In recent years, with China’s continuous investment in shale gas exploration and the continuous efforts of scientific workers, China’s shale gas exploration and development has achieved leap-forward development. In 2011, China’s State Council approved shale gas as a new mineral resource. In 2014, shale gas was first proved at geological reserves of 106.8 billion m$^3$. In 2015, 2016 and 2017, China had 130.18 billion m$^3$, 122.413 billion m$^3$ and 376.76 billion m$^3$ of newly proven geological reserves of shale gas, respectively. Until April 2018, the proven geological reserves of shale gas in China had exceeded 1000 billion m$^3$.

With the strengthened shale gas exploration in China, the development of shale gas has also entered the fast lane. From the first cubic meter of shale gas development in 2010, China had 0.1 billion m$^3$, 1.3 billion m$^3$, over 4.4 billion m$^3$, 7.9 billion m$^3$ and up to 9.1 m$^3$ of shale gas production in 2012, 2014, 2015, 2016 and till the end of 2017, respectively. China is expected to exceed producing 10 billion m$^3$ of shale gas during the whole of 2018. China has become the third country to achieve industrial production of shale gas, followed by the United States and Canada. According to the "Shale Gas Development Plan (2016–2020)" issued by the State Energy Administration of China, shale gas production will reach 30 billion m$^3$ by 2020 and 80–100 billion m$^3$ by 2030.

At present, China’s shale gas exploration is mainly characterized by its late start, complex basic geological conditions of shale gas reservoirs, a low degree of investigation and evaluation, and of exploration and...
development of shale gas resources; the exploration and development are thus facing many difficulties and challenges. However, China has widely distributed shale and many shale intervals, ranging from the Changchengian period to the Paleogene period, indicative of the large exploration potential of shale gas. Shale gas fields in China are mainly distributed in the Sichuan, Ordos, Bohai Bay, Songliao, Qaidam, Junggar–Tuha and other southern basins (Table 1; Fig. 1).

Clearly, China contains abundant shale gas resources, which is the most important unconventional natural gas resource after coalbed methane and tight sandstone gas. The shale gas resources are typified by their long mining life, long production cycle, short hydrocarbon migration distance and large gas-bearing area. To speed up the development of the shale gas industry is thus of great significance to improve the guaranteed capability of energy resources, to optimize energy structure, to improve ecological environments and to build a clean, low-carbon, safe and efficient energy system in the process of economic development.

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