FACTSHEETS SERIES ON CHINA ENERGY TRANSITION UPDATE

POWER MARKETS ARE PLAYING AN INCREASING ROLE IN CHINA'S NEW TYPE ENERGY SYSTEM

In 2023, **China's power trading centers handled a total of 5,667.9 TWh of electricity trading, an increase of 7.9% and accounting for 61.4% of the country´s total electricity consumption.** The total volume of intra-province electricity trading was 4,509 TWh (79.6%), including 4,299.5 TWh of direct electricity trading, 196.4 TWh of power generation rights trading, and 13.1 TWh of other transactions. The total volume of inter-provincial electricity trading was 1,158.9 TWh (20.4%), of which 129.4 TWh of inter-provincial direct electricity trading, 1,016 TWh of inter-provincial transmission trading, and 13.6 TWh of power generation rights trading.[1]

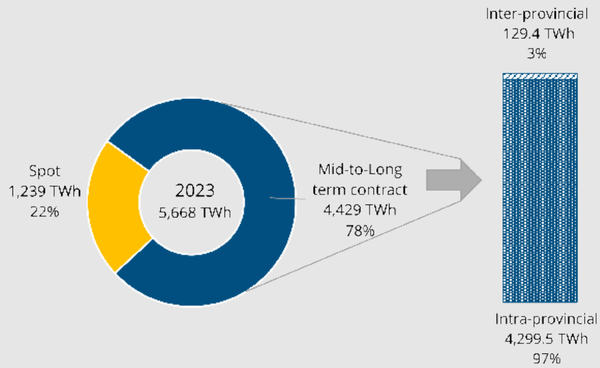
Figure 1 China's power trading volume (2018-2023)

Source: CEC, 2024; GIZ analysis, March 2024

The total amount of medium-to long-term direct electricity trading in the whole electricity market for the year was 4,428.9 TWh, an increase of 7% y-o-y.

In 2023, the ancillary service market has unlocked a peak shaving potential of more than 117 GW and increased the consumption of clean energy by 120 TWh. In addition, **23 provinces have launched pilot power spot markets,** of which Shanxi and Guangdong have been officially put into operation.[2]

Figure 2 Share of different contract type in total power trading



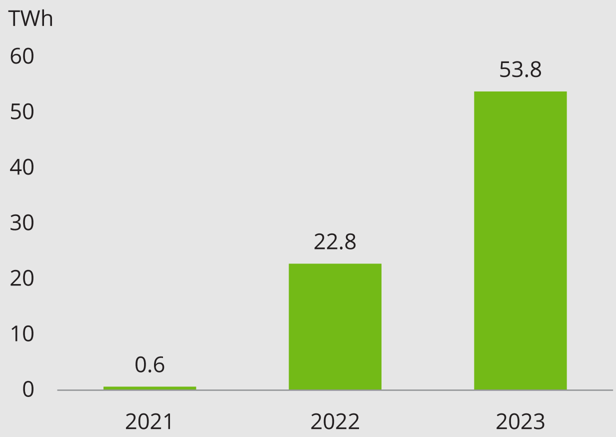
Source: CEC, 2024; GIZ analysis, March 2024

China has 743,000 registered power trading entities, with an increase of 28.3%. These include all types of electricity generators, electricity sales companies, electricity consumers and independent ancillary service providers.

China's national power market was specifically designed to promote renewable energy. The related policies encourage medium-to long-term contracts with longer durations and participation in the spot market. China launched its green power trading market in 2021. After the phase out of renewable energy subsidies, new wind and solar projects are expected to be traded on the electricity market and benefit from their zero marginal cost.

However, at present, China's green electricity trading is still mainly intra-provincial, and inter-provincial trading is not directly open to electricity consumers. Power grid operators need to aggregate the green electricity trading demand of consumers in the provinces, and then purchase green electricity across regions and provinces, with a high threshold for inter-provincial trades. In 2023, the trading volume of green electricity in the provinces was 53.8 TWh (0.95% of the total market trading).

