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CHINA ENERGY POLICY NEWSLETTER

China Energy Transformation Programme

1. China energy transition updates

Wind power and solar PV have become the main body of newly installed capacity in 2022

By the end of 2022, China's total installed power generation capacity reached 2,564 GW, a year-on-year increase of 7.8%. Non-fossil energy is now nearly 50% of the total installed capacity. The total installed capacity of wind power reached 365 GW, an increase of 11.2% year-on-year; the total installed capacity of solar power was 393 GW, an increase of 28.1% year-on-year.¹ Wind power and solar PV have become the main body of China's newly installed capacity and incremental power generation, accounting for 78% and 55% in 2022, respectively. According to the National Energy Administration (NEA), wind power and solar PV have played a more important role in ensuring the security of the power supply. In 2022, the average output of wind power and solar PV in most provinces reached 15% of the average power load, with a maximum of 40%.² It is estimated that the total installed capacity of power generation in the country will reach about 2,810 GW in 2023, and the proportion of non-fossil energy will exceed 50%. Wind power and solar PV installed capacity are expected to reach 430 GW and 490 GW, respectively, higher than the installed capacity of hydropower.³

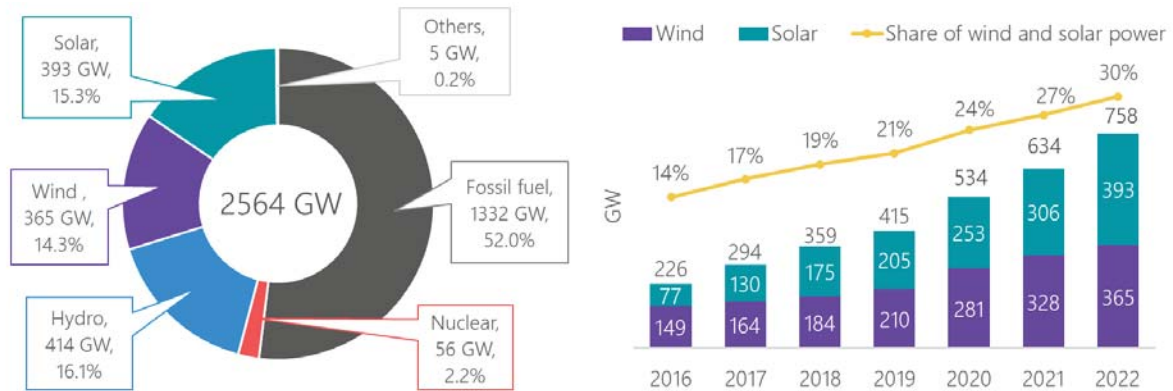
¹ "2022年全国电力工业统计快报一览表," China Electricity Council, 18 January 2023, accessed at <https://cec.org.cn/detail/index.html?3-317446>.

² "国家能源局局长: 风电光伏发电保供作用越来越明显," National Energy Administration, 13 January 2023, accessed at <https://baijiahao.baidu.com/s?id=1754894058840796821&wfr=spider&for=pc>.

³ "中电联发布2023年度全国电力供需形势分析预测报告," China Electricity Council, 19 January 2023, accessed at <https://cec.org.cn/detail/index.html?3-317477>.

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2022 Total installed power generation capacity mix (left); 2016-2022 Total installed capacity and its proportion of wind and solar power (right)



