CHINA ECONOMIC UPDATE NOVEMBER 2021

To the market: China's power crunch is forcing much needed energy reform

NAB Group Economics

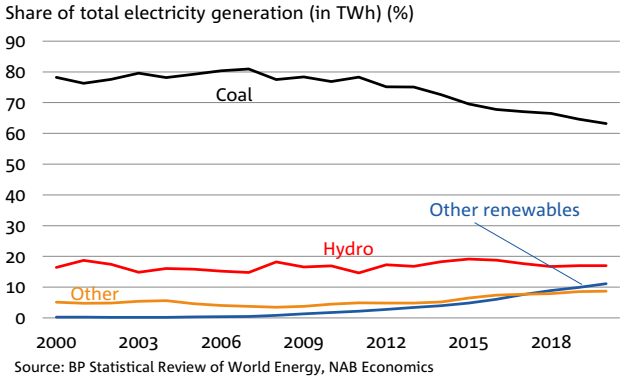
The sudden emergence of electricity shortages in September has forced Chinese authorities to implement (if only partially) long delayed reforms to the country's electricity sector. That said, further reforms may be necessary to support a more diverse and sustainable electricity sector that can meet the country's long-term environmental targets.

AN OVERVIEW OF CHINA'S ELECTRICITY GENERATION SECTOR

Despite the growth of alternative technologies over the past two decades, coal remains the dominate fuel source for China's electricity generation – accounting for around 63% of the total in 2020, with reports suggesting a similar share for the first nine months of 2021. That said, coal's share of the electricity fuel mix has been declining since 2007, with non-hydroelectric renewables accounting for the largest increase in share over this time.

ELECTRICITY GENERATION BY FUEL

Coal's share has declined but remains the dominant source



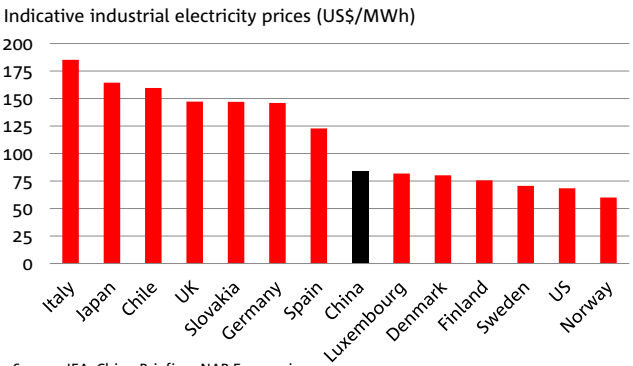
Source: BP Statistical Review of World Energy, NAB Economics

The electricity sector has undergone a number of reforms over the past few decades, most notably when generators were restructured from the State Power Corporation into various commercialised corporate entities (albeit remaining state-owned enterprises), separate from transmission infrastructure, in the early 2000s. That said, market based reforms have been limited – with regulated prices set for each province by the National Development and Reform Commission (NDRC).

It is worth noting that the regulated prices for electricity have not been particularly cheap by international standards. Research by China Briefing found that average industrial electricity prices in China sat roughly in the middle of the range of advanced economy industrial prices in 2019. Industrial users in the United States, among others, had lower prices. In part this reflects government policies to keep residential electricity prices at lower levels – subsidised by higher industrial and commercial electricity prices.

INDUSTRIAL ELECTRICITY PRICES

Many advanced economies have lower prices than China



Source: IEA, China-Briefing, NAB Economics

In the mid-2000s, domestic pricing of coal was progressively deregulated – initially allowing the price to trade within set bands, before eventually allowing the fuel to trade freely. At the same time, the NDRC proposed reforms to electricity prices, which would allow them to move in response to

changes in coal prices, however these measures were not implemented due to concerns around inflation.

A partial reform was announced in late 2019, when the NDRC announced it would introduce bands around the regulated electricity price for coal fired generators – allowing the price to rise by 10% and fall by 15% – although reports suggest that the NDRC only permitted downside movements in prices during 2020. As power shortages emerged in October 2021, these bands were widened to 20% up and down – with price caps removed altogether for some high energy consumers.

ELECTRICITY SHORTAGES HAVE EMERGED IN 2021

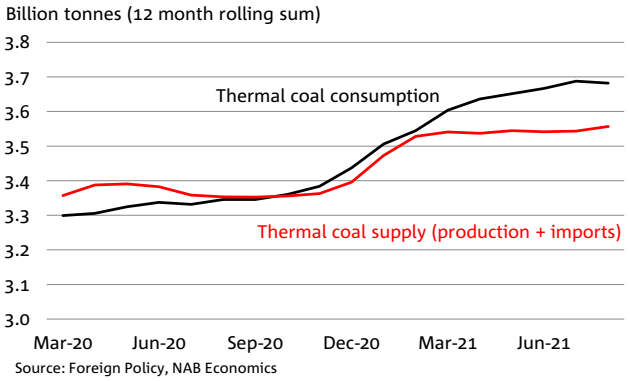
China's economic recovery from the COVID-19 downturn in early 2020 has been largely driven by industrial activity (with consumption indicators remaining relatively subdued when compared with pre-COVID-19 trends). In the first three quarters of 2021, electricity consumption rose by 13% yoy, compared with overall growth in the economy of just 9.8% yoy – highlighting the outsized role of the industrial sector.

