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Foreword by Cynthia YU

Director, Coal Transition Task Force

While China is still recovering from the aftermath of a widespread power crunch in late 2021, the outbreak of the Russian-Ukrainian War in February 2022 has led to rising anxiety over energy supply security in Beijing. Meanwhile, Asian and European spot gas prices spiked by seven times year-over-year (YOY), and oil price was above \$90/bbl during most of 2022. The world is concerned with dramatic uncertainties over the coming winter's heat supply.

China's recent energy policies reflect the country's short-term urgent need to alleviate potential energy security risks. In response to an increasingly disruptive global energy market and mounting concerns over power system reliability, China makes energy security as the top priority: clean use of coal, stabilization of coal prices, and the guarantee of coal production and supply are emphasized by central government. Coal production provinces, concentrated in northwest China, were working at the full capacity to produce enough coal before the summer peak power demand season. State Council plans to increase coal mining capacity by 300 Mt/annum and finance has been provided to support the building up of coal inventory. Meanwhile, closures of small scale and deep mines are continued in east and central regions.

Contrary to the strong growth at the supply side, China's coal demand is relatively weak, leading to building up of coal inventory in H1 2022 before entering the summer peak power demand season. Both power coal and industrial coal consumption recorded negative growth by H1 2022, due to the strict Covid-19 policy and concerns on China's real estate industry. While entering summer, coal power consumption was increased to supply provinces suffering drought and heatwave. Cumulatively, China's coal power output declined by 0.2% YOY in August 2022 while renewable power output continues with double-digit growth.

Against the backdrop of short-term setback of its climate agenda, China is doubling down its efforts to move its clean energy transition agenda forward. To improve efficiency of coal-fired power generation and absorb more renewables, China is retrofitting coal-fired power plants across the country, aiming to improve their flexibility. Meanwhile, accelerating renewables development continues to be a key pillar of national energy strategy - large-scale clean energy bases, rural distributed energy, and green power consumption will all be promoted. Renewable-friendly grid networks are also emphasized, together with market mechanism, simplified approval processes, integrated value chain development and financial support.

While supportive government policies are beneficial to accelerate commercialization of advanced technologies, we at EF China strive to approach pressing policy issues through the nexus of energy security, economic growth, and environmental integrity as well as climate mitigation with focus on energy decision-making. To nurture an increasingly renewable-compatible regulatory framework, China will be able to not only ensure national energy security, but also lay a solid foundation in support of sustainable growth and environmental integrity in the decades to come.



Note from LIU Xin

Program Director, Environmental Management

With about 500 million rural population in China, scattered coal is widely used across the country for the purposes of rural residential heating and cooking as well as industrial heating (e.g. small boilers and kilns). Residential use of scattered coal has caused more severe environmental problems than similar application with small boilers and kilns. It accounts for only 3% of China's total energy consumption but contributes to about one quarter of PM_{2.5} emissions and one third of human health-related damages. Because of its low combustion efficiency and high air pollution potential, scattered coal has received much attention and are subject to increasingly stringent regulation (e.g. clean heating policies) by the Chinese government in the past few years.

EFC Environmental Management Program develops environmentally ambitious targets and strategy, aiming to accelerate phase-out of scattered coal to achieve the first major breakthrough of carbon neutrality, air pollution control, and healthier public life in rural areas across China. In particular, scattered coal use in Beijing-Tianjin-Hebei and its surrounding areas, the Fen-Wei Plain and other key regions in northern China, should be phased out by 2025 and 2027, respectively. The proportion of renewable energy deployed for scattered coal substitution is expected to reach 50% - 70% by then.

We consider the following five elements as indispensable components of a successful scattered coal phase-out strategy: energy efficiency, pollution control, affordable cost, easy to use, and carbon emissions abatement. They could all contribute to establishing a sustainable rural clean energy system. Our research findings indicate that there exists great potential for local renewable energy on spatial distribution in rural China, and the energy utilization potential of biomass and rooftop solar system in rural areas is estimated to be around 900 and 890 Mtce, respectively.

We at EFC are doubling down efforts on the ground to support design of technical solutions to substitute scattered coal use in rural areas, including piloting in extremely cold conditions, scaling up renewable energy use from pilots to broader regions, proposing market-based financial policies. Meanwhile, we also actively conduct dialogues with local governments, including Shanxi, Shandong, Henan and Jiangsu province, to formulate politically plausible and environmentally sound scattered coal phase-out plans with coverage ranging from residential to industrial as well as agricultural sectors.

Coal Data Updates

In H1 2022, the Chinese economy grew by 2.5% YOY, which is a significant drop compared with similar ratio of 12.7% YOY in 2021, indicating the severe economic impacts caused by COVID outbreak-related lockdown in Shanghai and other parts of China in the second quarter (Q2) of 2022. Except for hydro and solar power generation that witnessed an upward growth, similar pattern generally holds for all other indicators listed in Figure 1.

Largely due to a rather low GDP growth rate of 0.4% YOY in Q2 2022, China's national energy and power demand only increased by 1.7% and 2.9% YOY, significantly lower than similar rates last year. Meanwhile, because of a 3.9% YOY contraction of thermal power generation in H1 2022, growth rate of non-fossil fuel power generation including hydro, nuclear, wind and solar spiked by 12.8% YOY during the same period. Meanwhile, as share of coal, oil and gas in China's energy mix declined by 0.3, 1.0 and 0.3 percentage points in H1 2022, respectively, China's overall energy mix has undergone marginal structural improvement by the end of H1 2022.

