NOVEMBER 2021

CHINA ENERGY POLICY
NEWSLETTER

Boosting Renewable Energy as Part of China's Energy Revolution

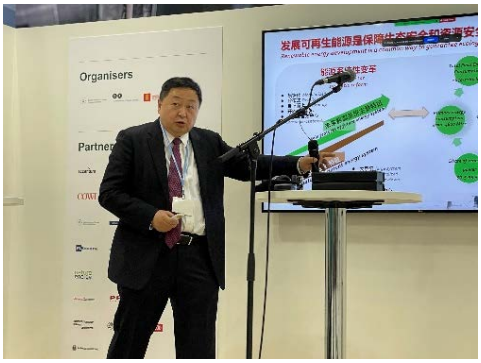
1. Project activities

China Energy Transformation Outlook 2021 presented at COP26 in Glasgow

On November 10, 2021, the Energy Research Institute of the Chinese Academy of Macroeconomic Research (ERI of AMR) together with the Danish Energy Agency (DEA) and the Center for Global Energy Policy at Columbia University (CGEP) presented pathways to fulfill the climate goals and reach carbon neutrality in China, Europe and United States. The event was hosted at COP26 in Glasgow with opening speeches from Xie Zhenhua, China Special Envoy for Climate Change and Dan Jørgensen, Minster of Climate, Energy and Utilities in Denmark.

"We are looking forward to have such a research that adopt scientific methodologies to simulate China's energy transition pathways and provide policy suggestions to the 2060 carbon neutrality vision."

—— Xie Zhenhua



Left photo: An Qi, Associate Researcher, ERI of AMR; Xie Zhenhua, China Special Envoy for Climate Change; Dan Jørgensen, Minster of Climate, Energy and Utilities in Denmark. Right photo: Wang Zhongying, Director General, ERI of AMR. Source: ERI of AMR, DEA, State of Green.

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Director General Wang Zhongying from ERI of AMR presented key findings of the upcoming China Energy Transformation Outlook 2021 (CETO 2021). The CETO serves as scientific based research input for Chinese national energy policy taking the temperature on China's green energy transformation. Its main purpose is to provide a long-term scenario view of the future Chinese energy system, and develop policy recommendations for cost-effective initiatives that could be implemented to reach the below 2-degree target in the Paris Agreement. The outlook shows that China is in a position where it can create the foundation for its energy revolution. A decoupling of economic growth from energy consumption is a precondition for China to become CO_2-neutral in 2060 while maintaining a sustainable economic growth.

The outlook is the first in a new line of publications building on top of ERI's China Renewable Energy Outlooks (CREOs) published yearly since 2016. The new outlook incorporates a more comprehensive analysis of the Chinese energy system than in the previous CREOs. The CETO 2021 executive summary and the full report will be available for download later this year.


Left photo: Kristoffer Böttzauw, Director General of DEA. Middle photo: Kaare Sandholt, Chief International Expert at Center for Renewable Energy Development, ERI of AMR; Wang Zhongying; Anton Beck, Director of Centre for Global Cooperation, DEA; David Sandalow, the Inaugural Fellow of CGEP. Right photo: Kaare Sandholt. Source: ERI of AMR, DEA, State of Green.

2. China energy transition updates

China officially submits an updated version of NDC

On October 28, 2021, China officially submitted to the UNFCCC the ***China's Achievements, New Goals and New Measures for Nationally Determined Contributions*** and ***China's Mid-Century Long-Term Low Greenhouse Gas Emission Development Strategy***.[1] These two documents set out China's latest measures to implement the Paris Agreement. The previous one is an update of the ***Enhanced Actions to Climate Change: China's Intended Nationally Determined Contributions*** submitted by China in 2015, which raises the 2005-2030 CO_2 emission intensity reduction target from 60%~65% to more than 65%, and puts forward relevant policies and measures; the latter illustrates the basic policy, strategic vision and technological path of China's long-term low-emissions development of greenhouse gases (GHG). The main objectives and implementation paths mentioned in the two documents are consistent with the *Carbon Peaking and Carbon Neutrality "1+N" Policy Framework*[2] documents issued by the Chinese government at the same time. For details, please refer to the third part of this newsletter.