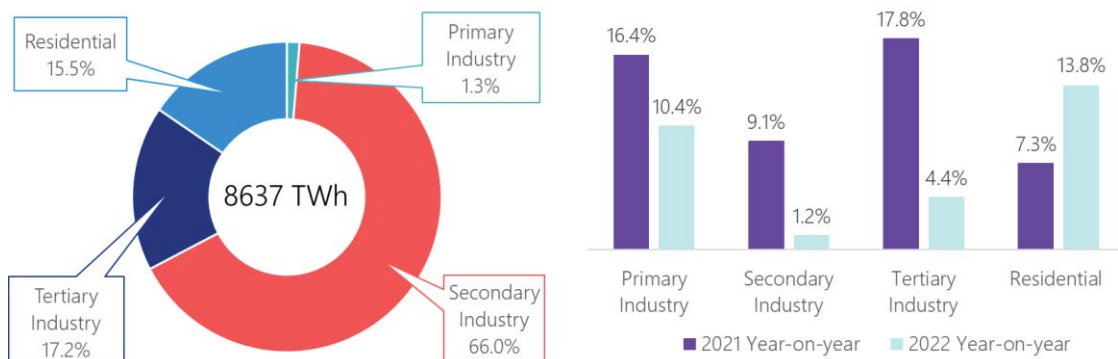
Notes: Fossil fuel mainly includes coal, gas, and biomass. Source: China Electricity Council (CEC), National Energy Administration (NEA), accessed in February 2023

The growth rate of national electricity consumption is expected to reach 6% in 2023

In 2022, the total electricity consumption reached 8,640 TWh, a year-on-year increase of 3.6%, which is lower than the forecast of the China Electricity Council (CEC) at the beginning of the year (5%~6%). This is mainly due to the negative growth of industrial electricity consumption in the second and fourth quarters. Particularly in energy-intensive industries, electricity consumption in the building materials and cement industries decreased by 15.9% year-on-year, the ferrous metal smelting industry decreased by 4.8% year-on-year, and the non-metallic mineral products industry decreased by 3.2% year-on-year. It is worth noting that the electricity consumption of some high-tech and equipment manufacturing industries has grown rapidly. For example, the electricity consumption of the new energy vehicle (NEV) manufacturing industry has increased by 71.1% year-on-year. Affected by the COVID-19 pandemic, the growth rate of electricity consumption in the tertiary industry has also dropped significantly.

According to the forecast of the CEC, with the overall recovery of economic operation, the national electricity demand will increase by about 6% in 2023, and the total electricity consumption will reach 9,150 TWh. Favourable real estate policies will promote the recovery of electricity consumption in the steel and building materials industries; the adjustment of the COVID-19 prevention and control measures will become the main driving force for the increase in electricity consumption in the tertiary industry. In 2023, the overall national power supply and demand will be in a tight balance, with the power supply being tight in summer in the middle-eastern-southern regions and the power supply being tight in winter in the middle-eastern-southern regions and northwest regions.⁴

2022 Electricity consumption mix (left); 2021-2022 The year-on-year growth rate of electricity consumption by industry (right)



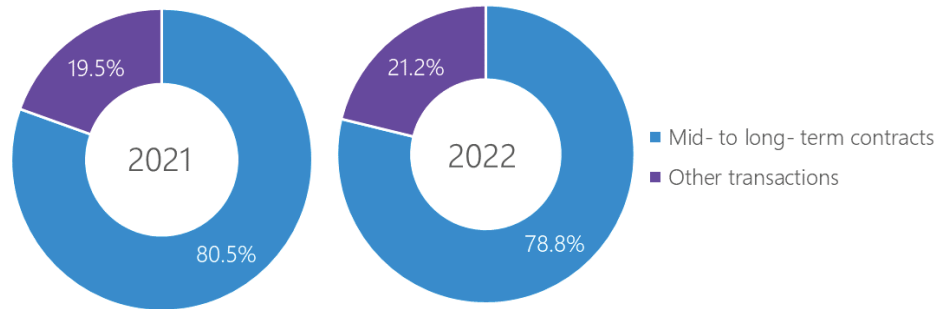
Source: CEC, accessed in February 2023

⁴ “中电联发布2023年度全国电力供需形势分析预测报告,” China Electricity Council, 19 January 2023, accessed at <https://cec.org.cn/detail/index.html?3-317477>.