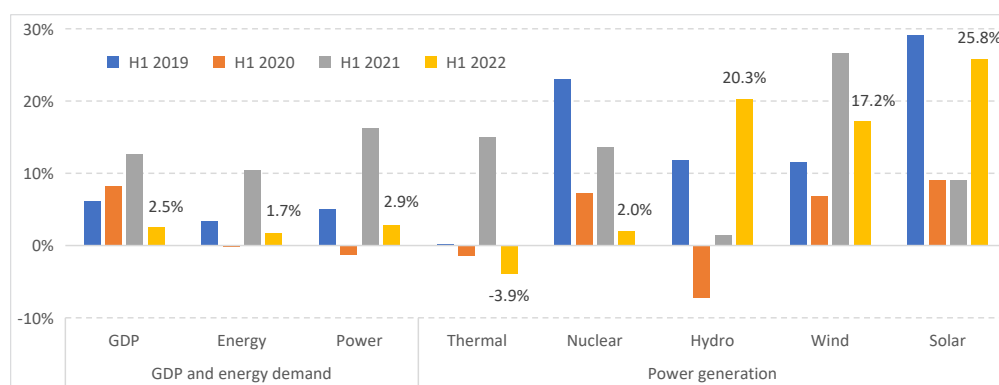


Figure 1. YOY changes of China's key economic and energy indicators, 2019-2022

Source: National Bureau of Statistics and China Electricity Council.

Coal Production

Following the outbreak of the Russian-Ukrainian War in February 2022, an already tight global energy market has been further burdened by the urgent need to diversify energy supply away from Russia, especially in the European Union (EU). As many countries are scrambling to ensure energy supply security with whatever energy sources available, coal prices are soaring and global coal consumption is returning to record levels as the global energy supply crunch continues. As a result, seven of ten top coal producing countries witnessed positive growth of national coal production in H1 2022.

In particular, India, the second largest coal producer in the world, produced 16% more coal compared with H1 2021, followed by the 8th largest coal producer Germany at 11.2% YOY, and the most dominant coal producing country China at 11.0% YOY. Largely due to the aftermath of the ongoing Russian-Ukrainian War, high spot gas prices and tight gas supply/demand balance are expected to sustain high-level of coal mining activities across the globe, with severe implications for global energy transition and climate agenda.

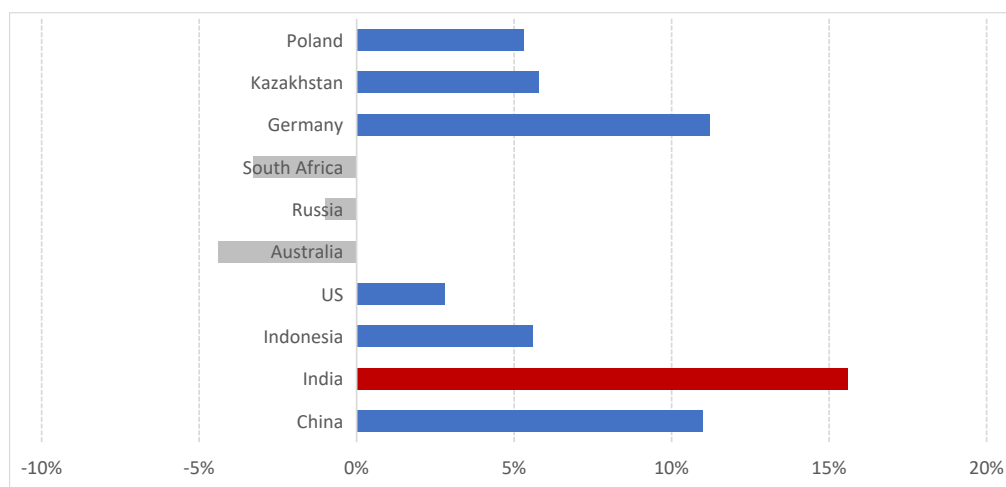


Figure 2. YOY change of coal production in top 10 coal producing countries, H1 2022

Source: [China Coal Economic Research Association](#).

Note: South Africa, Russia and Germany are based on data of the first five months of 2022, Australia is based on data in the first quarter (Q1) of 2022.

Following a nationwide power crunch hitting massive Chinese provinces in September 2021, China's stance towards coal has undergone drastic adjustment, with Beijing increasingly positioning domestically abundant and pricewise affordable coal as backbone to ensure national energy security, with profound implications for China's national carbon emissions trajectory in the years to come.

Since the beginning of 2022, monthly national coal production has constantly maintained at elevated level at least 10% higher than one year before until a slow-down emerging in August. As a result, in H1 2022, national coal production by Chinese enterprises above designated size reached 2,194 Mt, the equivalent of a 11.0% YOY growth. Nevertheless, national coal production is highly concentrated in top producing regions. More specifically, the top four coal mining provinces (top four), namely Shanxi, Inner Mongolia, Shaanxi and Xinjiang, together account for more than four fifth of national coal production. By comparison, the similar ratio of top 10 stands at 94%.

Shanxi is currently China's largest coal producing province by output. Its total coal production was 641 Mt in H1 2022, accounting for 29% of China's national output. By comparison, Inner Mongolia, Shaanxi and Xinjiang represent 27%, 17% and 8%, respectively. In other words, the top four producers represented 81% of China's national coal output last year.

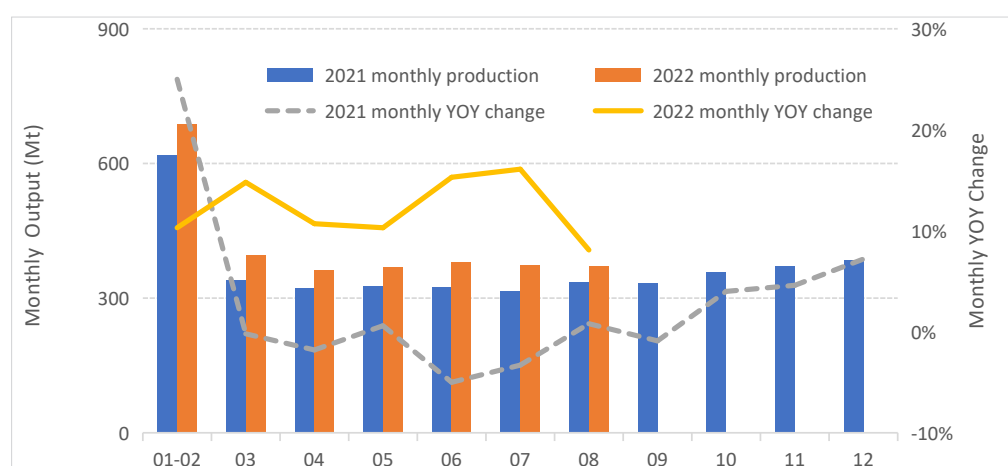


Figure 3. YOY change of China's monthly coal production: 2021 vs. 2022

Source: National Bureau of Statistics.