Power shortages began to emerge in September. Initially these appeared to be isolated incidents – based on local market conditions – but by the end of the month it became apparent that there was a broader systematic problem. At this time, twenty provinces had implemented some sort of electricity rationing. These differed between locations – with some provinces ensuring supply to residential consumers, while rationing supply to industrial consumers based on energy usage (typically favouring high tech producers over lower value heavy industry), although there were reports that residential consumers also lost access to power in some provinces.

The key driver of the electricity shortage has been a lack of affordable coal, given the mismatch between market priced coal and regulated electricity prices. Data compiled by Foreign Policy shows that thermal coal consumption rose significantly across the second half of 2020 – as China's economy recovered – but the disparity between consumption and available supply (comprising production and imported volumes) started to widen noticeably in March 2021. It is important to note that the vast majority of coal consumption is domestically produced – around 92% in 2020 – and that the NDRC had been urging coal miners to expand production for several months.

CHINA'S COAL CONSUMPTION

Supply has been unable to keep up with the increase in thermal coal demand

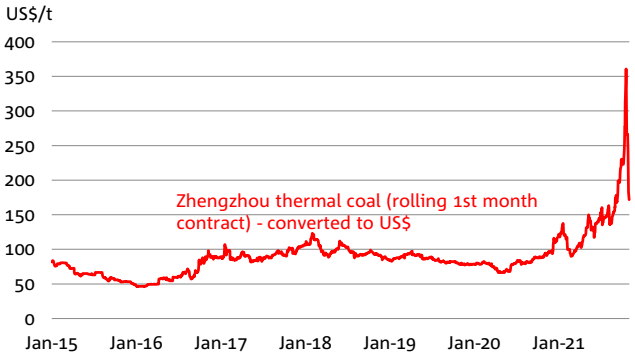


Source: Foreign Policy, NAB Economics

Across 2019 and 2020, thermal coal in China – as measured by the Zhengzhou Commodity Exchange's first month contract – averaged around US$84 a tonne (converted at using daily exchange rates). From the start of March 2021 through to mid-October, the price steadily trended higher – peaking at around US$360 a tonne on 19 October – as flooding in Shanxi province (the country's largest coal producer) added additional short-term pressure to coal supply.

CHINA THERMAL COAL PRICE

Surging coal prices in 2021 strained profitability among generators



Source: Bloomberg, NAB Economics

As coal prices rapidly rose, coal fired generators soon became unprofitable given the restrictions on electricity prices. Some generators chose to run down existing coal inventories, while avoiding purchasing coal at unprofitable prices. Others reduced electricity production, or shutdown completely, putting plants into maintenance phases.

Prices have subsequently fallen, but remain comparatively high for now, as Chinese authorities encouraged miners to expand supply, while boosting coal imports – up by 76% yoy – albeit Australia remains excluded. In the near term, coal prices may fall further – assuming that efforts to lift production are successful. In addition to expansions at existing mines, new coal mines have been approved (although they are likely to take time to start

production). However, a colder-than-average winter is expected, which could once again strain fuel supplies – meaning that coal fired generators could remain unprofitable even if they are able to charge the 20% surcharge.

The coal supply issues were exacerbated by abnormal weather patterns that impacted the supply of renewable electricity in September. A lack of rain in Yunnan province in the country's south west limited the capacity of hydroelectric generation (the province typically relies on hydro for almost three-quarters of its electricity supply), while unseasonably low wind speeds limited the supply of wind power in Liaoning province in the country's north east (where wind generation provided around 8.2% of electricity supply in 2020). That said, these factors most likely had only a marginal impact on the overall shortages.

The role of environmental policy in contributing to the shortages has been contested. The policies to reduce energy usage and the energy intensity of economic growth in China were cited in state-owned media sources early in the crisis, following on from a NDRC report in August that showed that 20 provinces failed to meet at least one of the two targets in the first half of 2021. Some analysts suggested that local authorities may have ordered output cuts to address these targets, while others have dismissed this idea as a convenient scapegoat. Recent efforts to expand coal production suggest that environmental policies are a lower priority than ensuring adequate electricity supply.

CONCLUSIONS

China's economic growth was comparatively weak in Q3, and the prospect of further shortages due to a cold winter adds downside risk to our forecast for China's growth in both Q4 2020 and Q1 2021. Both the duration and severity of any supply shortages over this period are highly uncertain. In addition, electricity shortages could have flow on effects to other economies, further stressing already disrupted global supply chains – with delays in production impacting goods supplies and adding upward pressure to inflation.

Expanded coal imports could see a return to purchases from Australia – with reports suggesting that around one million tonnes of Australian coal that had been stored in bonded warehouses near major ports was released in October. That said, trade tensions between the two countries remain high, and China could continue to favour other exporters.

Longer term, further deregulation of electricity prices, along with diversification away from coal fired generation, may be necessary to create a more sustainable sector. The latter will be particularly necessary for China to meet its international environmental commitments – which require carbon emissions to peak before 2030 and the country to reach carbon neutrality by 2060 – but would negatively impact carbon intensive manufacturing – such as steel, cement and chemicals.

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