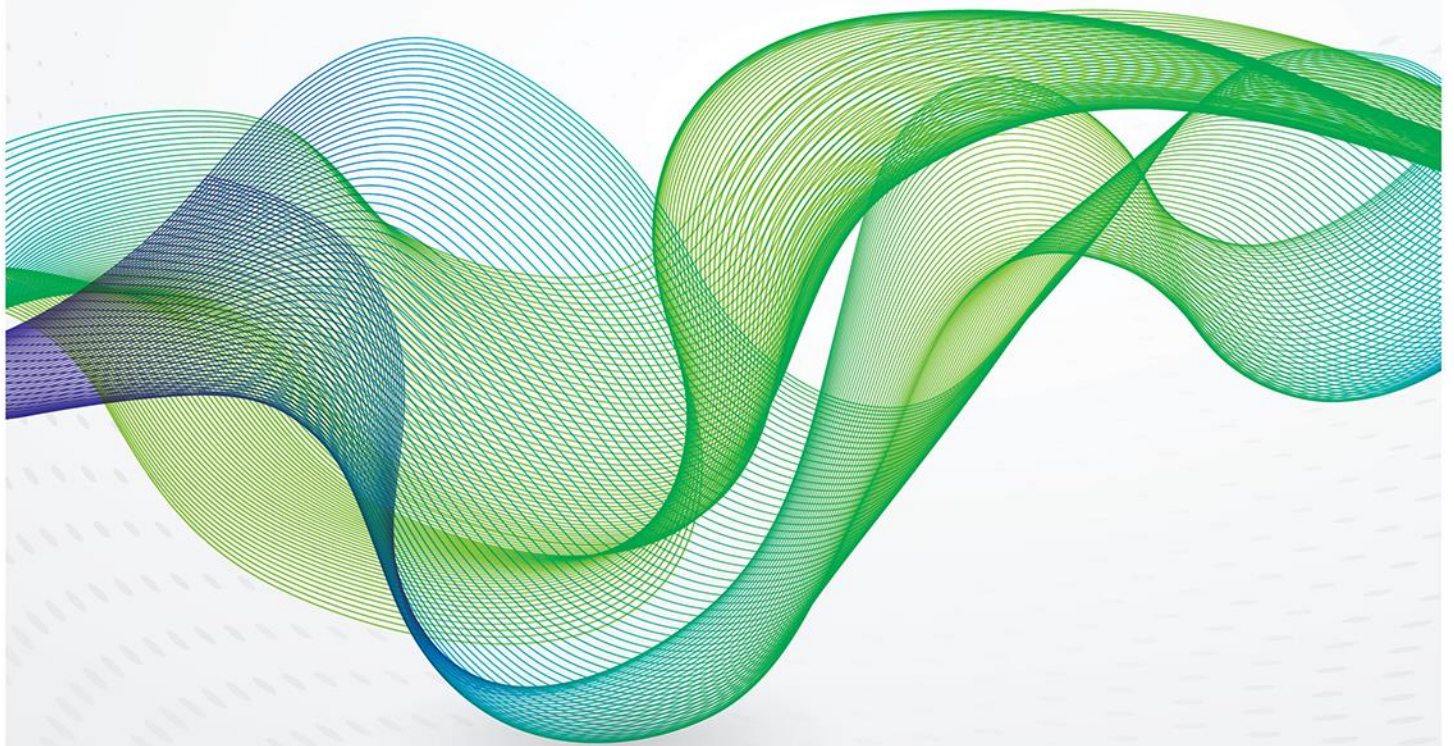


March 2021

Key issues for China's 14th Five Year Plan





China's long-awaited '14th Five Year Plan and long-term targets for 2035' was released and ratified by the National People's Congress on 11 March 2021¹. Since it is the first Five Year Plan (FYP) published following China's announcement in September 2020 that it would aim to peak carbon emissions by 2030 and reach carbon neutrality by 2060, it was expected to be a strong indicator of China's commitment to this pledge and a first concrete step toward it, although we have argued previously that viewing it as a bellwether of China's ambitions may be misguided². In this comment, we outline some of the key statements from the Plan regarding energy and the environment, as well as five themes that we think will be important to watch over the next five years.

Weak climate ambition, strong reliance on self sufficiency

The 'Outline for the 14th Five Year Plan and long-term targets for 2035' is a general framework and as such, it is an important indicator of the general direction of travel. The plan outlines a number of binding and aspirational targets, but forthcoming plans related to energy, climate and industrial development, as well as provincial plans, will offer additional details and more specific targets. So when assessing the Plan, it clearly gives a sense of the government's priorities, but it is also important to keep in mind that both the central and local governments seek to ensure that binding targets are reachable, and at times may frame their goals in a way that seems to lack in ambition. For instance, in the previous two plans, China overshot its CO₂ intensity reduction targets and its non-fossil fuel targets (although it failed to reach some of its natural gas targets).

The Plan, therefore, seeks to balance ambition and political reality. And to an extent, it was short on ambition and big on political reality. For one, the 148-page document mentions that 2060 goal only once. It mentions 'energy' 59 times in a section entitled 'Establishing a modern energy system' but also in a dozen other chapters including ecological planning, the green economy, environmental protection and resource conservation, national economic security and energy and resource safety strategy. In comparison, the term 'climate' is mentioned nine times, 'carbon emissions' eight times, although the Plan notes 'environmental protection' and 'energy savings' 21 times combined.

Second, the plan states that the country will boost the share of non-fossil sources in its energy mix (including nuclear and hydropower) to 'around 20 per cent' by the end of the period, from a targeted 15 per cent by 2020 (and 15.8 per cent achieved). Not only is the 20 per cent target not binding, it is also a rather small acceleration of existing trends, given that over the course of the 13th FYP, the share of non-fossil fuels increased by 3.6 percentage points and is now expected to increase by 4.2 percentage points.