With coal mining increasingly concentrating in the top four provinces, how to strategically phase-down coal production and achieve just coal transition without severe regional economic impacts deserves more attention from key Chinese and international stakeholders.

Compared with similar ranking in 2021, with a 12.4% YOY coal output, Ningxia overtook Shandong, which witnessed a 5.1% YOY contraction of provincial coal output during the same period, as China's eighth largest coal producer. By comparison, coal reserves in northeast China are close to depletion, with aggregate output in this region accounting for a mere 2.9% of national total in H1 2022. Given the remote distance between top four provinces and China's coal consumption centers along the coastal region, coal transport is expected to continuously shape price arbitrage between domestic coal and imported coal.

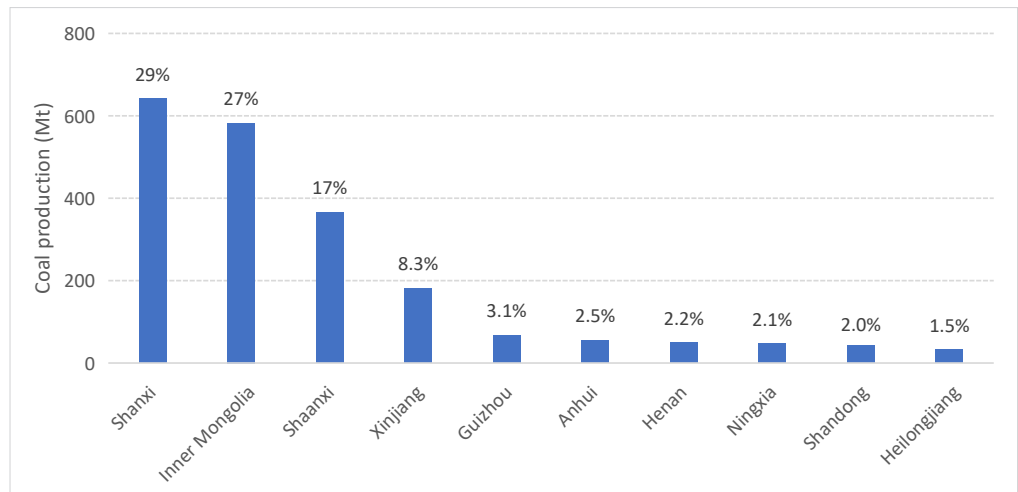


Figure 4. China's top 10 coal producing provinces in H1 2022
Source: National Bureau of Statistics and Provincial Bureaus of Statistics.

China's Coal Consumption in the International Context

China is the most dominant global coal consumer, accounting for more than half of global total demand, with the next two top consuming economies, namely India and US, standing at 13% and 6.6% of the global total, respectively. Against the backdrop of worldwide economic recovery and energy crunch in H2 2021, worldwide coal demand rebounded strongly by 6.3% YOY in 2021. As national coal consumption in China grew slightly lower than world average last year, China's share of global coal demand declined by 0.7 percentage point, reaching 54% in 2021. Meanwhile, as India and U.S., the 2nd and 3rd largest coal consumers, increased national coal consumption by an astonishing 15.8% and 15.2% YOY last year, their shares of global coal consumption increased by 1.0 and 0.7 percentage point in 2021, respectively.

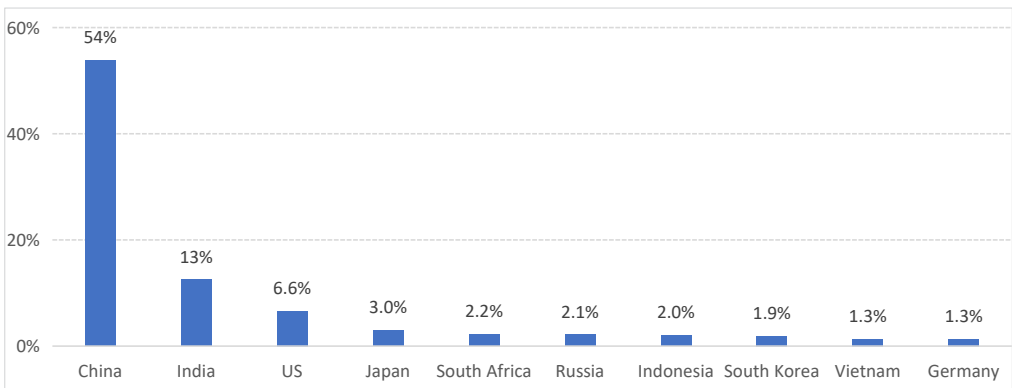


Figure 5. Share of global coal demand by top 10 consuming countries in 2021
Source: BP Statistical Review of World Energy 2022.

Coal-fired Power Plants

According to China Electricity Council (CEC), China's new coal capacity addition stands at 11.2 GW from January to August in 2022. Meanwhile, China adds 75.77 GW of renewable capacity during the same period, accounting for 79% of national power capacity addition with the breakdown as below: hydro – 13.06 GW, wind – 16.14 GW, solar – 44.47 GW, biomass – 2.1 GW, which represent 13.6%, 16.8%, 46.2% and 2.2% of national total, respectively. Consequently, China's total renewable capacity reaches 1,130 GW by the end of August 2022, exceeding the country's aggregate coal power capacity at 1,110 GW. By August 2022, the share of coal-fired power in national capacity mix further dipped to 45% from the level of 47% in 2021.

As a result, while China's national power output increased by 2.5% YOY during January to August in 2022, thermal power generation declined by 0.2% YOY during the same period. By comparison, the share of non-fossil generation in China's power mix increased by 14 percentage points since 2015, reaching 55% by the end of H1 2022. Since the beginning of the new millennium, China generally accounts for more than half of global new operational coal-fired power capacity addition, with 2002 as the only exception, when China accounted for only 45% of the global total. However, based on the National Energy Administration (NEA), to prepare the summer power peak, China's coal inventory at power plant level increased by 51.7% YOY by H1 2022, enough for 29 days.

