

Rosefinch Research | Carbon-Neutral Economics: Green Energy is Key Since 90% of Carbon Emission in China Comes from Energy Sector

In the UN conference in Sep 2020, China announced the 3060 targets of Carbon-peak by 2030, and Carbon-neutral by 2060. It was subsequently incorporated into the government's 14th Five-year development plan. To expand green energy and achieve carbon-neutrality is not only China's wish, but also the human race's common goal. In this process, China will see birth of a group of world leading companies. Rosefinch will continue creating value by providing market knowledge related to 3060, and to grow with the investors in the brave new world of Green Energy.

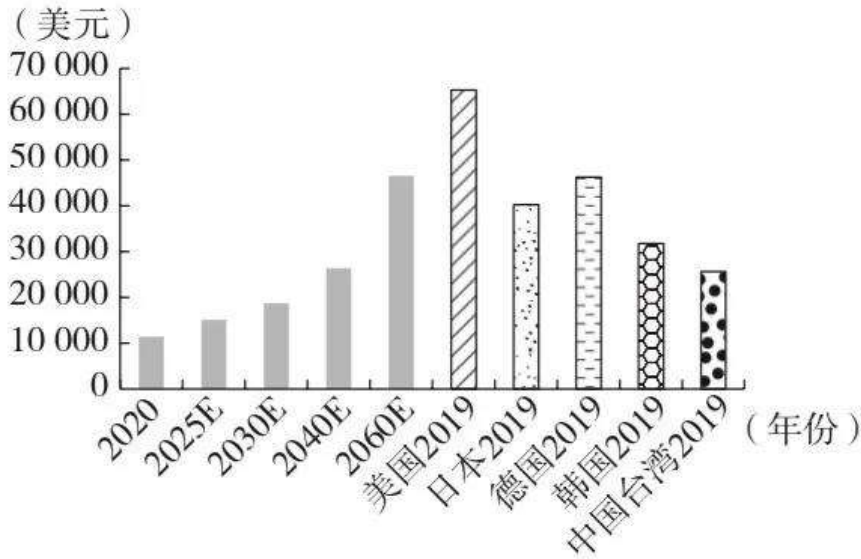
Green energy is key, since 90% of carbon emission in China comes from energy sector

Currently China's energy supply is still predominately led by coal, followed by oil, gas, and non-carbon energy. Dealing with the climate change and reducing carbon emission are common goals for the global population. Based on UN environmental agency's "2019 Carbon Emission Gap Report", China is the largest emitter of carbon, accounting for over 1/4 of global carbon emission in 2018. Carbon-neutral by 2060 is a proactive goal promised by China as a member of global community, which also provides support for China's dual-circulation development strategy. Therefore, energy sector should quickly move towards low-carbon and zero-carbon because it's the key pillar to achieve China's goal of Carbon-neutrality.

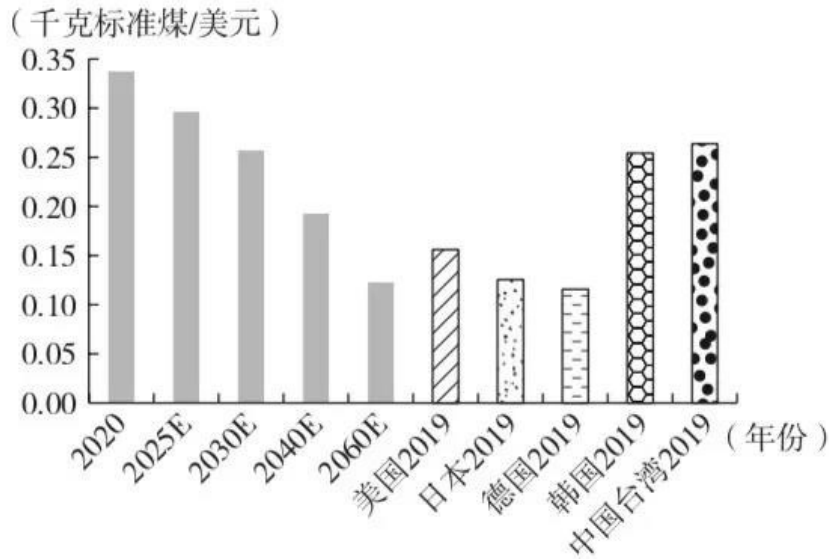
Economic growth remains resilient; total energy demand may rise further

Based on official data, China's per-capita GDP is only 1/6 to 1/3 of developed countries. We see further room for economic growth ahead. CICC macro research team estimates GDP growth to 2030, 2040, 2050 and 2060 will be +4.2%, 3.0%, 2.5% and 2% respectively. Our 2019 per capita GDP is 10,276 USD, or more than doubling the 2010 level of 4,628 USD and achieving the national goal of reaching 10,000 USD per-capita GDP by 2020. Looking forward, under the guideline to achieve social modernization by 2035 and great rejuvenation by 2050, we expect per-capita GDP to reach 46,559 USD by 2060, or roughly current levels at Japan and Germany.

The current energy consumption per GDP is still at relatively high level. There's hope to reduce this ratio as structural changes and energy-saving measures take place. In 2020, China's per unit energy expenditure is 0.328 kg coal per USD, still higher than developed countries' 0.116~0.264 kg coal per USD. As economic structure improves and various sectors improve unit energy expenditure, China's per GDP unit energy expenditure may decrease to 0.123kg coal per USD, or a drop of 63% and lower than current US and Japan level.