Thirdly, the Plan contains multiple references to the development of coal, even though it emphasises 'clean and efficient utilisation', largely related to the need to ensure energy security in the face of an increasingly hostile external environment. It is notable that in this FYP, the government issued a binding floor for domestic energy production, looking to maintain domestic supplies (of all energy sources) at above 4.6 billion tonnes of standard coal equivalent (tsce). In 2019, China consumed 4.86 billion tsce of energy and CNPC, for example, forecasts primary energy demand will reach 5.6 billion tce by 2035³. So the government is clearly looking to maintain as much self-sufficiency in its energy supplies as possible.

In this vein, China did not include a coal consumption cap. One may still be issued in upcoming sectoral plans, much like the 13th FYP for Energy Development set a coal consumption cap of 4.1 billion tonnes. Indeed, the China Coal Association suggested that coal consumption in 2025 would be capped at 4.2 billion tonnes, a target that could therefore be included in the energy sector plan. Moreover, policy advice from the State Grid's research centre suggests that the share of coal in China's energy mix should fall to around 50 per cent by 2025, from 57 per cent in 2020. While this would be a huge

¹ In Chinese http://www.xinhuanet.com/politics/2021-03/11/c_1127200766.htm

² Michal Meidan, "Unpacking China's 2060 carbon neutrality pledge", OIES Comment, December 2020, <https://www.oxfordenergy.org/publications/unpacking-chinas-2060-carbon-neutrality-pledge/>

³ CNPC 2050 energy outlook, 2020.



achievement, it could still represent new coal capacity of anywhere from 100-200 GW⁴. At the same time, the Plan suggests coal to gas and coal-to-liquids projects should be ‘steadily promoted’. The wording points to some support for new projects, although it is less enthusiastic than the ‘major push’ that renewables will receive.

That said, even though renewables will clearly be encouraged, the Plan does not include targets for installed capacity by 2025 nor does it reiterate Xi Jinping’s announcement that by 2030 China will install 1,200 GW of wind and solar capacity. These are likely to be stated in forthcoming plans, though.

No formal emissions cap but the onus will be on provinces

Fourth, the Plan does not include a carbon emissions cap. The authoritative Tsinghua University Institute for Climate Change and Sustainable Development (ICCSA), which modelled China’s roadmap to carbon neutrality by 2060, projected that China could achieve a carbon emissions peak of around 10.5 billion tonnes shortly before 2030, based on annual economic growth slowing to 5.3 per cent during the 14th FYP period and 4.8 per cent during the 15th FYP period alongside aggressive carbon intensity cuts. The ICCSA then recommended setting a carbon intensity reduction target of above 19%, and an energy intensity reduction target of 14% in the 14th FYP. The Plan is slightly less ambitious and calls for an 18 per cent drop in carbon intensity and 13.5 per cent fall in energy intensity from 2020 levels.

But the Plan does not include a numerical GDP growth targets for the next five years, which complicates forecasting potential intensity reductions. The Plan, instead, suggests a new system of “indicative economic growth targets” based on actual circumstances. For instance, in 2021, GDP growth is set at ‘over 6 per cent’, widely seen as a conservative estimate. But while this new system of indicative GDP targets gives both the central and local governments flexibility to focus on social or environmental goals rather than simply seeking growth, it complicates targeting emission reductions, given that China’s key climate targets are pegged to economic performance. Since the draft does not include a carbon emissions cap, and continues to set energy intensity and carbon intensity targets per unit of GDP, with continued economic growth through 2025, carbon emissions will still rise every year⁵.

At the same time, the Plan states that carbon intensity controls will be ‘supplemented’ by controls on total emissions. This confusing wording suggests that while the government is looking to control and reduce emissions, it remains concerned about the impact of the pandemic on economic growth and is therefore avoiding issuing emissions quotas in a top-down manner. Indeed, a top-down approach could also face local resistance⁶. Moreover, mandatory top-down instructions have in the past backfired when local officials needed to reach targets and resorted to cutting off power supplies, as was the case in Zhejiang province in the winter of 2020. This time, therefore, provinces are expected to set their own individual targets although some may set conservative goals in order to meet and even exceed them.

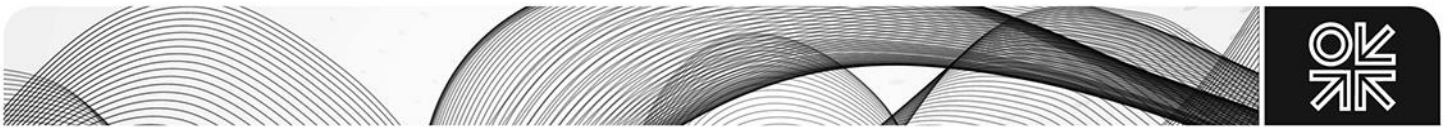
Nuclear gets a mention but only a few technologies get a clear nod

The Plan also includes a target for nuclear capacity to reach 70 GW in 2025, from 52 GW currently. Even though this is less than the increase between 2015 and 2020—when capacity doubled—there is less capacity under construction currently. Interestingly, this is also the only explicit capacity addition target, suggesting that new project approvals could accelerate rapidly. The push for nuclear is

⁴ “Q&A: What does China’s 14th ‘five year plan’ mean for climate change?”, Carbon Brief, <https://www.carbonbrief.org/qa-what-does-chinas-14th-five-year-plan-mean-for-climate-change>

⁵ Lauri Myllyvirta calculates that, on average, China’s carbon dioxide emissions rose by 1.7 per cent every year during the 13th FYP period (2016-2020). Despite low economic growth last year, emissions increased by 1.5 per cent year on year, approaching 10 billion tonnes in total. Assuming China’s GDP grows at an annual rate of 5.5 per cent from 2021 to 2025, carbon emissions will still rise by 1.1 per cent each year. <https://energyandcleanair.org/china-14th-five-year-plan-carbon-neutrality/>

⁶ “Q&A: What does China’s 14th ‘five year plan’ mean for climate change?”, Carbon Brief, <https://www.carbonbrief.org/qa-what-does-chinas-14th-five-year-plan-mean-for-climate-change>



confirmed also in the industrial elements of the Plan, that call for promoting the research and development of key components of nuclear power plants⁷.

