Breaking the inter-provincial barriers and absorbing RE through market mechanism.
- Synergizing the spot market and medium- and long-term transactions.

Role of Grid Enterprises

Profit Model

- Transforming the grid enterprises back to the public utilities that provide transmission and distribution services, and undertaking the secured power supply service of its business area.

Business Model

- Providing transmission and distribution services, expanding business scope, and providing high-quality value-added services.

Investment Model

- Breaking through the restriction of the power grid enterprise's own fund and realizing the diversification of the subjects of power grid investment.



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