[1] NDC Registry - China, UNFCCC, accessed in October 2021 at **https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=CHN&prototype=1**.

[2] *Carbon Peaking and Carbon Neutrality "1+N" Policy Framework* inlcudes a *Guidance* to cover systematic planning and overall deployment to achieve carbon peaking and carbon neutrality, and a series of programs to achieve the goals of the *Guidance*, including carbon reduction programs, carbon peaking implementation programs by sector and industry, as well as guarantee programs.

China releases a white paper on climate change for the second time

The State Council recently released the white paper ***China's Policies and Actions to Climate Change (2021)***, which is the second time China has released the white paper since 2011. This white paper points out that between 2005 and 2020:

1. Carbon dioxide emissions per unit of GDP has dropped by 48.4% compared to 2005, exceeding the committed target of 40% to 45%, basically reversing the rapid growth of carbon dioxide emissions
2. The proportion of non-fossil energy in primary energy consumption reached 15.9%, an increase of 8.5 percentage points than that in 2005, and the energy structure was significantly optimized
3. The proportion of coal in total primary energy consumption dropped from 72.4% in 2005 to 56.8%, and the dependence on coal consumption has dropped significantly
4. The government has launched a national carbon market, covering more than 4.5 billion tons of carbon emissions each year

The Ministry of Ecology and Environment (MEE) emphasized at a press conference that China is still facing difficulties and challenges in addressing climate change.[3] The government plans to spend about 30 years from carbon peaking to carbon neutrality. However, as a developing country, China has to balance economic development, pollution control and energy security while facing serious problems of unbalanced domestic development. The government is going to build and implement a mechanism that adopts carbon intensity control as the key task and total carbon emission control as supplement task. The MEE will actively implement the *Carbon Peaking and Carbon Neutrality "1+N" Policy Framework*, breakdown the goal of 18% reduction in carbon intensity during the 14th Five-Year Plan period to all provinces, prepare and issue the *Synergistic Implementation Plan for Pollution Reduction and Carbon Reduction, Interim Regulations on the Management of Carbon Emission Trading, National Climate Change Adaptation Strategy 2035* and other documents.

The government releases the 14th Five-Year pollution prevention and control *Opinion*

The CPC Central Committee and the State Council jointly released an Opinion to put forward key targets and tasks for pollution prevention and control in key regions and industries in the 14th Five-Year Plan period.[4] The goal is that by 2025, the total discharge of major pollutants across the country should continue to decline, heavily polluted weather and urban black and odorous water bodies will be basically eliminated, soil pollution risks should be effectively controlled, solid waste and new pollutants governance capabilities will be significantly enhanced, and the ecological environment continue to improve. By 2035, green production and green lifestyles should be widely formed across the country, carbon emissions will steadily decline after peaking, and the ecological environment will be fundamentally improved. Main goals to be achieved in 2025 include:

- The concentration of PM2.5 in prefecture-level and above cities across the country will be reduced by 10% compared to 2020, the ratio of days with good air quality will reach 87.5%, and the ratio of days with severe pollution will be controlled within 1%
- The proportion of surface water bodies of Type I to III reaches 85%, and the proportion of inshore waters with good water quality (Type I and II) reaches about 79%
- The total emissions of volatile organic compounds and nitrogen oxides will be reduced by more than 10% respectively compared to 2020, and study to include volatile organic compounds in the scope of environmental protection tax collection in a timely manner
- The discharge of key heavy metal pollutants in key industries nationwide will be reduced by 5% compared with 2020

[3] "全文实录丨国新办举行《中国应对气候变化的政策与行动》白皮书新闻发布会," Ministry of Ecology and Environment, 27 October 2021, accessed at **https://www.mee.gov.cn/ywdt/zbft/202110/t20211027_958087.shtml**.

[4] "中共中央 国务院关于深入打好污染防治攻坚战的意见," CPC Central Committee and the State Council, 12 November 2021, accessed at **http://www.gov.cn/xinwen/2021-11/07/content_5649656.htm**.