On the technological front, the Plan emphasises the development of high-end new materials, intelligent manufacturing among other areas, noting in particular a desire to enhance China's capabilities in producing gas turbines, large LNG ships as well as deep-sea oil and gas production platforms. The Plan also discusses new energy vehicles, as well as smart (connected) vehicles, noting the need to promote break-through technologies including high safety power batteries, high performance power systems and both the software and hardware systems for smart vehicles. Many of these areas will be detailed in forthcoming sectoral and industrial plans. The plan also intends to develop and expand strategic emerging industries, including hydrogen energy and energy storage.

⁷ 14th FYP, page 22

Policy Tensions Facing China as it Develops its Five-Year Plan for Energy

Philip Andrews-Speed

On 5 March 2021, the Chinese government published a draft of the main goals of the 14th Five-Year Plan and its 2035 long-term vision⁸, which was then approved by the National Peoples' Congress the following week. This broader Plan will be followed up with a Five-Year Plan for Energy later in 2021 or possibly early in 2022. As the policy makers draft the Energy Plan they will face a number of tensions between different objectives, especially between the energy sector and other sectors. Some such tensions are already evident from the text of the overarching Plan, but how the trade-offs will be managed will only be revealed, if they are even addressed, in the sector-specific Plans.

All governments face such tensions when formulating energy policy. These tensions may lie between different priorities for energy policy such as security of energy supply, emissions reduction, social equity and economic efficiency. Further, tensions are also likely between energy policy and policies for other sectors, for example economic, industrial, environmental and foreign policies. Nevertheless, some preferences may be mutually supporting. For example, China's renewable energy policy has clearly benefitted from the country's industrial policy.

In September 2020, President Xi Jinping pledged that greenhouse gas emissions would peak before 2030 rather than just "around" 2030 and, second, that the country would strive to achieve carbon neutrality by 2060.⁹ The President followed this up in December 2020 by announcing to the United Nations that the 2030 ambitions for the country's Nationally Determined Contributions were being raised: the carbon dioxide emissions per unit of GDP would decline by 65% from 2005 levels, compared to the original commitment of 60-65% made in 2015; and the share of non-fossil fuels in the energy mix would rise to 25%, compared to 20% in the initial commitment.¹⁰

Also in December, the State Council issued its "Energy in China's New Era" which pulls together many themes that had been aired earlier in the year as well as longer standing priorities, including: energy efficiency and conservation, boosting domestic energy production of all types including the need to be more self-sufficient in oil and gas, promoting cleaner energy, pushing forward with competitive energy markets, and letting markets set energy prices.¹¹ Below, we highlight five contradictions that will plague the upcoming FYP.

Can China boost energy supplies for economic growth while reducing reliance on fossil fuels?

One of the key challenges for China's leadership remains to keep economic growth high enough to maintain employment and social stability, but at the same time move from high-speed growth to high-quality growth by raising domestic consumption and reining in energy-intensive industries.

However, the pace and energy-intensive nature of the economic recovery from COVID-19¹² combined with Xi's proposal that GDP should double by 2035¹³ will make it difficult for the planners to reconcile these trends with the low-carbon pledges. The fastest way to boost energy supply in the short term is with fossil fuels. Beyond that, massive expenditure will be needed in support of innovation and the deployment of renewable energy, energy storage and carbon capture.

⁸ The draft is available here (Chinese) http://www.xinhuanet.com/politics/2021h/2021-03/05/c_1127172897.htm

⁹ Farand C, Darby M. Xi Jinping: China will aim for carbon neutrality by 2060. *Climate Change News*, 22 September 2020, <https://www.climatechangenews.com/2020/09/22/xi-jinping-china-will-achieve-carbon-neutrality-2060/>

¹⁰ Xinhua News Agency, Full text: Remarks by President Xi Jinping at Climate Ambition Summit, 12 December 2020, http://www.xinhuanet.com/english/2020-12/12/c_139584803.htm

¹¹ http://www.xinhuanet.com/english/2020-12/21/c_139607131.htm

¹² Shepherd, C. and Hale, T.. China's economic recovery jeopardises Xi's climate pledge. *Financial Times*, 20 November 2020. <https://www.ft.com/content/d452aef8-9fd7-422a-a034-4558f0e66e53>

¹³ Pettis, M. Xi's aim to double China's economy is fantasy. *Financial Times*, 23 November 2020. <https://www.ft.com/content/8cc6f95e-89c2-4bf3-9db3-eafd481f1f37>

Can China sustain its domestic energy production if SOEs reduce non-commercial obligations?

Within the energy agenda, a number of priorities expressed by the leadership in 2020 create potential tensions with priorities in other sectors. The aims of producing more domestic energy of all types and reducing dependence on oil and gas imports introduces two particular challenges. The first relates to industrial policy. The leadership has been encouraging state-owned enterprises of all types to become more commercially-oriented and has floated the possibility of creating a holding company like Singapore's Temasek Holdings that would more clearly separate the government from the SOEs and a reduction of their non-commercial obligations.¹⁴ However, most of China's remaining oil and gas reserves are likely to be of marginal commercial value, at best. These are not attractive targets for national oil companies that are supposed to shed their non-commercial obligations. If the five-year plan follows precedent, it will include targets for domestic fossil fuel production and the main actors responsible will be the SOEs.

Self-sufficiency, environmental policy and liberalisation efforts

The desire to constrain oil imports threatens to undermine environmental policy. As road transport undergoes electrification, the future source of demand growth for oil will be from petrochemicals. As a result, Chinese companies are accelerating their construction of facilities to transform coal into chemicals. These processes require large amounts of water and emit high levels of greenhouse gases. To ameliorate the environmental impacts, companies will have to invest heavily in water recycling and carbon capture. Not only will this undermine the commerciality of the projects, but they will also require more energy, most probably in the form of coal.

Tightening control over oil and gas imports also conflicts with the liberalisation agenda that has in recent years involved allocating oil import rights to non-state actors and granted third party access to natural gas infrastructure such as LNG regasification terminals.

Will market reform undermine China's ability to meet targets?

Efforts to introduce market forces to the energy sector date back to the 1990s. The slow progress can be attributed to the influence of the state-owned energy companies on the policy-making process, natural caution of the part of the leadership, and the ability of local governments and energy companies to undermine or distort the roll out of new market measures. Given the current leadership's preferential support for the state-owned industries and the non-commercial obligations placed on the energy companies, it is far from clear that the energy markets will achieve their potential economic benefits. The same argument applies to the new national carbon market. Central or local governments are almost bound to step in if prices threaten either social stability or the commercial viability of key SOEs, especially local enterprises.