In January 2022, Chinese president Xi Jinping emphasized the importance of three types of joint retrofitting of China's sizable coal power fleet, namely retrofitting for energy conservation and carbon emissions reduction, retrofitting for flexibility improvement, and retrofitting for heating service provision, which were later echoed by the 2022 Government Work Report published by the State Council.

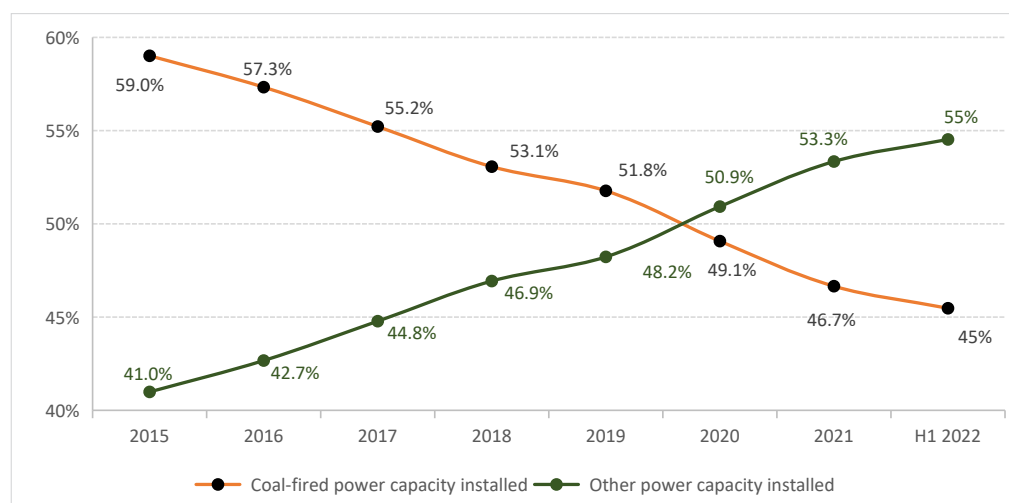


Figure 6. Comparison of coal-fired power capacity vs. other power capacity

Source: BJX Power Info Net and China Electricity Council.

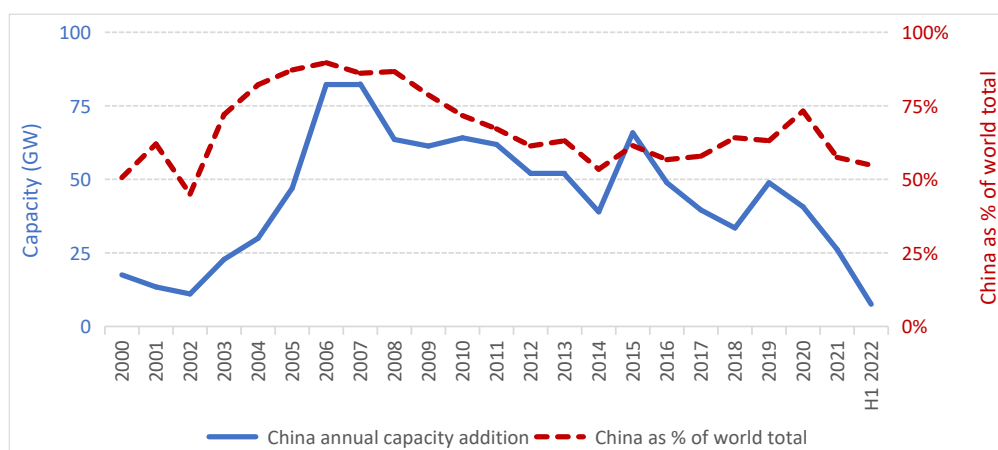


Figure 7. China's annual coal power capacity addition in the international context

Source: [Global Energy Monitor](#).

Nevertheless, due to the boom-and-bust cycle of global coal-fired power construction market, China's annual capacity addition fluctuated widely from 11 GW in 2002 to more than 80 GW/annum in 2006 and 2007. Following China's announcement of stopping overseas investment on coal power projects in September 2021, annual domestic coal power capacity addition in China declined drastically from 49 GW in 2019 to only 7.5 GW in H1 2022, indicating the end of the so-called golden age of coal-fired power in China. Even so, against the looming danger of global climate crisis, how China may suppress further expansion of its already sizable coal-fired power fleet is not only important for its own dual carbon targets but also global climate agenda.

China's Aggregate Coal Imports in 2022

China's Year-to-date (YTD) coal import declined by 15.2% YOY, lowering to 168MT. Considering the pricing restrictions imposed on domestic coal by NDRC and high international coal prices, traditional coal importers turn to source from domestic coal suppliers. China's national coal imports in 2022 are expected to be lower than the 2021 level.