The *Opinion* sets 14th Five-Year targets for coal reduction

In terms of green and low-carbon development, the CPC Central Committee and the State Council's jointly released Opinion emphasizes to speed up the pace of coal reduction that under the premise of ensuring energy security.[5] During the 14th Five-Year Plan period, the government will strictly control the growth of coal consumption. Coal consumption in the Beijing-Tianjin-Hebei and surrounding areas and the Yangtze River Delta should drop by about 10% and 5% respectively, and coal consumption in the Fenwei Plain aims to achieve negative growth. In principle, no additional captive coal power plants shall be added, and encourage to replace the active units by clean energy. At the same time, China will continue to increase the proportion of electricity in final energy consumption, and the loose coal (*sanmei*) in the plains of key areas will be basically cleared.

NDRC quantifies the 14th Five-Year goals of coal power units retrofit

The power generation and heating industries are still the key industries of China's CO_2 emissions, accounting for more than 40%. During the 14th Five-Year Plan period, the National Development and Reform Commission (NDRC) requires new coal power projects to adopt ultra-supercritical units with coal consumption lower than 270 gce/kWh in principle, and reduce the national average coal consumption of thermal power to 300 gce/kWh or less by 2025. In addition, the government requires to continue the retrofit of energy-saving, heat-supply and flexibility of coal power units to improve energy efficiency and promote clean energy consumption.[6] The main objectives include:

- **Energy-saving retrofit** of 350 GW and above: coal power units that consume more than 300 gce/kWh for power supply should carry out energy-saving retrofits. Those that cannot be retrofitted should be shut down gradually, and some can be converted into emergency backup power sources.
- **Heat-supply retrofit** of 50 GW: retrofitting the condensing unit with heating conditions into the combined heat and power (CHP) unit.
- **Flexibility retrofit** of 200 GW: all active coal power units should be retrofitted to increase the power system's regulation capacity by 30-40 GW.

In 2020, the coal consumption of coal power plants with a capacity of 6 MW and above consumed 305.5 gce/kWh, which is 9.9 gce/kWh, 27.5 gce/kWh and 64.5 gce/kWh lower than that in 2015, 2010 and 2005 respectively. A total of 6.67 billion tons of carbon dioxide emissions from electricity generation were reduced from 2006 to 2020, which contributed 36% to the reduction of carbon dioxide emissions in the power industry.

[5] "中共中央 国务院关于深入打好污染防治攻坚战的意见," CPC Central Committee and the State Council, 12 November 2021, accessed at http://www.gov.cn/xinwen/2021-11/07/content_5649656.htm.

[6] "国家发展改革委 国家能源局关于开展全国煤电机组改造升级的通知，发改运行〔2021〕1519号," National Development and Reform Commission, National Energy Administration, 29 October 2021, accessed at **https://www.ndrc.gov.cn/xxgk/zcfb/tz/202111/t20211103_1302856.html?code=&state=123**.

China's Carbon Peaking and Carbon Neutrality "1+N" Policy Framework

Key takeaways for energy sector

In the end of October 2021, two weeks ahead of the UN Climate Change Conference of the Parties (COP26), the Communist Party of China Central Committee and the State Council jointly released a document titled *Working Guidance For Carbon Dioxide Peaking And Carbon Neutrality In Full And Faithful Implementation Of The New Development Philosophy* (hereafter refers to the *Guidance*), and the State Council released a document titled *Action Plan for Carbon Dioxide Peaking Before 2030* (hereafter refers to the *Action Plan*).

The *Guidance* and the *Action Plan* are the core policy documents of *China's Carbon Peaking and Carbon Neutrality "1+N" Policy Framework*, forming **multi-dimensional targets** and **multi-level task framework**. The Guidance is the "1" of "1+N", which is the systematic planning and overall deployment to achieve carbon peaking and carbon neutrality; the Action Plan is the first "N" issued, and the "N" is a series of programs to achieve the goals of the "1", including carbon reduction programs, carbon peaking implementation programs by sector and industry, as well as guarantee programs. The issuance of the two documents means that the most core part of "1+N" has been completed, and China will enter stage of the substantive implementation.