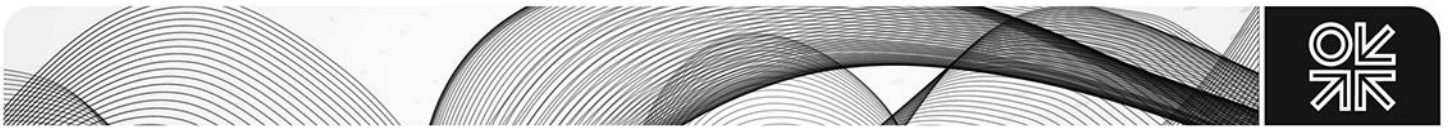
How will China factor in foreign policy into its energy policy?

Energy policy also interacts with foreign policy in a number of ways. Two current examples are illustrative. The trade agreement struck between China and the United States in January 2020 included obligations on China to purchase from the US a substantially greater amount of energy commodities in terms of value, namely US\$27.6 billion in 2020 and US\$ 43.0 billion in 2021. Yet the value of the energy imports in 2020 fell below the target¹⁵. Meeting the target for 2021 will be even more challenging as China seeks to constrain oil and gas imports.¹⁶ However, it remains to be seen whether the new US

¹⁴ The State Council has approved the Temasek-style form of Chinese state-owned enterprises. 11 October 2020, <http://caifuhao.eastmoney.com/news/20201011180928395324290> (in Chinese) [accessed 12 October 2020].

¹⁵ Chad Brown, "US-China phase one tracker: China's purchases of US goods in 2021", 1 March 2021, PIIE, <https://www.piie.com/research/piie-charts/us-china-phase-one-tracker-chinas-purchases-us-goods>

¹⁶ <https://www.reuters.com/article/us-column-russell-commodities-china-usa-idUSKBN29Q185>



administration will press China to adhere to this requirement and how this will impact any potential coordination or collaboration on climate change.

The second example is China's decision in October 2020 to ban the import of coal from Australia due to deteriorating bilateral relations. This may have had a short-term impact on thermal power stations along China's coast which rely on high quality Australian coal. In the meantime, trade flows have re-orientated, but many ships carrying Australian coal remain stranded outside Chinese ports. To compensate, China has increased its imports from Mongolia and Indonesia and urged domestic miners to boost output.

In summary, two components of China's current energy policy threaten to undermine the more progressive agenda. The push for greater self-sufficiency in energy supply and the continued dominance of the SOEs in the energy sector lie in apparent contradiction with the promotion of market forces and the environmental objectives. It is possible that these tensions will be neatly resolved by the upcoming Five-Year Plans, both the overarching one and the one for energy, but past practice suggests that this will not be the case.

China's political framework: who will oversee carbon neutrality?

Michal Meidan

China's pledge to reach carbon neutrality by 2060 is nothing short of monumental. For a country that relied on fossil fuels for 84 per cent of its primary energy in 2020, the structural shifts that this pledge implies are substantial both from an energy systems perspective and in terms of economic¹⁷ and political power structures. The fossil fuels industry is a large employer and provider of tax revenue as well as a key political stakeholder. China's state-owned enterprises (SOEs) are dominant in the energy sector¹⁸: they enjoy priority access to state-owned bank lending and benefit from rapid project approval, especially if this coincides with local government priorities such as stimulating growth and employment. In addition, local governments can at times pursue their own interests, putting them at odds with Central government mandates¹⁹. Put differently, the impetus for the kind of dramatic change that the energy transition entails will require clear political signalling as well as some administrative and bureaucratic changes.

The Party's recent criticism of China's National Energy Administration (NEA)—the country's *de facto* energy regulator—for failing to properly implement environmental protections suggests such change could be forthcoming. Whether the government upends some of the existing political power structures, by elevating the power of the Ministry of Ecology and Environment (MEE), by improving coordination with the all-powerful National Development and Reform Commission (NDRC) and/or by creating new leadership groups at the Party level—which remains the country's top decision making body—will be indicative of the level of political ambition to implement deeper change.

Greening China's political set up

China's energy administration is fragmented, with a number of government and Communist Party organs in charge of decision making and implementation²⁰. Historically, the NDRC has been the dominant agency in energy and climate policy, with oversight over planning and pricing, and initially over climate negotiations. The NDRC also houses the National Energy Administration, the *de facto*, albeit weak, energy ministry created in March 2008²¹. Over the years, though, as air quality and pollution concerns have become more prominent, the environmental protection agency has gained power, having started off as a national environmental protection agency²². In 2008, it was promoted to a cabinet-level ministry, the Ministry of Environmental Protection (MEP), and was in charge of formulating and implementing environmental protection plans, policies and standards.

While its status strengthened over time, it shared responsibilities with other ministries for air and soil quality monitoring and importantly, even though the MEP was responsible for air pollution control, the NDRC was dedicated to controlling greenhouse gases and combating climate change. Ultimately,

¹⁷ As we have argued previously, the need to adapt China's industrial structure among others are also key drivers of the pledge, Michal Meidan, "Unpacking China's 2060 carbon neutrality pledge", OIES Comment, December 2020, <https://www.oxfordenergy.org/publications/unpacking-chinas-2060-carbon-neutrality-pledge/>

¹⁸ P. Andrews-Speed, S. Zhang, *China As a Global Clean Energy Champion: Lifting the Veil*, Palgrave MacMillan, Basingstoke (2019)

¹⁹ Philip Andrew-Speed, "Power sector reform in China: Markets constrained by the State", Oxford Energy Forum no 125, <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/09/OEF-125-1.pdf>

²⁰ For a comprehensive discussion on the energy administration and the State-Party system see Craig Hart, Zhu Jiayan, Ying Jiahui, "Mapping China's Climate & Energy Policies", December 2018; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786518/China_Climate_Map_Public_Secured_2019-3-1.pdf