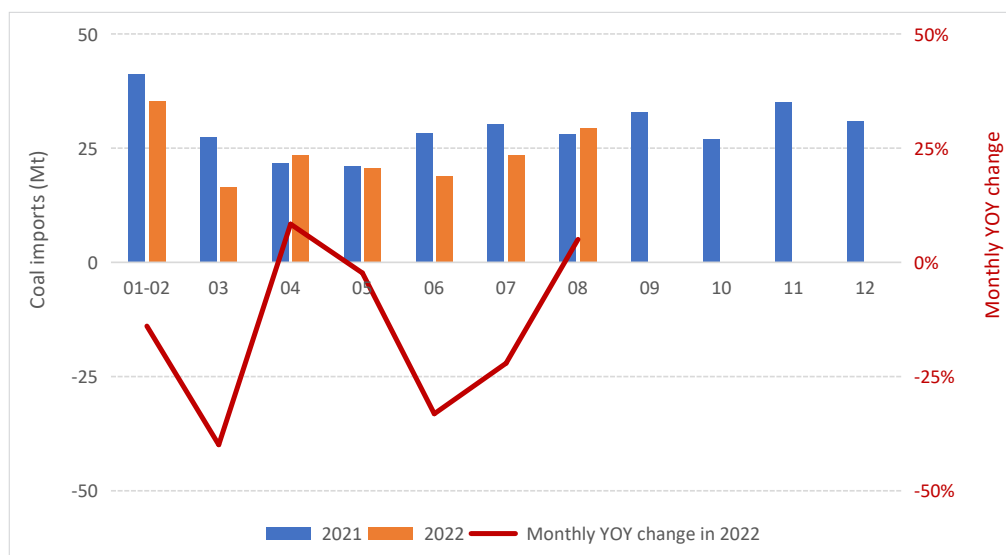


Figure 8. YOY change of China's monthly coal imports: 2021 vs. 2022

Source: [China Customs](#) and [National Bureau of Statistics](#).

Key Developments in China



Summary of coal-related policies in Q2 2022

Against the backdrop of rising international geopolitical tensions and the recurring domestic COVID-19 infections in Q2 2022, Chinese decision makers increasingly position energy security as top policy priority. In order to avoid another nationwide power crunch which occurred in September 2021 and lower societal burden of rising energy costs, Beijing's stance towards coal is tilting towards capacity expansion to ensure supply security and stabilize coal prices within a government-defined range, with selected examples as below:

- On April 20, the State Council Executive Meeting decided to increase national coal production capacity by 300 Mt/annum in 2022, by greenfield mine addition and capacity expansion of existing coal mines.
- On April 28, PBoC announced that 100 billion yuan of reloans were allocated in support of development and utilization of coal as well as enlargement of energy storage.
- On April 29, the NDRC mandated that medium- to long-term contracts signed by coal mining enterprises must account for no-less-than 80% of their annual coal output.
- In May 2022, the State Council executive meeting emphasized the importance of adjusting policies of approving coal mining capacity addition and speeding up the permitting process of coal mine projects.

In sum, while China is committed to achieve its dual carbon goals in the medium- to longer-term, coal's importance in ensuring national energy security has nevertheless been highlighted by the central government. With coal positioned as "ballast" of China's energy system, China is expected to continuously rely on carbon-intensive coal to sustain its economic recovery in the foreseeable future.



June 1, 2022: China released the 14th Five-Year Plan (FYP) on renewable energy development

On June 1, China released the 14th FYP on Renewable Energy Development (2021–2025), a comprehensive blueprint for further accelerating development of China's already sizable renewable energy (RE). The plan aims for a 50% increase of renewable energy generation from 2.2 PWh in 2020 to 3.3 PWh in 2025, and 33% renewables in power consumption mix by 2025 (up from 28.8% in 2020), as well as a target that 50% of China's incremental power and energy consumption shall be met by renewables over the period between 2021 and 2025. Achieving the targets in the plan is estimated to reduce up to 2,600 Mt CO₂ emissions on an annual basis, or the equivalent of near one quarter of China's national carbon emissions in 2020.

EFC grantees have been instrumental in studying renewable potential and providing research findings to NEA and NDRC when they set China's RE goals for the next five years. Our grantees' wide range of work has covered renewable targets and development potential, system economics with multiple constraints, and renewable-power consumption potential. We were especially pleased to notice that the newly released 14th RE FYP set a goal of meeting 50% of China's incremental energy consumption with renewables, after one of our key grantees concluded that non-fossil energy's share in national energy mix could exceed 50%. Based on our grantee's research findings, China possesses sufficient resources to sustain large-scale renewable expansion, with technically recoverable wind and solar power resources beyond 6,000 and 35,000 GW, respectively. The grantee also makes politically plausible recommendations on how to improve enabling policies in support of consumption of renewable and green electricity, which have been reflected in the FYP's supplementary regulations. ([NDRC](#))

May 31, 2022: The State Council released a package of policies to stabilize the economy

The policies and measures related to coal include but not necessarily limited to: 1) ***Orderly release of high-quality coal mining capacity under the premise of ensuring clean, highly efficient and safe utilization***—Establishment and improvement of incentivizing and restrictive policy mechanisms related to coal production. Speed up the permitting process for coal mine projects in accordance with the law and regulations. Support capacity release of eligible open pit and underground coal mining projects with the prerequisite of ensuring safe production and ecological integrity. Speedy adjustment of the policy of approving capacity expansion, support coal mines with safe production conditions to increase capacity, accelerate the capacity expansion of high-quality coal mines, and ensure power and coal supply security during peak summer season. 2) ***Improve the capacity and level of coal storage***—Reap the benefit of dedicated reloan and eligible bank loans related to cleaner and highly efficient coal utilization. Make the responsibility of coal storage accountable at the local level. 3) ***Strengthen the stockpiling capacity of crude oil and other energy resources***—Plan and start the construction of storage projects as soon as possible. Accelerate the construction of government-funded stockpiling projects, and fill the reserve capacity of operational projects as soon as possible. ([The State Council](#))

May 25, 2022: MoF issued opinions on financial support of carbon peak and neutrality

In this opinion, MoF specifically targets the following sectors and issues: 1) **Financial commitments are made to support the establishment of a clean, low-carbon, safe and highly efficient energy system**—Orderly promote coal demand abatement and substitution, and promote the transition and upgrading of coal consumption. Optimize clean energy policies, actively support utilization of high shares of renewables, and promote the establishment of a new type of power system with a gradually increasing share of new energy. Support renewable energy, such as photovoltaic, wind power, biomass, and replace fossil energy with non-intermittent new energy. 2) **Support green low-carbon transition of key sectors**, including advanced manufacturing, integrated urban-rural transport integration, improved transport structure, new energy vehicles and supporting infrastructure, clean heating in north China, electrification of industry, transport, buildings and agriculture to substitute coal or oil. 3) **Support innovations and basic capacity building in green low-carbon science and technology**. 4) **Support green low-carbon life style and resource conservation and utilization**. 5) **Support stabilization and improvement of carbon sink capacity**. 6) **Support and improve green low-carbon market-oriented system**, including but not necessarily limited to carbon emissions credit, energy consumption permit and waste discharge rights. ([MoF](#))

May 14, 2022: Implementation plan on promoting high-quality development of new energy in the new era was issued by NDRC and NEA

In this plan, it is mandated to innovate the mode of new energy development and utilization. Accelerate the construction of large wind power and photovoltaic bases on desert and Gobi areas. In particular, to optimize synergy between coal power and new energy, coal power enterprises are encouraged to create substantive joint ventures with new energy companies.