Multi-dimensional targets

01 Dimension of goals

The *Guidance* put forwards five main goals:

1. Build a green and low-carbon circular development system
2. Improve energy utilization efficiency
3. Increase the proportion of non-fossil energy consumption
4. Reduce carbon dioxide emissions
5. Improve carbon sink capacity of the ecosystem

02 Dimension of timeline

Both the *Guidance* and the *Action Plan* reiterated the key short- to medium- term goals for 2025 and 2030. On this basis, the Guidance also focuses on the long-term development of 2060, and clarifies the target that ***non-fossil energy should account for 80% of total primary energy consumption by 2060*** for the first time.

Main Targets

Energy consumption/GDP
Decreases by 13.5% by 2025 compared to 2020

Share of non-fossil in primary energy consumption
Reaches 20% in 2025, 25% in 2030, and 80%* in 2060

CO_2 emissions/GDP
Reduces by 18% by 2025 compared with 2020, and by more than 65% by 2030 compared with 2005

Forest coverage and forest reserves
Reaches 24.1%* and 18 billion m_3* by 2025 respectively, and reaches 25% and 19 billion m_3 by 2030 respectively

Total installed capacity of wind and solar power
Reaches over 1200 GW by 2030

**The ones with an asterisk are only mentioned in the Guidance, other goals are mentioned in both documents*

03 Dimension of industry

The *Guidance* and the *Action Plan* put forward "overall" and "specific" goals for different industries respectively.

The Guidance

- Strictly control the growth of coal consumption during the 14th Five-Year Plan period, and to gradually decrease it during the 15th Five-Year Plan period.
- Oil consumption will enter a peak period during the 15th Five-Year Plan period
- Strictly control the scale of coal power installations, and accelerate the energy-saving and flexibility retrofit of active units
- Strictly implement the capacity replacement of energy-intensive and emission-intensive projects, and raise access standards with lower energy consumption
- Strictly control energy consumption intensity and CO_2 emission intensity, and coordinate the establishment of a total CO_2 emission control system
- Vigorously develop energy-saving buildings, deepen the application of renewable energy and clean heating in buildings
- Accelerate the development of new energy vehicles, green logistics, and low-carbon travelling
- Stabilize the existing carbon sequestration capacities of forests, grasslands, etc., strengthen ecosystem protection to enhance carbon sink capacity

The Action Plan

- 40 GW of installed hydropower capacity will be added both between 2021-2025 and 2026-2030, and a hydropower-based renewable energy system will be basically established in the southwestern region
- Develop nuclear power positively, safely and orderly, and regulate oil and gas consumption rationally
- The installed capacity of new-type energy storage will reach more than 30 GW in 2025; the installed capacity of pumped storage will reach about 120 GW in 2030, and the provincial power grid should have a peak-load response capacity of more than 5%
- Promote carbon peaks in the steel, non-ferrous metals, building materials, petrochemical and chemical industries
- By 2025, the renewable energy replacement rate of urban buildings will reach 8%, and the PV roof coverage rate of new public institutions and factory buildings will reach 50%
- By 2030, the proportion of new energy and clean energy powered transportation will reach about 40%, and land transport oil consumption strives to peak by 2030
- By 2030, the annual utilization of bulk solid waste will reach 4.5 billion tons, and the utilization ratio of household waste will increase to 65%

Multi-level task framework

Based on the establishment of multi-dimensional goals, the Opinions also clarifies the main tasks towards 2030 at the three levels of the central government, local governments, and markets and enterprises.

The first level - central government's overall planning and deployment

- Create a green and low-carbon circular development system, and continue to improve energy efficiency
- Integrate the 30-60 carbon targets into the country's medium and long-term planning over economic, development, territorial and spatial planning, and local planning at all levels
- Optimize the layout of major infrastructure, productivity and public resources, and build a spatial development pattern that is conducive to 30-60 carbon targets
- Promote legislative work in the field of 30-60 carbon targets to form a scientific, clear and enforceable national climate governance system

The second level - local government implementing goals and tasks

- Local party committees and governments at all levels should clarify the goals and tasks, and formulate implementation measures
- Formulate realistic action plans and timetables according to the local resources, industrial layout and development stages

The third level - the market and enterprises jointly supporting

- Promote the construction of market-oriented mechanisms and actively develop green finance
- Use incentive policies such as tax exemption and price control to promote enterprises to independently improve low-carbon performance
- Key energy-consuming departments should research and discuss on emission reduction paths, and formulate special action plans for specific enterprises.