²¹ Erica Downs, "China's 'New' Energy Administration", *China Business Review*, November-December 2008, pp. 42-45

²² A leading group is usually set up in order to facilitate inter-ministerial coordination. There are such groups both under the auspices of the State Council—China's government—and under the Party. For an overview of leading groups and their importance see Alice Miller, "More Already on the Central Committees Leading Small Groups", *China Leadership Monitor*, no 44, 2013, <https://www.hoover.org/sites/default/files/research/docs/clm44am.pdf>; Christopher K. Johnson, Scott Kennedy, "Xi's Signature Governance Innovation: The Rise of Leading Small Groups", CSIS, 17 October 2017, <https://www.csis.org/analysis/xis-signature-governance-innovation-rise-leading-small-groups>; Nis Grünberg, "The CCP's nerve center", MERICS Short analysis, 30 October 2019, <https://merics.org/en/short-analysis/ccps-nerve-center>



bureaucratic fragmentation and overlapping responsibilities led to a lack of coordination and ineffective regulation²³. In a bid to address this, in March 2018, the MEP was replaced with the Ministry of Environment and Ecology (MEE) which integrated a number of additional responsibilities spread throughout different agencies including NDRC climate change mitigation efforts. Yet despite the MEE's elevated status, it remains less influential than the NDRC especially at the local level²⁴.

Since the climate neutrality pledge, there have been subtle signs of change, with the MEE looking to take the lead on climate policy. Since January 2021, the MEE has been highlighting its efforts and role in the 2030 peak carbon goal, alongside its efforts to tackle pollutant emissions²⁵. MEE is also working to integrate the carbon market allowance registry with its existing pollutant permit database. Finally, China's re-appointed climate negotiator Xie Zhenhua will be supported by a new Office for Climate change affairs, housed under the MEE and led by the Deputy minister of Environment and Ecology. The office will reportedly liaise with the NDRC, the Ministry of Foreign Affairs and other departments²⁶. Going forward, then, it will be important to watch to what extent this new office and indeed the MEE more broadly will drive the climate agenda, and how the balance of powers with the NDRC will be managed. The NDRC has historically resisted transferring powers and may want to take the lead on the carbon neutrality agenda. A stronger MEE or a recentralisation of climate change policy under NDRC will be indicative of a stronger climate agenda in the government, but if both bureaucracies are given greater power over parts of the energy and climate agendas, coordination will be key.

A party within the Party?

Issues of utmost political importance tend to be managed by a leading group, either under the State Council or the Communist Party, with the latter suggesting a higher degree of importance. In this context, reports in early February that China's relatively obscure Central Environmental Inspection Team (CEIT)²⁷ criticised the NEA for failing to limit the country's expansion of coal power plants point to further potential change. The inspection report charged the NEA of 'falling behind' on promoting the development of low-carbon energy; accused it of a 'deteriorated political ecology' and for 'failing to strictly control the excess coal power capacity in key areas of air pollution, prevention and control'.

The criticism was striking for three reasons: first, the harsh vocabulary used, second, because this is the first time a central government agency has been inspected and openly rebuked for its actions. Finally, because the CEIT is now an inspection group under the Party, after having been placed under the State Council initially. Any signs of change within the NEA and MEE will be indicative of the changing balance of power, for instance whether the MEE is given greater human and financial resources, as well as stronger administrative authority. Moreover, the power of the CEIT will be important to monitor: Currently, the CEIT is an implementing body, but its remit could be expanded, or a new leading group could be created to coordinate policy planning going forward. Whether such a group is created and Han Zheng—the current energy and environment czar—runs it, will show considerable more attention to the environmental agenda.

²³ Jinpeng WANG, "Reform of China's Environmental Governance: The Creation of a Ministry of Ecology and Environment", *Chinese Journal of Environmental Law*, Volume 2: Issue 1, July 2018, <https://doi.org/10.1163/24686042-12340026>

²⁴ Michael Davidson, "Creating subnational climate institutions in China", December 2019, <https://www.belfercenter.org/sites/default/files/files/publication/davidson-china-paper%20designed-version-3.pdf>

²⁵ Thanks go to Yan Qin for pointing this out. See for example, <http://www.chinanews.com/gn/2021/01-13/9386305.shtml>;

²⁶ Xie Zhenhua appointed as China's special envoy for climate change (Chinese), *China Environment News*, 25 February 2021, https://www.cenews.com.cn/news/202102/t20210225_970780.html?from=singlemessage&isappinstalled=0&mc_cid=bc2fdc16f&mc_eid=1f5ebaac4b

²⁷ The CEIT was formed in 2015 by China's top leaders to monitor the implementation of environmental protection with Xi Jinping, reportedly, personally initiating the initiative and was placed under the State Council. It started off as an inspection group but in 2019 was upgraded and placed directly under the Party's CCCPC. Inspection targets were also expanded to include relevant departments of the State Council and state-owned enterprises (SEOs), with an instruction that the inspections operate on a five-year cycle.



The long-awaited national carbon market: big news, limited near term impact

Yan Qin

2021 is the year when China will launch its national emissions trading scheme (ETS). While the country has already made progress toward the rollout of the ETS, its official launch is a significant development, formalising President Xi Jinping's announced plans to launch a nationwide carbon market during a 2015 bilateral meeting with former US president Barack Obama, and following on his more recent climate pledges. 2021 will therefore be significant as it is the inaugural year for the regulatory set up and initial trading. In addition, this year, the medium- and long-term roll out plans will be developed and included in the 14th Five Year Plan as well as longer term vision documents. But even though this is a significant step for China, in the near term, the focus will be on improving emissions data-monitoring and reporting. The impact on emissions in the power sector will be limited.

What is in the ETS?

The ETS launch was announced on 5 January 2021, when the Ministry of Ecology and Environment (MEE) released the Interim Administrative Measures for Carbon Emissions Trading Management²⁸, which then came into force on 1 February 2021. Since power and industry account for near 80 per cent of China's yearly CO₂ emissions, China's carbon market is expected to play an important role in fulfilling the country's pledge of peaking emissions before 2030 and achieving carbon neutrality before 2060. Indeed, the covered emissions of China's national carbon market are estimated to be three times that of the European carbon market, making it the largest carbon market in the world.