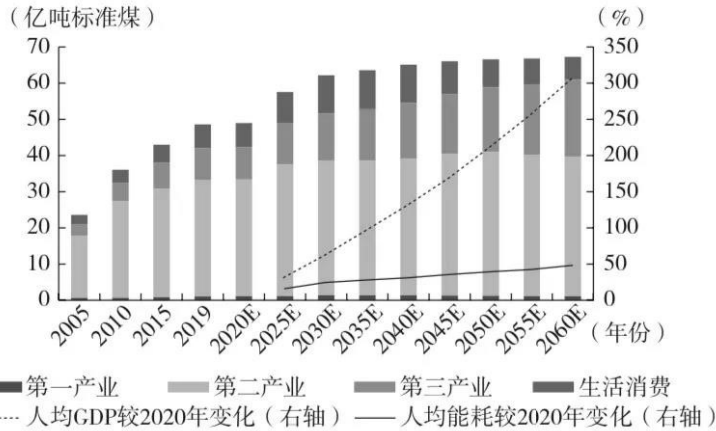


Source: China NBS, government websites, CICC. Per-capita GDP for China and various other regions.



Source: National Energy Bureau, NBS, CICC. Per unit energy expenditure for China and other regions.

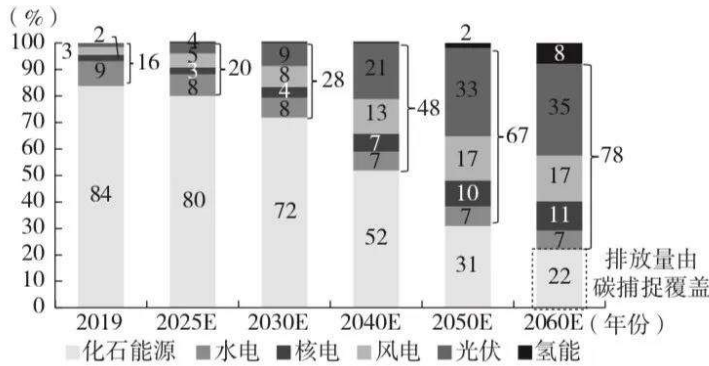
Even as per unit energy expenditure decreases, the expected economic growth will still increase total energy consumption to 6.73 billion tons of coal by 2060, or 38% increase from now. We expect China' total energy consumption to reach 5.76 billion tons, 6.36 billion tons, and 6.73 billion tons in the years 2025, 2035, and 2060 respectively. As the low energy-consuming tertiary industry gains shares in the economy, the energy consumption increase rates will slow down, with annual total increases of 3.3% in 2021-2025, 1.0% in 2025-2035, and 0.2% in 2035-2060.



Source: China NBS, CICC. First, second, tertiary industries, and consumers; per-capita GDP vs 2020, and average energy consumption vs 2020.

There’s heavy carbon-reduction pressure under current energy structure; top-level planning and policy supports are crucial.

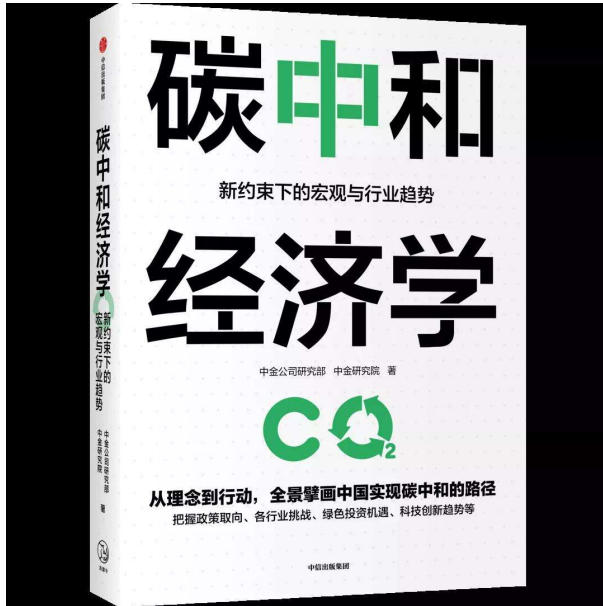
As the biggest carbon emitter in the world, China has a difficult and heavy carbon-reduction job ahead. Carbon-neutrality means our energy system must become cleaner, safer, and more economical. Based on what we discussed above, China’s path to carbon-neutrality must deal with both an increase of energy consumption and a decrease in carbon emission. This challenge must have strong and effective policy guidance and support, which will accelerate China’s energy transition that will ultimately benefit Chinese economy. The Carbon-neutral goal will create by 2060 a cleaner, more economical, and safer energy structure. See the energy structure chart below:



Source: BP Energy, CICC. Carbon energy, hydro, nuclear, wind, solar, hydrogen.

To achieve carbon-neutrality, we believe China needs to push on supply side for non-carbon energy to be the main energy source. China needs to increase the electrification rate and accelerate new technology in hydrogen energy and carbon capture. By 2060, CICC expects over 70% of the energy will come from clean electricity, 8% will come from green hydrogen, with remaining 22% of carbon energy to be offset by carbon-capture. To achieve this transformation, we need energy supply side and demand side to cooperate: the supply side will use clean electricity and cleaning of non-electric energy, while the demand side need to push for more electric and hydrogen applications.

This paper contains excerpt from Chapter 6 of the “Carbo-Neutral Economy” by CICC.



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