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Is China's Power Crunch Just an Unexpected Outcome of Its Carbon Neutral Policies?

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Since late August 2021, various localities in more than 10 provinces in China including Heilongjiang, Jilin, Liaoning, Guangdong and Jiangsu have suffered from power cuts. These power cuts have affected industrial enterprises and households alike. Discussion on the causes have been numerous, ranging from domestic economics to international political contention.

China's power crunch is attributed to many causes, including the Big Game (*Da Qi Lun*) as a deliberate move by policymaker to curtail import demand for certain commodities in response to their surging production costs.¹ The COVID-19 pandemic and the monetary easing policies in various countries have fired up commodity prices and virus containment efforts have also spiked transportation costs at the back end of the value chain. The increased cost pressure on Chinese producers is a cause for concern as China heavily relies on the international market for material supply and cargo transportation. A large part of China's production activities is in highly competitive, low margin industries. As typical price takers, Chinese producers cannot increase their prices in response to increasing demand and must absorb the surge in raw materials and transportation costs. This evidently meant a cut to their profit margin and leads to a situation where the more they produce and export, the more they lose.

China's power cut can be best understood from the perspectives of changes in demand, supply and the gaps between the two. In terms of demand, China's exports went up 28.1% year-on-year, while imports surged by 17.6%, widening the annual trade surplus by US\$66.8 billion²

¹ For more details, please refer to <https://opinion.cctv.com/2021/09/28/ARTIM6zbrTVs94vrfivx4sUE210928.shtml>, accessed 14 October 2021. Notably, the Big Game perspective has been refuted by the official media.

² For more details, please refer to <http://www.customs.gov.cn/customs/302249/zfxgk/2799825/302274/302275/3946919/index.html>, accessed 14 October 2021.

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and higher than market expectations in September 2021. Higher demand for manufacturing exports has increased production, working hours and electricity consumption in China. The power crunch was worsened when shoppers spent big during the National Day Golden Week in October, which caused electricity demand to skyrocket.

On the supply side, rising coal prices and year-end assessment of carbon intensity reduction are the two key impact factors. As thermal power accounts for more than 70% of China's electricity supply, coal prices are a very important determinant of power supply.

Since 2020, three major trends have pushed coal prices up. First, while China's coal production grew by 4.4%, coal imports decreased 10.3% in the first eight months of 2021; the shrink in coal inventories was further aggravated by the 12.4% surge in power output from thermal power generator to meet expanded demand.³ Certain northern areas also need to stock up coal supply for the upcoming winter heating season, which is worsening the current shortage of coal supply and pushing up the prices of coal in China.

Second, to help economies recover from the pandemic, central banks around the world have unleashed a lot of liquidity. As a result, the prices of commodities in the international market, including coal, have risen since March 2020. The Bloomberg Commodity Spot Index, which tracks 23 energy, metals and crop futures contracts, almost doubled from 272.69 on 15 March 2020 to 525.96 on 3 October 2021.⁴

Third, due to China's import ban on Australian coal, coal export volumes of non-Australian origins, including Canada, Russia, Indonesia and the United States, to China have increased across different grades of metallurgical coal. China consumed 3.143 billion tonnes of thermal coal in 2019, of which 218.1 million tonnes (6.9%) were imported, including 46.01 million tonnes (1.5%) from Australia.⁵ In the same year, total international trade volume of thermal coal was 1.093 billion tonnes. The share of imports from Australia is relatively small and could not influence China's total consumption of thermal coal. However, the shift in Chinese demand has exacerbated the rise of thermal coal prices in the international market as Indonesia's (the largest thermal coal exporter) production has decreased sharply due to the pandemic and there is a rebound in electricity demand in other regions of the world. The price of coal futures traded in the Intercontinental Exchange and on the New York Mercantile Exchange reached 269.5 per metric ton on 5 October 2021, a leap of about 363.9% from a year ago.

As both domestic and international prices of coal soared, the fuel cost for power generation in China has far exceeded RMB0.40 per kilowatt-hour, while the Grid Power price (wholesale price) of electricity remains at only about RMB0.40 per kilowatt-hour.⁶ Moreover, China's electricity price and its fluctuation range are strictly controlled by the government. Electricity producers can only try to reduce output and lessen losses in the current market situation in spite of the government's efforts at improving transportation capacity and supply for coal.