According to the final national ETS allocation plan, which was published on 30 December 2020, the ETS will cover 2,225 enterprises consisting of coal and gas plants. Reportedly, the first compliance cycle of China's ETS began on 1 January 2021, covering 2019-2020, meaning that compliance is backdated to January 2019. This is mainly due to delayed 2019 emissions data reporting and a potential bias in 2020 data due to COVID outbreak. In 2019, China's coal-fired power generation was 4,560 TWh, rising slightly to 4,630 TWh in 2020, meaning that total covered emissions are estimated at around 8 Gt for the 2019-2020 compliance period.

But in contrast to the existing cap and trade scheme globally, China's ETS sets an intensity-based target instead of an absolute cap, with the entire ETS freely allocated. The benchmarks, based on which allocations are calculated, were released in December 2020²⁹. The values vary according to fuel type and capacity class, but are roughly in line with the average emission factor of the majority of the thermal fleet. The aim at present is to encourage participation in the first compliance cycle and for the regulator to collect historical data and test the system. Going forward, more sectors will be added to the ETS (by 2025), the allocation will likely be tightened and an absolute cap could be introduced to replace the intensity target, albeit more likely after 2025. But this year, the ETS will have a limited impact on emissions in the power sector, given the generous benchmarks, intensity-based target and expected growth of 6-7% of power demand in 2021. By the end of this year, power companies will need to be in compliance with historic emissions in previous two years, although gas plants have no compliance obligation in this first compliance cycle.

The next step will be for trading to begin. Participating enterprises need to receive their allowance balance for this first compliance period in the registry. The provincial environment bureaus are responsible for allocating allowances to enterprises covered in their jurisdictions, a process that is well underway as the MEE required provincial bureaus to submit data by 29 January. They were then mandated to calculate total allocations in February and issue allowances in the national ETS registry. Hubei province is hosting the national ETS registry and Shanghai is responsible for the national trading platform. The construction of both systems has reportedly been completed and is now undergoing testing, with some power companies already agreeing bilateral trading deals based on their own

²⁸ http://mee.gov.cn/xxgk2018/xxgk/xxgk02/202101/t20210105_816131.html

²⁹ http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/t20201230_815546.html

preliminary calculation. They are expected to be in a position to conduct trades quickly upon final confirmation of their allocation, likely in Q2 21.

A number of open questions still remain

An additional question will be the price level: China has implemented pilot ETS in 7 provinces since 2011. However, trading volumes have been low and allowances price have stayed between €1-15/t in the past years, with the highest prices recorded in Beijing. According to the *'2020 China Carbon Pricing Survey'* report conducted by China Carbon Forum in 2020, their 567 respondents expect price in the national ETS to start at CNY 49/t (€7.5/t), roughly the mid-point of the traded prices in the pilot ETS, which in turn, would be only one-fifth of allowance prices in the European carbon market, at around €38/t.

It will also be interesting to see how the existing pilot ETS will transit to the national ETS. The 5 January ETS Measures stated that the enterprises in the pilots shall opt into the national ETS. But the allocation plan specifies that power companies do not have to comply with the national ETS if they have completed their 2019 and 2020 allocation. This could slash the yearly allocation by 500 Mt. To date, all the pilot ETS schemes have completed their 2019 allocation, with only Guangdong, Tianjin and Fujian also conducting their 2020 allocation, but it remains unclear whether or not they have already transferred allowances to covered entities. As a result, it is unclear if the national ETS will cover the 2020 emissions of power companies in these three pilots.

Finally, the eligibility criteria for China certified emissions reduction (CCER) for compliance remain an open question. The 5 January ETS Measures stated that covered entities can use projects in renewable energy, carbon sinks, methane utilization, and others for reducing up to 5 per cent of their yearly verified emissions. Power enterprises are likely to fully use the offset limit, suggest a large increase in CCER demand this year. China has vowed to increase total installed capacity of wind and solar to 1200 GW by 2030, up from its current 530 GW. With renewables in China largely moving to grid parity from next year, CCER from renewable projects could be indirect subsidies for solar and wind project developers, if these are included in the CCER eligibility criteria.

A key signpost to watch in 2021 is whether the Carbon market regulation moves further up in the legislative hierarchy: Currently the 5 January Measures are a ministerial-level regulation, meaning that the ETS non-compliance fine is low, constrained by the levels set in the environmental protection directives (or 2,500-3,500 euros, against 100 euros/ton in the EU ETS). On 13 January, MEE released its *'Guidance on overall planning and strengthening Climate change and Ecological environment protection work'* which emphasises the establishment of the Emissions Trading Regulation, moving compliance also under the purview of the State Council, which ranks above the MEE. When this becomes State Council regulation, the ETS implementation will be more robust as penalties will be higher.

A refined outlook for crude

Michal Meidan

China was a bright spot for oil markets in 2020. Despite the COVID-19 economic-induced shock in the first quarter, China's crude imports averaged 10.9 mb/d last year, a 0.76 mb/d increase from 2019 levels (7.5 per cent) and close to their 2019 increment of 0.88 mb/d (9.5 per cent). But even though crude buying was extremely strong, refinery runs and end product demand grew more slowly. 2020, therefore, was mainly about storage. Going into 2021, higher global crude prices expected this year suggest that stockpiling will slow, while new refining starts will shape crude import patterns. But looking ahead, to the next Five-Year Plan period, how much more stockpiling can be expected from China, and will the country's efforts to peak emissions by 2030 weigh on new refining starts?

China's crude hangover

In 2020, even before China had fully emerged from lockdowns, crude buying surged due to low international crude prices. While refinery runs and product demand recovered later in the year, we estimate that China managed to accumulate 300-350 mb of crude stocks, nearly doubling its Strategic Petroleum Reserves (SPR).