References

[7] "中共中央 国务院关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见," Communist Party of China Central Committee and the State Council, 24 October 2021, accessed at http://www.gov.cn/xinwen/2021-10/24/content_5644613.htm.

[8] "国务院关于印发2030年前碳达峰行动方案的通知, 国发〔2021〕23号," the State Council, 26 October 2021, accessed at http://www.gov.cn/zhengce/content/2021-10/26/content_5644984.htm.

[9] "一图读懂| 中共中央 国务院关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见," National Development and Reform Commission and China Economic Herald, 25 October 2021, accessed at https://www.thepaper.cn/newsDetail_forward_15055357.

[10] "一图读懂| 2030年前碳达峰行动方案," National Development and Reform Commission and China Economic Herald, 27 October 2021, accessed at https://m.thepaper.cn/baijiahao_15092716.

[11] "权威快报|《关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见》发布," Xinhua News, 24 October 2021, accessed at https://www.sohu.com/a/496972451_267106.

[12] "双碳"1 + N"政策体系解读之一," Caron Neutrality Committee of CECA, 27 October 2021, accessed at https://www.sohu.com/a/497628227_121134460.

4. Policy monitoring

2021-10-29
https://www.mee.gov.cn/xxgk2018/xxgk/xxgk03/202110/t20211029_958394.html

17 government departments jointly issue the winter air pollution control plan

2021-2022 Autumn/Winter Air Pollution Control Plan

The *Plan* sets the control targets of the PM2.5 concentration control target and the number of days of heavy pollution in key cities in the Beijing-Tianjin-Hebei and surrounding areas, the Fenwei Plain and the Yangtze River Delta from October 2021 to March 2022 (autumn and winter). According to calculations, the average concentration of PM2.5 should drop by 4.0% year-on-year, and the number of days of heavy pollution should be reduced by an average of 2.0 days per city. The government has also substantially adjusted the list of "key cities" for this time, reducing the number of cities from 80 to 59. The number of cities in the Beijing-Tianjin-Hebei region and the Fenwei Plain has increased from 39 to 59. The new cities cover northern Hebei, northern Shanxi, eastern and southern Shandong, and southern Henan; heavy pollution in the original 41 cities in the Yangtze River Delta have basically been eliminated, therefore, of which only 7 cities will be kept for reference.

2021-10-14
https://www.ndrc.gov.cn/xxgk/zcfb/ghxwj/202110/t20211015_1299846.html?code=&state=123

NDRC improves the pricing mechanism of RE transmission tariffs across provinces and regions

Notice to Issue the Pricing Method of Power Transmission Tariff for Dedicated Inter-Provincial and Inter-Regional Power Transmission Projects, NDRC Pricing Regulation [2021] No. 1455

The inter-provincial and inter-regional specific power transmission projects are dedicated transmission and interconnection lines built to serve major national energy strategies, such as west-to-east power transmission program. In 2017, the NDRC issued the first systematic pricing regulation for such projects. The NDRC has improved the price forms, calculation methods, regulation mechanisms and revenue sharing in the updated pricing regulation, aiming to promote inter-provincial and inter-regional trading and transmission of renewable power. The *Regulation* proposes that when implementing the inter-provincial and inter-regional power transmission for spot trading of renewable power[13], if the line with the lowest transmission tariff is already fully loaded, other special lines with spare capacity that participate in the transmission should charge according to the lowest transmission tariff.

[13] It refers to inter-provincial and cross-regional spot transactions based on existing power medium and long-term contracts, the sellers include hydropower, wind power, solar PV and other renewable energy power generation enterprises, and the buyers include grid companies, power users, and power sales companies.