Market-based electricity transactions accounted for 60% in 2022

In 2022, China's electricity market transactions increased significantly, with the annual transaction volume reaching 5,254 TWh, a year-on-year increase of 39%, accounting for 60.8% of the total electricity consumption, an increase of 15.4 percentage points year-on-year. Among these, medium and long-term transactions increased by 36.2% year-on-year, accounting for 78.8% of the annual transaction volume.⁵

2021-2022 National power trading volume mix



Source: CEC, accessed in February 2023

2022 Green certificate transaction data released

In 2022, the transaction volume of green certificates has increased by order of magnitude, which played a certain role in promoting the consumption of green electricity. In September 2021, China launched the green electricity transaction programme. Green certificates can be used for integrated transactions of *electricity + green certificates* or separate subscription transactions for certificates. The variety and convenience of transaction methods facilitate the transaction of green certificates. At the end of 2021, the cumulative transaction volume of green certificates nationwide was less than 1 million, while by the end of 2022, the figure was tenfold, reaching 10.3 million. Among them, there were 5.8 million green certificates for *electricity + green certificate* integrated transactions, 4.39 million green certificates for subscriptions of subsidy-free wind power and solar PV projects, and 79,000 green certificates for alternative subsidy subscriptions for wind power and solar PV projects qualified for feed-in tariff subsidies. In December 2022, the average prices of green certificate subsidy-free wind power and solar PV projects were 49.1 RMB/MWh and 41.2 RMB/MWh, respectively.⁶

⁵ "2022年1-12月份全国电力市场交易简况," China Electricity Council, 28 January 2023, accessed at <https://cec.org.cn/detail/index.html?3-317500>.

⁶ Energy Research Institute of the National Development and Reform Commission, January 2023.

2. Energy transformation key to clean heating

– By Han Wenke | *Professor of the Energy Research Institute*

Replacing fossil fuels with clean energy has become an irreversible trend in China, and with the introduction of a series of policies to peak its carbon emissions before 2030 and achieve carbon neutrality before 2060, its low-carbon energy transformation is constantly accelerating. That shows that energy transformation, which is part of efforts to actively respond to climate change, is gaining momentum in China.

Because of the amount of land, labor, capital, and entrepreneurship that it possesses and can exploit for manufacturing, its status as a developing country, and its stage of development, China remains the world's largest producer and consumer of fossil fuels. However, as climate change and energy issues are becoming more of a challenge, China is upholding energy transformation with a revolutionary zeal.

After President Xi Jinping proposed vigorously promoting an energy production and consumption revolution in 2014, China has accelerated reforms on the energy supply side and consumption side, upgraded its energy technology and energy system, and accelerated the green and low-carbon transformation of China's industrial sectors and the entire economy.

For example, from 2016 to 2020, China has resolved 170 million metric tons of excess steel production capacity, removed 1 billion tons of excess coal production capacity, shut down 300 million tons of cement production overcapacity, and reduced flat glass production capacity by 150 million weight boxes.

The proportion of coal consumption in China's total primary energy consumption has dropped from 67 percent in 2005 to 56.8 percent in 2020, and the proportion of non-fossil fuels in its primary energy consumption has risen to 15.9 percent. China's investment, installed capacity, electric energy production and number of technical patents in renewable energy sources have ranked first in the world for many years.

Last year, China introduced the 1+N policy system — “1” being a master guideline issued by the central authorities, and “N” standing for specific action plans or policies for different industrial sectors — to achieve carbon peaking before 2030 and carbon neutrality before 2060. To realize these goals, the country has released action plans for an energy green transformation initiative, industrial carbon peak initiative, green transportation low-carbon action, circular economy carbon reduction actions and other key areas and implementation plans to peak emissions in various industries, as well as a series of supporting measures.