But even though China may now hold over 1 billion barrels in tanks, it is not yet hitting tank tops or meeting its 90-day strategic forward cover target because when accounting for refiners' 15-day forward cover, pipeline fills and other operational stocks, China now holds around 60 days of strategic stocks. With another 30-days-worth to fill (be they in designated SPR tanks or commercial storage), only a small part of the crude accumulated in 2020 will come back into the market. At the same time, since China has essentially doubled its forward cover in 2020, there is less urgency to stock in 2021 and its overall stockpiling needs through 2025 are likely to slow, barring a mandate to increase forward cover to 180 days. So far, though, the 14th FYP states that China will 'strive to increase the storage and production of oil and gas', without attaching specific numbers to that. So the main driver of crude purchases going forward will be refinery runs and new capacity starts.

Is the year of the Ox a reason to be bullish?

In 2020, both crude and product stocks built, as end-product demand recovered at a softer pace. We estimate implied demand reached 13.4 mb/d in 2020, growing by 0.35 mb/d from 2019 levels, compared to a 0.55 mb/d increase the previous year. While the actual recovery in demand remains unclear, given the lack of product storage data, macroeconomic indicators and activity suggested a strong rebound, with most of the demand coming from the real estate and industrial sectors, as well as from chemicals.

The question now is whether the Chinese economy will expand by closer to 7 or 9 per cent. This will depend on a number of factors including the success of the COVID-19 vaccine roll-out as well as government policies to manage the recovery. In the government report this year, Premier Li Keqiang set an 'over 6 per cent' GDP growth target for 2021—despite suggestions the government may forego an official target this year. The target, however, is relatively modest with most forecasts expecting the Chinese economy to grow more rapidly. The International Monetary Fund (IMF), for example, expects China to grow 8.1 percent in 2021. In keeping with this figure, a number of provinces and municipalities have already published their targets for 2021, with Beijing, Shanghai and Guangdong all suggesting their GDPs will expand by over 6 per cent. In the context of China's strong post-COVID-19 economic recovery, the relatively soft GDP targets point to caution. Both central and local officials are looking to prevent the economy from overheating by focusing on high quality growth and dialling back fiscal support. Moreover, deteriorating local government finances and concerns about mounting public debts could lead local governments to slow infrastructure projects.



Economic recovery will drive refinery runs

Despite some fine tuning to policy support, we still expect end product demand to rise by around 0.70 mb/d y/y in 2021, with chemicals and transport fuels leading growth even as demand for industrial fuels moderates as fiscal policy tightens. But the question in 2021—and more broadly in the coming Five Year Plan—will be the outlook for refining in light of the changing policy environment. The Chinese government's ambition to peak carbon emissions before 2030 and reach carbon neutrality by 2060 is starting to show up in policy documents, but has yet to filter through to oil companies' planning. Back in December 2020, China's state-owned majors, CNPC and Sinopec, forecast that China's refining capacity would reach 20 mb/d in 2025, from just under 18 mb/d in 2020. But on 22 February 2021, China's state council issued a circular calling for green, low-carbon and circular development. In it, the government announced its plans to transform the industrial structure and energy mix with the aim of reducing emissions and pollution from the manufacturing, energy and transportation sectors by 2025³⁰. Earlier studies have showed that in order to cap China's carbon emissions by 2030, it will need to cap refining capacity at under 19 mb/d³¹.

To build or not to build greenfield refineries?

But somewhat counterintuitively, the government's February circular may not prevent new refining projects from starting up over the next few years, and there is at least 1.2 mb/d of planned capacity additions through 2023. If anything, refiners are looking to accelerate construction of large greenfield refineries which will focus on higher quality fuels and petrochemical integration, in line with the government's desire to reduce its reliance on imported chemicals. This year's planned capacity additions tick these boxes. Achieving peak emissions will then require shutting older, less efficient capacity, a political hot potato that local officials may choose to implement selectively. The Shandong authorities, for example, are planning capacity closures in the province but these will be offset by the construction of the 0.40 mb/d integrated Yulong project³².

Overcapacity in China's refining sector will continue, but tougher environmental regulations could mean more closures in the coming years, although these could impact both Shandong teapots and some of the state-owned majors' less efficient assets. Indeed, all of the planned and operating private mega-refineries have lower transport fuel yields than their state-owned peers, which average around 60pc gasoline, diesel and jet. Some of the majors' upgrades are focusing on reducing transport fuel yields, but with competition in key provinces such as Shanghai, Zhejiang and Jiangsu—where the mega-refineries are starting to market products—intensifying, some of the majors' plants may also be challenged. Still, net capacity additions could still grow, even though China's demand for gasoline and diesel is set to peak by the mid-2020s. Indeed, the 14th FYP mandates increased use of railway and water-based transportation, as well as the ongoing electrification of urban public transport and logistics vehicles. Specific plans—both sectoral and provincial—will show to what extent the electrification programme will be accelerated under the 14th FYP, but the overarching trend is greening transport, which in turn will weigh on diesel and gasoline use.

An oversupply of oil products and increasingly chemicals is likely. But how this impacts global markets will depend on the government's liberalisation agenda and price reforms. As long as product exports remain heavily regulated, gaining market share in the domestic market will remain refiners' top priority, especially with margins guaranteed by the domestic product pricing mechanism. But if the government opens up product trading and liberalises prices, refiners' calculus will change. Their competitiveness will be tested and while product markets assume this will mean a flood of product exports, it could also mean a stronger inflow, and a more rapid rationalisation of domestic capacity. That is perhaps the reason why the next five-year plan could still maintain some control over trading and prices.

³⁰ http://www.gov.cn/zhengce/content/2021-02/22/content_5588274.htm

³¹ 2020 China oil cap project, <http://www.nrdc.cn/work?cid=90&cook=1>

³² China's Shandong province trims refining capacity, Argus, 22 January 2021

Is the 14th FYP China's golden age of gas?

Michal Meidan

The Chinese government has now issued the 14th FYP, outlining the overarching goals for the country's macroeconomic development. Specific sectoral goals for natural gas will be unveiled later on, but a number of government statements are already offering insights into the priorities that will inform the supply and demand of natural gas over the coming years, but also to some of the tensions that gas development faces. Two main themes stand out as impactful for the gas market, pointing to ongoing demand growth. The first policy priority is accelerating the country's low carbon transition and the second is the need to beef up energy security.