In addition, it is also required to comprehensively improve the adjustment capability and flexibility of power system. Therefore, it is important to improve the compensation mechanism for peak shaving and frequency regulation power sources, and the measurements include flexibility retrofitting of coal-fired power plants, expansion of hydropower capacity, promotion of pumped storage and solar thermal power projects, and development of new energy storage. ([The State Council](#))

May 4, 2022: PBoC announced an additional 100 billion yuan of dedicated relloan to support cleaner and highly efficient use of coal

Following the approval by the State Council, PBoC announced the addition of 100 billion yuan of dedicated relloan to support cleaner and highly efficient use of coal, especially to support the development and use of coal and enhance coal storage capacity. The detailed two supporting areas are safe production and storage of coal, as well as ensuring supply security of coal and electricity. The former includes opening of modern coal mines, utilization of greener and highly efficient technology, intelligent mining, safety improvements of coal mines, coal washing, establishment of coal storage capacity, and so on. With the aforementioned 100 billion yuan, the total amount of dedicated relloan to support cleaner and highly efficient use of coal is expected to reach 300 billion yuan, which is planned to help further increase advanced coal mining capacity, ensure safe and stable supply of energy, and support economic growth within a reasonable range. ([The State Council](#))

April 30, 2022: NDRC identified four types of behaviors of coal traders as price manipulation in the 2022 No. 4 public notification

To stabilize domestic coal prices and ensure national energy supply security, NDRC deems four types of behaviors as coal price manipulation, including 1) framing fake news to drive coal prices up; 2) disseminate disinformation in support of coal price increase; 3) cornering the coal market; 4) significantly increasing retail coal prices directly or indirectly without decent reasons. The mid- and long-term coal contract prices shall fall within the reasonable range specified by NDRC, with spot coal prices shall not exceed 1.5 times of mid- to long-term coal contract price cap specified by either national or local governments. ([NDRC](#))

April 26, 2022: State Council Tariff Commission decided to levy zero tariff on coal imports

China decided to levy zero tariff on coal imports starting from May 1, 2022 with the end date tentatively set on March 31, 2023. The policy was introduced due to tight domestic coal supply and high coal prices since the beginning of 2022. On April 28, spot price of 5,500-kcal steam coal at coastal ports in northern China was 1,180-1,220 yuan/ton, the equivalent of an almost 50% YOY spike. Meanwhile, the ongoing Russian-Ukrainian War exacerbated rising energy security anxiety across the globe and led to elevated international coal prices. In March 2022, the average price of steam-coal in Newcastle, Australia, was \$314/ton, the equivalent of an astonishing 231% growth. The extremely high price further dampened Chinese imports. In the same month, China imported 16.42 Mt of coal and lignite, a 39.9% YOY reduction. The average import price was \$141/ton, which is \$61.6/ton higher than last year. The aforementioned zero tariff policy is intended to encourage coal imports and help stabilize domestic coal prices, with its effect to be seen. ([MoF](#))



Key Developments: International Perspective

June 2022 The U.S. Supreme Court limits EPA to set climate standards for power plants

On June 30, the U.S. Supreme Court limited the Environmental Protection Agency's authority to set standards on climate-changing greenhouse gas emissions for existing power plants. In its 6-3 ruling, the court said that only Congress, not the EPA, had the power to create a broad system of cap-and-trade regulations to limit emissions from existing power plants in a bid to transition away from coal to renewable energy sources. The decision is a major setback for the Biden administration's agenda to combat climate change, specifically the goal to zero out carbon emissions from power plants by 2035 and cut in half the country's emissions by 2100. ([CNBC](#))

June 2022 In the unclear outlook, Russia boosts coal exports as Western sanction yet to bite

Russia is the world's fourth-largest coal exporter behind Australia, Indonesia and South Africa, and has the ability to supply both the Atlantic and Pacific basins. Europe, the main buyer of Russian coal, has proposed a ban on imports but it has yet to be fully implemented until August 2022, while Japan also plans to end purchases from Russia. Between February and June 2022, there has been some switching of buyers for Russian seaborne coal exports but the loss of some markets in Europe and Japan has been more than offset by increased buying, especially by India and Turkey. Russia exported 16.45 Mt of coal by sea in June 2022, down slightly from May's 16.56 Mt, the equivalent of a 3.5% and 3.8% YOY growth, respectively. ([Reuters](#))

According to the Australian Department of Industry, Science and Resources, Russian exports of metallurgical coal are estimated to fall by at least 5 Mt/annum by mid-2023 as the forthcoming European ban takes effect in August. Japan has also announced a ban on Russian coal but has not yet provided details. Russian exporters will ultimately need to redirect about 48 Mt from the EU, and 16 Mt from Japan. Alternative buyers include China, India, and South and South-East Asia. However, Russian exports are expected to fall by at least 12 Mt in 2022, remaining somewhat constrained through the outlook period. The timetable for the overall redirection of Russian thermal coal remains highly unclear. ([Australian Department of Industry, Science and Resources](#))



June 2022 Germany to fire up coal plants as Russia turns down natural gas

Against the backdrop of rising tension between Russia and Europe, Russian gas company Gazprom started to reduce supplies through the Nord Stream 1 pipeline in June 2022, quoting technical reasons that there had been delays in the repair of compressor turbines by the German company Siemens Energy. As a response, German Economy Minister Robert Habeck states that Germany must limit its use of gas for electricity production and prioritize the filling of storage facilities to compensate for a drop in supply from Russia. In addition, Germany also has to increase coal consumption. Habeck lamented the necessity to use more coal to produce electricity, but described the proposed short-term solution necessary to alleviate looming risk of gas supply security ([Deutsche Welle](#)). Even before the aforementioned gas supply cut by Russia, lignite production in Germany during the first five months of 2022 has increased by 11.2% YOY (Figure 2).