These policies and measures have expedited China's development of clean energy, mainly solar and wind energy, and accelerated the pace of green low-carbon transformation, injecting new impetus into China's energy transformation. Meanwhile, it also expands space for the clean development of electric vehicles, hydrogen energy, energy storage and various distributed energy sources, including winter heating, to ensure people's livelihoods.

In recent years, some inefficient heating methods, such as scattered coal heating in rural areas, are gradually being replaced with electric heating and more efficient centralized heating; electric heating equipment for decentralized heating in some areas are being replaced with more efficient household heat pump equipment. At the same time, some qualified urban and rural areas have implemented energy-saving renovation of old houses to improve the insulation, build energy efficiency, and correspondingly reduce the heat energy demand for winter heating.

In some remote areas, replacing coal-fired heating with electric heating has also effectively improved the local ecology. For example, Sanjiangyuan, which means the source of three rivers, in Northwest China's Qinghai province is the highest and biggest plateau wetland in the world, and it is also an important water conservation site. For a long time, locals there have relied on burning coal and cow dung for heating, which, apart from low energy efficiency and heating quality, was also causing pollution. So the Sanjiangyuan Clean Heating Construction and Renovation Project was launched in May 2020. Under a pilot project, implemented gradually, traditional coal-fired soil boilers were gradually transformed into efficient and clean electric boilers. Qinghai province has also implemented clean heating in public places such as schools and rural pastoral areas.

As China vigorously promotes its energy transformation to achieve its dual carbon goals, the building area of such clean heating systems will expand. Among the sources for regional central heating, the heat pump technology that is largely applied in China in recent years will play a dominant role. Heat pumps will replace fossil fuel-based boilers and, combined with electricity, make the central heating system green and low-carbon.

In short, with energy transformation, the use of energy will be more efficient, clean, affordable and convenient.

(SHI YU / CHINA DAILY)

[Repost](#) from the China Daily.

4. Policy monitoring

2022-12-02

http://www.gov.cn/zhengce/zhengceku/2022-12/23/content_5733220.htm

NEA clarifies the requirements for medium and long-term power contracts in 2023

Notice on the Works of Signing and Performance of Medium and Long-Term Power Contracts in 2023, NDRC Operations [2022] No.1861

On the power generation side, the power generated by the medium and long-term contracts of coal-fired power generation enterprises in 2023 shall be at least 80% of the previous year's total power generation. With the superimposed monthly and intra-month contracts, it should be at least 90% of the previous year's total power generation. The proportion of provinces with high hydropower and new energy can be appropriately relaxed. On the demand side, the power consumption of the 2023 annual medium and long-term contracts of market-oriented power users should be higher than 80% of the previous year's power consumption. And through the signing of subsequent quarterly, monthly, and intra-month contracts, it is guaranteed that power consumption of the annual medium and long-term contract will be higher than 90% of the previous year's electricity consumption. The document also requires all localities to revise further and improve the time-based settlement rules and procedures. For interprovincial and inter-regional medium and long-term transactions, it is necessary to strictly follow the power transmission scale, curve, and price agreed in the contract, and relevant government departments must not intervene.

2022-11-30

http://zfxgk.nea.gov.cn/2022-11/30/c_1310686324.htm

NEA updates the management measures for the development and construction of solar PV power plants

Notice on Issuing the Administrative Measures for the Development and Construction of Solar PV Power Plants, NEA New Energy Development Regulations [2022] No.104

The measures cover the management requirements of different stages of the utility-scale solar PV power plant, including planning, project approval, construction, operation, retrofit, and recycling, and clarify the responsibilities and requirements of various entities such as industrial management departments and enterprises. The NEA is responsible for supervising and managing solar PV power plants across the country, and improving relevant policies, norms, and standards. Provincial energy authorities supervise and manage solar PV power plants in the province (region, city), formulate annual project development plans and competitive allocation methods, and report to the NEA. The power grid enterprises are responsible for measuring the power grid's consumption, access, and transmission capabilities, and implementing the grid connection of solar PV power plants.