

# How *Mandatory Renewable Power Consumption Mechanism* play its role under the carbon neutrality target



## SHI Jingli

Professor,  
Energy Research  
Institute, National  
Development and  
Reform Commission  
(ERI of NDRC)

Professor Shi started to work in ERI since 1995. Her research focuses on renewable energy policies, regulations, planning and strategy. Shi's latest projects include assessment of the *Renewable Energy Law*, study and draft of the *13th Five-Year Plan for Renewable Development*, improvement of renewable pricing and incentive policies and establishment of green certificate trading mechanism. She holds a master's degree in electrical engineering from the North China Electric Power University and a bachelor's degree in the same major from the Tsinghua University.

*\*This is amended from Ms. Shi Jingli's article that published in the Energy magazine on 13 November 2020.*



## Policy overview

In May 2019, the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA) jointly issued the Notice on the Establishment and Improvement of Safeguard Mechanism for Renewable Power Consumption (CHN:关于建立健全可再生能源电力消纳保障机制的通知) (hereafter referred to as the *Policy*). It is a compulsory and binding policy, that every year the central government sets a quota for each province, which stipulates a certain percentage of electricity consumption is renewable energy. By combining the policy of mandatorily purchasing minimum full load hours of renewable power by TSOs on the power supply side, China has established a dual-track development mechanism for renewable power paralleling on the power supply side and the power consumption side.

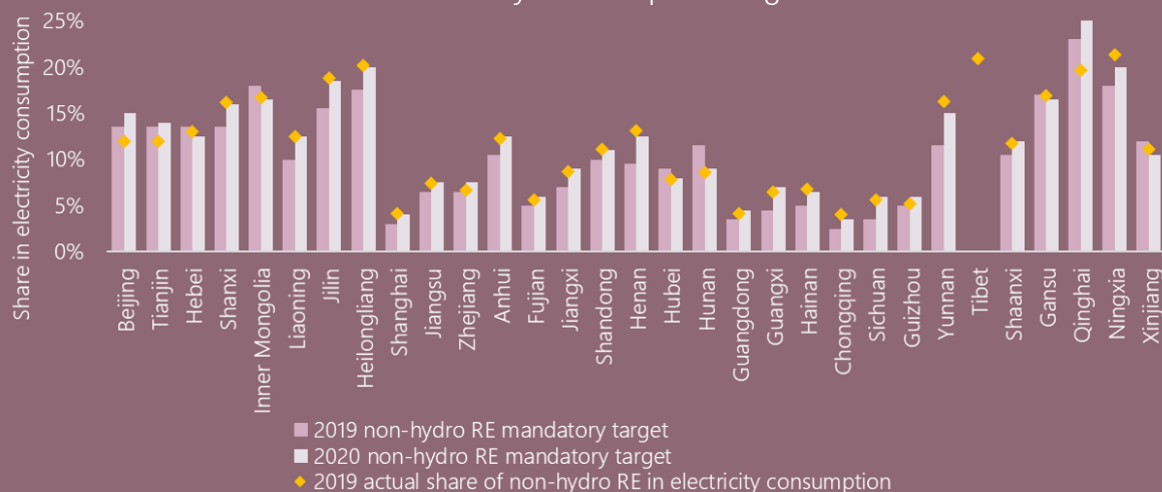
After the renewable power such as wind power and solar PV are completely phased out national feed-in tariff subsidies, the development of renewable power will transit from government planned and incentive-oriented mechanism to market-based operation with consumption-side responsibility. The *Policy* focuses to establish a long-term mechanism to ensure the realization of the 2025, 2030 and 2050 targets for share of non-fossil fuel and renewable energy in total energy consumption and power mix. The *Policy* will be a feasible operational measure for guiding the healthy development of the renewable energy industry, especially after wind power and solar PV has become subsidy-free available and fully de-subsided in the early phase of the 14th Five-Year period.



## The first-year anniversary of the policy

In the first year of implementation, the *Policy* effectively promoted the consumption of renewable electricity across provinces and regions, which allows power grids and power systems in a bigger region be optimized to facilitate renewable power consumption. In 2019, the provincial energy authorities were responsible to assess the implementation of the *Policy* in the province, and 2020 is the first year of the centralized assessment by the NEA. At the provincial assessment level, the implementation of the *Policy* has effectively motivated local governments, TSOs, and entities that are undertaking obligations, encouraging them to consume renewable energy, and especially increases the pressure on the obligational entities on consuming renewable electricity. From the perspective of quantitative data, the wind power curtailment rate dropped from 7% in 2018 to 4% in 2019, and solar PV dropped from 3% to 2%; the proportion of renewable energy in annual Ultra-high-voltage (UHV) power transmission nationwide increased by 12.8%, reaching 52.4%; the proportion of non-hydro renewable power in inter-provincial electricity transactions has increased significantly.

## Comparison of 2019 actual non-hydro renewable power consumption with 2019 and 2020 mandatory consumption targets



### Policy implementation under the new targets

China has established the new energy security strategic goals and climate change commitments. Back to 2014, the central government proposed the concept of *Four Revolution and One Cooperation*, meaning to control irrational energy consumption, diversify energy supply system, carry out technological innovation and institutional reform, as well as to enhance international cooperation in order to ensure the national energy security. Later in September 2020, the president Xi Jinping announced that China will strive to reach its carbon emissions peak by 2030 and achieve carbon neutrality by 2060. From the perspective of renewable energy, the new strategic goals for energy security and new climate change commitments serve as the top-layer design to define the five-year plans as well as the mid-term and long-term strategic goals related to renewable energy. These are used as the basis for determining and distributing the quotas for renewable power consumption, and the provincial quotas should be increased each year in principle.

In addition, as an important support for determining the provincial quotas, although NEA issues newly added consumption capacity of renewable power by province in the current year, it is not enough. The energy authority is expected to gradually establish a rolling evaluation mechanism and announce the renewable power consumption capacity of the next three to five years. In this way, if the consumption capacity of a province is insufficient, the local government can plan ahead and take effective measures to expand the consumption capacity. The feasible measures include thermal power plant retrofits, inter-provincial power transmission expansion, improvement of power market operation mechanism, the configuration of energy storage facilities and the increase of demand side response.



### The 14th Five-Year expectations for the policy development

Given the different development conditions of renewable energy by province during the 13th Five-Year period, the 2020 renewable power consumption quota assigned for each province is quite different. However, in the long run, the government should consider allowing the provinces to share the responsibilities of renewable power consumption in a relatively fair and balanced way. The quotas in economic developed provinces in the central, eastern and southern regions of China need to be increased, which means that there is a need to increase the capacity of subsidy-free renewable power projects in these regions, with an increasing import of renewable electricity.

Market-based electricity trading and green certificate transactions are also important ways to achieve the goal of renewable power consumption. The NDRC and the NEA require that green certificate transactions should be implemented under the *Policy* from 2021. In 2019 and 2020, the subsidy-free on-grid wind power and solar PV projects approved by the central government, as well as the renewable power projects that have reached the life-cycle hour limits to receive national subsidies, can obtain green certificates through power generation. Therefore, it is expected that the number of green certificates will increase in the next few years, and the green certificate trading market will sell them at a few cents of RMB per MWh. The integration of the green certificate mechanism and mandatory renewable power consumption mechanism can create favorable conditions for China to gradually move towards a system with balanced consumption responsibilities nationwide.