June 2022 Planned coal plants fizzle as Japan ends financing in Indonesia and Bangladesh

The Japanese government withdrew funding committed to two planned coal-fired power plants, one in Indonesia and another in Bangladesh, as part of Tokyo's decision to no longer support coal projects in either country. Official sources have already confirmed that neither the greenfield installation in Bangladesh nor the expansion project of an existing plant in Indonesia will go ahead. For Indonesia in particular, the move also means the loss of the top three foreign funders of its coal power projects, after similar decisions by China and South Korea; the three East Asian countries account for 95% of foreign funding of coal plants in Indonesia since 2013. ([Mongabay](#))

May 2022 G7 largely supports coal phase-out by the end of 2035, though without a fixed date

On May 27, G7 energy and climate ministers pledged to largely stop generating electricity with fossil fuels by 2035. The move comes amid rising energy security anxiety caused by the war in Ukraine. More specifically, the communique issued at the end of their Berlin summit commits to “achieving predominantly decarbonized electricity sectors by 2035,” which included “concrete and timely steps towards the goal of an eventual phase-out of domestic unabated coal power generation.” The ministers agreed—including Japan for the first time—to “end new direct public support for the international unabated fossil fuel energy sector by the end of 2022” with limited exceptions on the provision that are consistent with the climate goals of the Paris Agreement. ([Deutsche Welle](#), [G7](#))

April 2022 EU's fifth wave of Russia sanctions targets Russian coal imports

On April 8, the EU adopted the fifth round of sanctions against Russia and Belarus. Amid debate about potential restrictions on oil and natural gas imports from Russia, the EU has decided to ban imports of Russian coal with a phase-out period of four months for existing contracts until August 10, 2022. The ban also applies to related technical, brokering and other services, as well as financings and financial assistance. The EU estimates this will affect a quarter of Russia's coal exports and represent a loss of about €8 billion per year. About 45% of the EU coal imports come from Russia. ([Europa](#))

April 2022 The Indian government mandates renewable mix in power generation by utilities

To reduce the country's coal demand and to make electricity prices more affordable for distribution companies, Indian power minister RK Singh said the government would make bundling of conventional electricity with renewable energy mandatory for all generation companies in the country, including private ones. The government is also considering requiring all existing power projects, including the captive plants, to establish renewable projects at their current sites. ([Hindustan Times](#))

Progresses of EFC's Coal Transition Task Force

Low-carbon clean heating at cities and towns in north China

On July 21, EFC convened a Coal Transition Roundtable on low-carbon clean heating at cities and towns in north China. Professor FU Lin of Tsinghua University delivered a keynote speech on the status quo, technically sound solutions, and politically plausible policy advices on clean heating. His recommendations include a national clean heating guideline, and elimination of regional barriers against sector optimization. In addition, it is also important to establish reasonable pricing mechanism in support of waste heat utilization. Moreover, key technologies in the area of clean heating should be further improved and promoted.

In the open discussion, expert participants explored several pressing issues, including nuclear-powered heating, cogeneration at coal-fired power stations and heat pumps. Preliminary findings include but not necessarily limited to: 1) development of clean heating system should be synchronized with renewable energy; 2) heating sources should be diversified; 3) heating system should be compatible with the power system; 4) addition of heat pumps should take grid capacity into consideration; 5) appropriate marketing and pricing mechanisms are also important and should not be ignored.

Narrative building on dual carbon targets and energy security

On July 8, EFC co-organized the Forum of Sustainable Energy for a Prosperous China, together with China News Service, with the conference theme of ***Accelerating the Building of a Modern Energy System Oriented towards Carbon Peaking and Neutrality, and Seeking a Fundamental Solutions of Energy Security.***

Over the past few years, a series of global disruptions occurred, including the ongoing COVID-19 pandemic, the subsequent economic downturn, widespread power crunch, and increasingly severe energy market shock exaggerated by the outbreak of the Russian-Ukrainian War. At the forum, experts pointed out that China should prioritize energy security. Many countries are re-evaluating potential risks associated with over-reliance on fossil fuel. The rapid development of renewable energy such as solar and wind power is widely deemed as a key pillar to support China's quest for energy

independence in the decades to come.

In retrospect, we at EFC would like to emphasize that there is a window of opportunity to better balance China's dual carbon goals and rising energy security anxiety, as long as the narrative of "renewables for energy security" and "synergy of decarbonization and growth" could be recognized by the energy and climate policy community as well as key decision-makers.

Low-carbon transition pathways in the power sector against the backdrop of dual carbon goals

On July 6, EFC organized a seminar on low-carbon transition pathways in the power sector against the backdrop of China's dual carbon goals to peak carbon emissions before 2030 and achieve carbon neutrality before 2060.

During the keynote speech session, Dr. LIN Jiang of the Lawrence Berkeley National Laboratory introduced the 2035 projection of China Wind, Solar and Storage Model, Professors DU Ershun and DONG Wenjuan of Tsinghua University presented their research and policy recommendations on low-carbon transition pathways of China's power system from the near- and medium- as well as long-term perspectives, and Professor CHEN Xinyu of Huazhong University of Science and Technology introduced the optimization results of the carbon neutral transition pathway of the Chinese power system in 2050, which is a joint study initiative with a research team at Harvard University. Based on outcomes of different scenario building exercises by various models, the aforementioned top research institutions provided different policy solutions to move China's clean power sector transformation agenda forward.

In the open discussion, expert participants discussed how to plan and guide power transition pathways in the next few decades in support of meeting China's dual carbon goals. Consensus has been reached that while low-carbon transition of the power system cannot be completed overnight, China nevertheless needs to double down decarbonization efforts through a systematic approach. There are different priorities in the generation/grid/demand/storage sides, and a wholistic package of measures needs to be formulated to create synergy between macro- and micro- level analyses.