Figure 3 Trading volume of green electricity in China



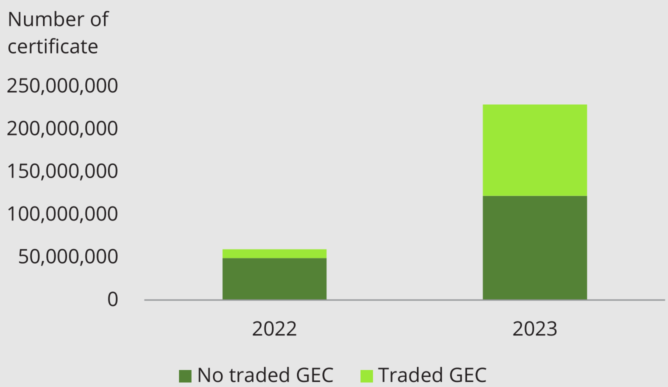
Source: Source: CEC, 2024; GIZ analysis, March 2024

In 2023, China issued several new policies to ensure the development of the power market. The "Notice on the Establishment of a Coal Power Capacity Price Mechanism" which was jointly issued by NDRC and NEA, introduced a two-part electricity pricing system from January 1, 2024, consisting of a capacity and an electricity price for coal-fired power. The electricity price is established by the market while the capacity price is set at a fixed rate which will be gradually adjusted according to the actual situation of the progress of coal power transition. The policy aims to support the expansion of renewable energy and reflects the Chinese government's expectation that coal power will play more and more a back-up role in the power system and to ensure its safe operation.

Another key policy was issued by NDRC, MoF and NEA in last August, which was the "Notice on Achieving Full Coverage of Renewable Energy for Green Electricity Certificates to Promote Renewable Energy Electricity Consumption". This document is a significant upgrade of the existing green certificate system in China and deploys key measures to increase the green electricity certificate market and to promote renewable energy electricity consumption.[3] The document specifies that green certificates are the only way to certify renewable energy production or consumption within China. **The policy aims to provide comprehensive coverage and therefore broadens the parameters for the issuance of green certificates,** which were previously limited to onshore wind and centralized photovoltaic installations. They now cover all verified and recognized renewable energy generation projects, including wind, solar, conventional hydropower, biomass, geothermal, and marine energy.

This new green certificate policy has strongly promoted the issuance and trade volume of green certificates. By the end of 2023, China had issued about 229 million green certificates, and of these, about 107 million green certificates were traded, accounting for 46.7% of the total issued volume, while the share in 2022 was 17.3%, and just 0.1% in 2020.[4 5]

Figure 4 Cumulated GEC trade by 2022 and 2023

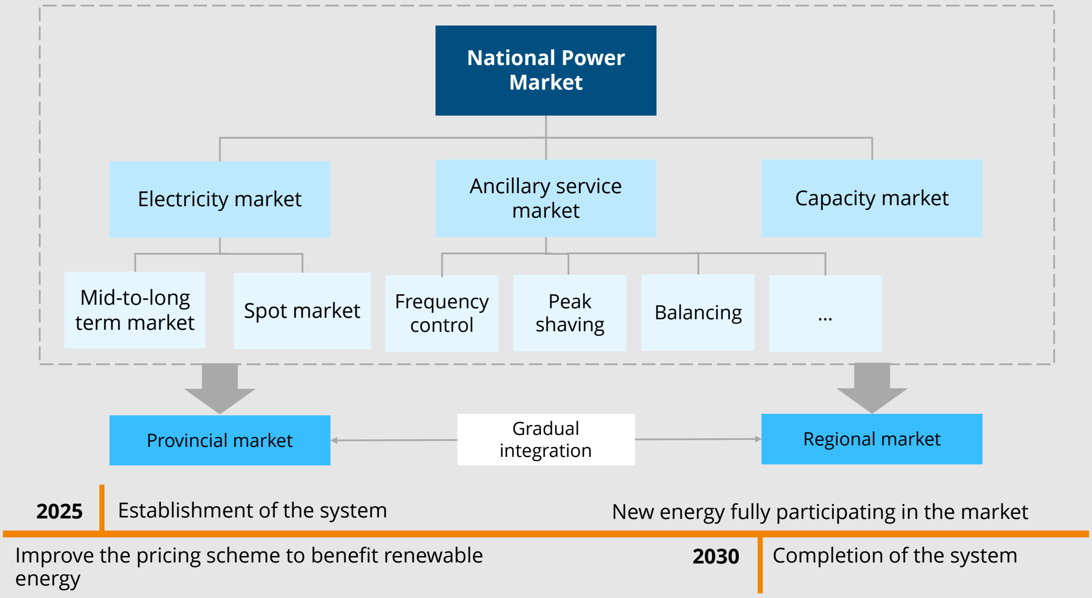


Source: CREEI, 2023; GIZ analysis, March 2024

Overall, China's market-based electricity trading has developed rapidly. The share of traded electricity in total electricity generation has increased from less than 17% in 2016 to more than 61% in 2023. In the medium- to long-term market, traded electricity plays a positive role in stabilizing the overall market size and trading prices. However, the inter-provincial and inter-regional trade is still developing slowly. There are various reasons for this, including provincial protectionism, inconsistent regulations, and delays in the construction of transmission corridors between provinces and regions, which strongly restricts the optimal allocation of electricity resources between provinces.