Following President Xi Jinping's pledge in September 2020, that the country will aim for carbon emissions to peak by 2030 and achieve carbon neutrality by 2060, the Chinese bureaucracy continues to work to translate these ambitions into policy steps with the 14th FYP offering only initial (and arguably unambitious) indications of how China aims to decarbonise its economy. Many feasibility studies on the pathways to carbon neutrality in 2060 suggest that for the coming decade, China's energy consumption and emissions will continue to grow, with natural gas and oil demand still rising. What is more, as the share of renewables in the power mix grows - likely more rapidly than expected before the 2060 pledge - the need for flexible power sources such as natural gas will also increase. And with greater urgency to phase out the use of coal in industrial, commercial and residential applications, the coal-to-gas switch will likely continue, supporting demand for natural gas. That said, the FYP mentions switching from coal to electricity, and sets a goal of reaching 70 per cent clean heating in northern China (compared to around 50 per cent currently) and while some coal-to-gas switching will be needed in order to reach these targets, coal-to-gas was not mentioned. Still, more detailed guidance will emerge with the gas-specific plan.

A focus on domestic production and infrastructure

The 14th FYP also specifies that China should 'strive to increase the storage and production of oil and gas' and 'accelerate the construction of natural gas network pipelines'—consistent with the priorities of the previous plan. But given the need to tackle air pollution and cut CO₂ intensity, and in light of the government's focus on developing its rural areas, its 'No. 1 document' for 2021³³ lists 'promoting natural gas to enter rural areas' as part of the clean energy infrastructure project. In the current FYP, gas seems likely to benefit from its role as a transition fuel, although longer-term, it could fall out of favour as China looks to cut carbon emissions more steeply.

CNPC, China's largest oil and gas company, expects natural gas consumption to reach around 420 bcm in 2025, slightly lower than our estimated 450 bcm of demand, and to reach 600 bcm by 2035 - against our 630-650 bcm forecast for that year. Still, the outlook remains one of ongoing growth in gas use, albeit at slower rates than over the past decade. It remains to be seen whether the gas 14th FYP will introduce a target for the share of gas in the energy mix for 2025, as it did for the 13th FYP. For the 2016-2020 period, the government aimed for natural gas to account for 10 per cent of the energy mix but this was later revised down to 8 per cent, a goal that has been met. At the same time, the government's outlook for domestic production in the 13th FYP - seeking to reach 200 bcm of domestic output including 30 bcm of shale - has not been met, suggesting that the government could issue vaguer goals for the next plan. Interestingly, the 14th FYP includes, for the first time, a binding target for domestic energy production to exceed 4.6 billion tons of standard coal, but includes all forms of energy, including renewables.

Liberalisation a boon for LNG

While the low carbon transition points to ongoing increases in gas use and to a growing role for gas in power, other government priorities suggest some structural changes in the market, including a stronger

³³ This is the first policy document of the year, which typically tackles issues related to agriculture and the rural economy.

position for independent buyers. These changes, in the near term, could support LNG at the expense of pipelines. Government documents and statements issued at the end of 2020 highlight the importance of supply security, as does the production target in the FYP. But the government's view on the paths to achieving reliable supplies has evolved. Traditionally, supply security policies focused on limiting import dependency by stressing both overland and seaborne import routes while maintaining strong domestic production. Even as these remain the premise of supply security, policy makers are emphasising supply diversification, which they reiterate in the FYP, by noting the need to prioritise oil and gas exploration and development, including gas hydrates, emphasizing also coal-to-gas production. Other policy statements, and the focus on market liberalisation, point to a need to diversify *suppliers*, the need to develop adequate infrastructure and storage capacity as well as price reforms in a bid to add flexibility to the system. To that end, the creation of PipeChina, the state-owned midstream pipeline company will, over time, support third-party access and help the optimisation of gas imports into China, especially if price reforms continue and new exchanges support the domestic price discovery process.

Since the transfer of assets from the state-owned majors to PipeChina in October 2020, PipeChina's operations have been fraught with disaster, starting with a fire at the Beihai LNG terminal and severe winter shortages that the state-owned majors have reportedly blamed on PipeChina's inexperience. However, the new midstream operator has also enabled third-party access, with Chinese independent Jovo energy receiving an LNG cargo through PipeChina's Hainan terminal. PipeChina has also launched a platform through which all third parties can register as certified shippers and apply for pipeline transmission and LNG import capacity, with 1,000 companies reportedly applying by end-October 2020. In December 2020, it released details of 6.4 Mt of spare import capacity at six regas terminals for 2021, and since in early December, PipeChina reportedly started operations on the second domestic section of the Power of Siberia, running from northern Jilin to central Hebei, allowing it to ensure pipeline gas to the Beijing-Tianjin-Hebei area.

Going forward, as the operating and regulatory guidelines are clarified, third-party access to the midstream network will increase and given the addition of new import terminals, incremental LNG flows are likely to outpace additional pipeline arrivals. Already in 2020, the longer lag between oil and piped gas favoured contract LNG, but the wide discount of spot LNG values to oil-indexed prices spurred buyers with sufficient capacity to switch between the sources. As a result, China's LNG imports in 2020 exceeded 90 bcm, increasing year-on-year by a strong 14 per cent, even as pipeline flows fell by an estimated 5 per cent year-on-year. Going forward, with 8 Mtpa of new LNG import capacity starting up in late 2020, and at least 10 Mtpa of delayed terminals from 2020 set to come online in 2021, LNG flows will rise strongly. In 2021, we expect LNG imports to increase by a strong 14-15 bcm from 2020 levels.

But energy security suggests a more balanced supply outlook

Yet this will not be the case indefinitely. The government will want to balance the risks associated with seaborne imports with pipelines, as the Power of Siberia from Russia is expected to double flows to 10 bcm in 2021 and gradually increase to 38 bcm by 2025. Moreover, the state-owned majors, which will face stiffer competition in the LNG market, have already stated their intention to focus on domestic supplies of both conventional and unconventional gas. In 2020, domestic output rose by close to 15 bcm from 2020 levels (or 8 per cent), and we expect similar growth rates in 2021. The 14th FYP may not mandate output goals or a specific share for pipeline supplies in the import mix, but its emphasis on supply security will indicate to state-owned companies that a balance between supply sources must be struck.