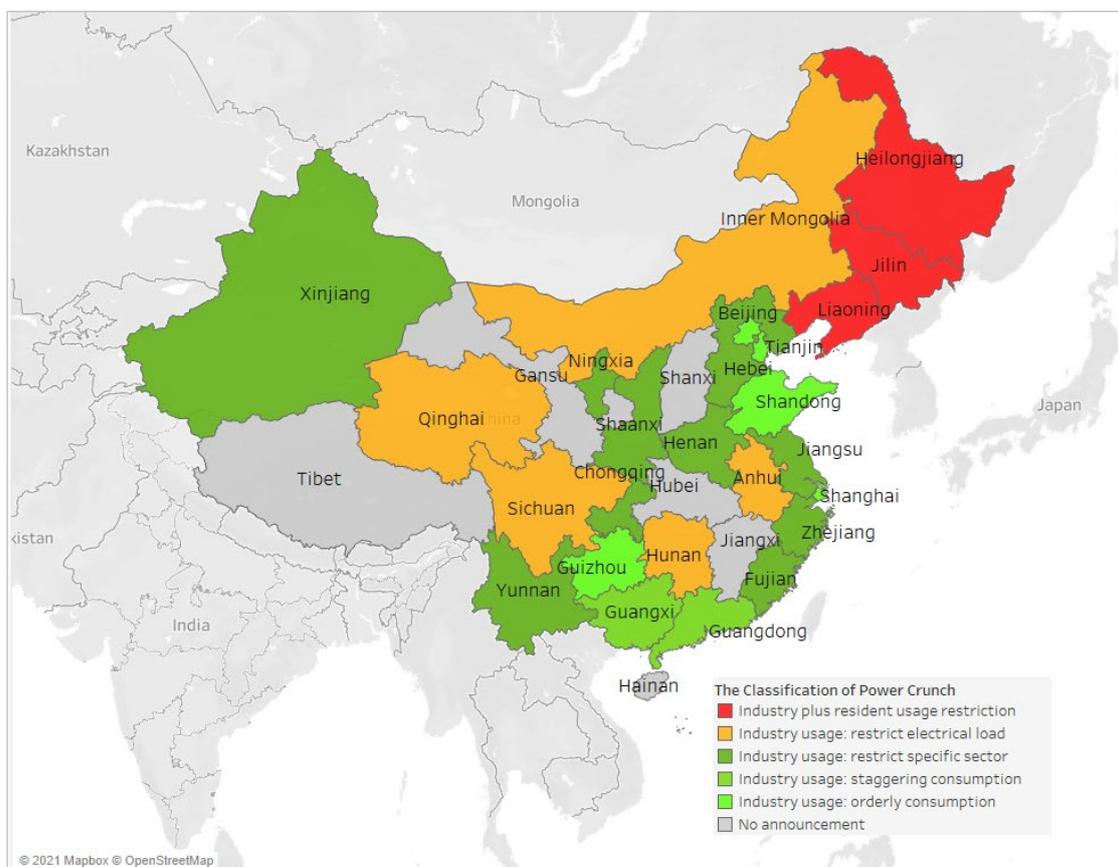
³ http://www.stats.gov.cn/tjsj/zxfb/202109/t20210915_1822087.html and <https://www.cec.org.cn/detail/index.html?3-300994>, all accessed 5 October 2021.

⁴ <https://www.bloomberg.com/news/articles/2021-10-04/commodities-index-hits-record-as-world-rebound-meets-shortages>, accessed 5 October 2021.

⁵ https://iea.blob.core.windows.net/assets/00abf3d2-4599-4353-977c-8f80e9085420/Coal_2020.pdf, accessed 5 October 2021.

⁶ <https://companies.caixin.com/m/2021-09-27/101778595.html> and https://www.china5e.com/subject/show_832.html, all accessed 14 October 2021.

FIGURE 1B MEASURES TAKEN TO REDUCE POWER CONSUMPTION, BY PROVINCES



Source: The data for Figure 1 is based on the report of *Barometer of Completion of Energy Consumption Dual Control Targets in Various Regions in the First Half of 2021* from The National Development and Reform Commission of China. The data for Figure 2 is authors' compilation from provincial government announcements, data from State Grid of China and its subsidiaries, and public information as at 8 October 2021.

In September, NDRC's document titled, "A plan to improve the dual control system of total energy consumption and energy consumption intensity", states that the results of the Dual-control assessment will serve as an important reference for the comprehensive assessment and performance evaluation of local governments and cadres. Therefore, power cuts have become a convenient way for local governments to quickly reduce carbon emissions; electricity producers too are more than happy to collaborate with local governments on this due to the cost pressure mentioned earlier.

Provinces that received First-level warnings such as Qinghai, Jiangsu, Fujian and Zhejiang have adopted various measures including scheduling energy consumption and restricting specific sectors' power usage or electrical load. For northeast provinces such as Liaoning, Jilin and Heilongjiang, despite attaining the proposed target of reducing energy intensity, they continue to apply stringent measures to cut power usage and that negatively impacted the livelihood needs of their residents.

While state-owned power producers have reportedly made their recommendations to the central government on measures to be adopted to overcome this power crunch, transferring domestic inflation to other countries is an unlikely option as this is at the risk of companies shifting their plants overseas for stable production. The stability of electric power is crucial for the survival

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of enterprises. The loss caused by the power outage far outweighs the profit deriving from the low cost of manpower and land.

The central government of China has taken measures to alleviate the power shortage. For example, the increase in electricity price is adjusted from no more than 10% to no more than 20%, and high energy-consuming industries are not subject to the 20% restriction.⁷ However, it is still unknown how long the power cut will last. A short period (10 days or half a month) of power cut is perhaps still acceptable to many companies. However, reports have it that China's power cuts may continue intermittently until the end of the year, or even after the Winter Olympics next year. A protracted period of power cuts will test the goals and viability of all companies and may even trigger China's economic slowdown.

This round of power cuts has also warned China of its new energy strategy. First, despite the rapid development of new energy in China, thermal power will still be the largest single source of electricity for a while. The importance of thermal power could not be ignored. Second, subject to natural factors, the supply of new energy such as hydropower, photovoltaic and wind power is not stable. Therefore, new energy can only supplement power supply in the short term and not very helpful in the current situation of power shortage. In the long run, power grids, power producers and power users should have necessary energy storage facilities to ensure the supply resilience of the power system. Third, as China's power source, transmission and application, as well as power cost and pricing mechanism continue to change, its energy infrastructure network should be adjusted or even reconstructed accordingly.

At the micro level, production halts could mean a more expensive festive year-end since gifts in shopping malls could be fewer and more expensive as the "Eastern Santa Claus" could not deliver the "gifts" to other parts of the world on time.

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⁷ For more details, please refer to http://www.gov.cn/zhengce/2021-10/09/content_5641554.htm, accessed 14 October 2021.