In May 2024, NDRC issued the Basic Rules for the Operation of the Electricity Market, which clarifies the inclusion of capacity electricity in the trading market. At present, China's national electricity market includes electricity trading (including medium- and long-term trading as well as spot trading), ancillary services trading (including frequency control, balancing and peak shaving), and capacity trading.[6] The policy will be officially implemented on July 1, 2024. This policy will become the "1" in the 1+N rule system of China's unified electricity market, which will provide a basis for NDRC and NEA to formulate a series of normative documents of the power market in the future.

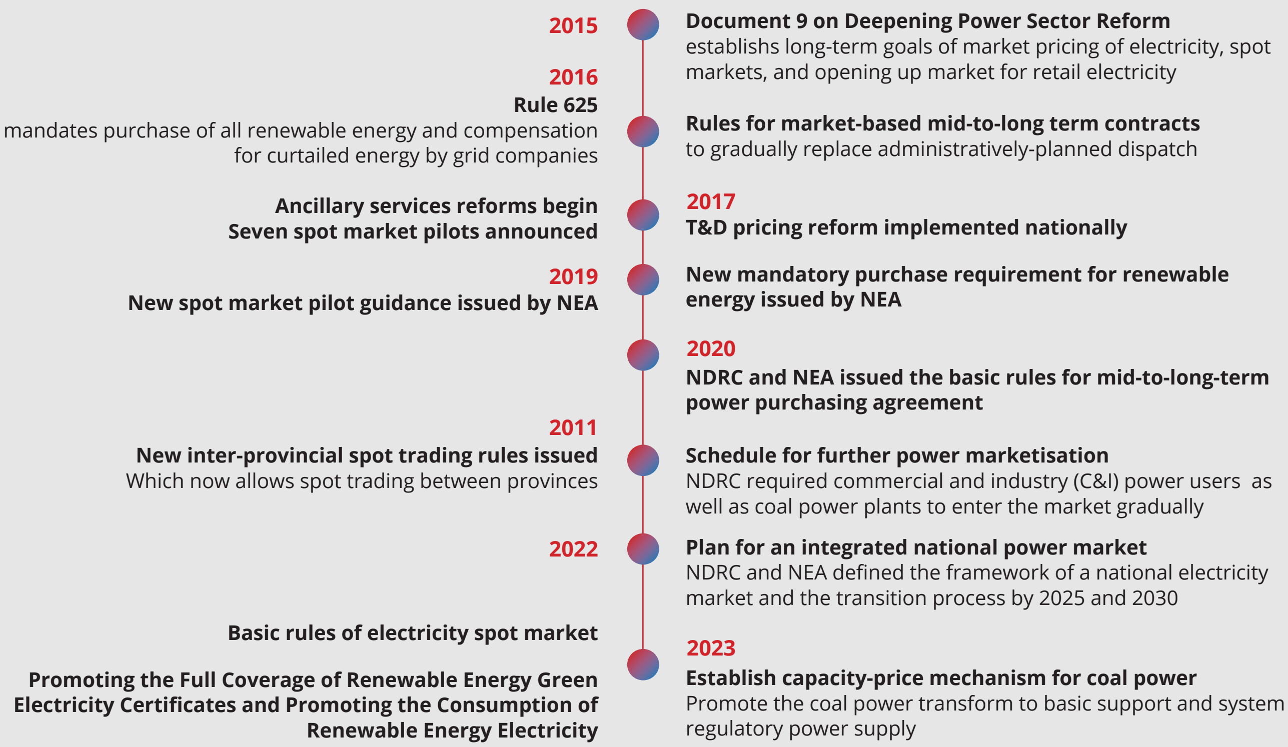
Figure 5 China's framework of national power market and the targets



Source: GIZ, May 2024

According to announcements by NEA, the basic rules of the electricity ancillary services market will be issued in 2024 to increase the stability of the electricity system. There will be a gradual transition in the provision of ancillary services from the power generation side to the consumption side. In addition, the construction of regional electricity markets, inter-provincial electricity trading and nationwide consumption of renewable energy will be promoted.

Figure 6 The policy progress from 2015 to 2023



Source: GIZ, April 2024

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Note: All the data quoted in this paper are from official sources to the extent possible. Due to different statistical methods, some data differ from each other, and individual revisions have been made compared with last year's version, or adjustments have been made according to the actual situation. For data that does not affect the overall judgment, the original cited data is retained.

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