Green hydrogen in the coal chemical industry

On June 15, EFC organized the mid-term evaluation meeting for the project entitled ***Green Hydrogen in the Coal Chemical Industry: Technology and Economic Evaluation and Feasibility Analysis of Future Investment.***

The coal chemical industry is characterized by high intensity of both energy consumption and emissions, which does not bode well with China's dual carbon goals. Therefore, it is necessary to innovate the

development mode and technology pathway, to promote the decoupling of coal chemical development and carbon emissions. In this regard, application of green hydrogen in coal chemical industry is identified as a promising route for deep decarbonization.

Based on preliminary research findings, expert reviewers recommend to further strengthen the analysis with typical cases, especially the analysis of cost reduction potential of green hydrogen, and also to evaluate the comprehensive impacts and cost effectiveness of green hydrogen from the perspective of coal chemical enterprises. Finally, expert reviewers also suggest to improve the assumptions of key parameters related to cost reduction potential of green hydrogen.

Deep dive in Inner Mongolia

On June 2, EFC organized the final evaluation meeting for the project of “4-E” master plan and transition strategy on coal phase-out for the Inner Mongolian coal industry during the 14th FYP period. The main components consist of scenario analysis of China’s energy transition pathways, prospects of key industries including steel and chemical manufacturing, and policy recommendations for transition and development of the coal industry. In addition, emerging coal producing regions in Inner Mongolia were identified as case study regions to explore appropriate regional transition strategy and supporting financial instruments, as well as other supporting policies.

Future meetings and potential field trips are in planning for in-depth discussion on progress of existing projects as well as new collaboration opportunities.

Comprehensive assessment of coal phase-out in China

On May 27, a project team from Peking University hold a project kick-off meeting. The project will carry out a comprehensive assessment of coal phase-out in China.

The next steps will include, but not necessarily limited to: 1) for environment-related assessment, population exposure-related health risks under different coal transition policies are to be calculated; 2) for climate-related assessment, GHG effects are to be simulated in short-, mid-, and long-term; 3) for economic assessment, direct and indirect impacts (GDP, energy structure, industry mix, etc.) of coal phase-out are to be analyzed; 4) for social assessment, indicators to evaluate just and inclusive transition are to be formulated.

Launch of EFC scattered coal phase-out strategy

On May 13, EFC and Tsinghua University jointly released a comprehensive report on rural scattered coal phase-out, with emphasis on goals and pathways of developing rural renewable energy system to substitute scattered coal. This report will serve as the EFC scattered coal phase-out strategy. According to our research findings, core principles of rural scattered coal phase-out strategy include both affordability and sustainability. The above report was published through a press release conference and seminar, which was watched by more than 8,000 participants online, coupled with a broad media coverage.





Highlights of Knowledge from the Field

Promoting regional coal just transitions in China, Europe and beyond: Europe-China dialogues on a just coal transition in 2021 ([Agora Energiewende](#))

Largely driven by the unexpectedly strong domestic demand for power and surging industrial activities, China's coal consumption increased substantially by 4.6 percent in 2021, marking the highest record of annual growth since 2012. The pandemic and its aftermath, together with the current geopolitical conflicts in Europe, have added more uncertainties to the energy transition agendas of China and the world. In particular, this may mean that coal-producing regions are seen as a source of energy security, which would potentially lead to delays in their transformation process. Therefore, more concerted endeavors are called on to move the just transition agenda forward for coal regions and coal-sector employees. In 2021, Agora Energiewende and EFC co-organized three dialogues on a just transition for China's coal-reliant regions. The series of dialogues discussed the challenges faced by coal-based corporations and by the communities affected by the coal transition in major coal-producing and coal-consuming regions, and proposed possible solutions that could help mitigate transition impacts in both China and Europe, along with wider policy relevant implications for other parts of the world. This paper, which is published in May 2022 and available in both English and Chinese, summarizes the key findings from the dialogues and identifies the differences and similarities of the challenges faced by the coal regions in China and Europe. The conclusions from this paper will support further in-depth research and bilateral conversations on promoting coal just transitions in China, Europe and beyond.

China's coal power transition: a discussion paper ([ISETS](#), [Ember](#))

Electricity decarbonization is a mainstay of China's bid to attain carbon neutrality by mid-century. A key aspect of China's approach to electricity decarbonization is demoting coal power to a supportive role, where it provides flexibility and backup capacity to the grids before energy storage technologies become mature and can be deployed at the scale considered adequate to replace coal power. This process, in the context of this report, is referred to as the coal power transition. The main purpose of this report is to review the development of coal power in China during the 13th FYP period (2016-2020), focusing on its underlying drivers, as well as to identify possible policy entry points to shift the future trajectory of coal power development (i.e., mid-steps between goals and mixes of policy instruments for achieving the goals). This review is intended to form a "discussion paper" to promote debates among energy experts and policy practitioners on how to better progress the coal power transition in China.



Exploring just transition in the Global South ([Climate Strategies](#))

This report explores the role of a just transition in the Global South. It summarizes insights from local partners in Argentina, Bangladesh, Colombia, Indonesia, Ghana, Kenya, Laos, Malawi and Vietnam, with key findings as below:

- Funders can play a critical role in creating dialogue about just transitions by helping to break down barriers.
- There is a need to broaden climate finance to target support at helping affected regions and communities to manage the socio-economic impacts of transition.
- Financing initiatives to close data gaps of national and local governments can improve just transition-aligned policy planning.

It also summarizes what makes a just transition challenging in developing countries. This includes a large share of informal workers, limited energy access and missing social safety nets.

Reduced pollution would boost Chinese agriculture ([Science Advances](#))

A recent study published in the journal Science Advances found that crops in parts of China are exposed to the world's highest levels of nitrogen oxides (NO_x), a pollutant produced by burning fossil fuels including coal. NO_x is among the most widely emitted pollutants in the world, yet their impacts on agriculture remain poorly known. NO_x can directly damage crop cells and indirectly affect growth by promoting ozone and aerosol formation. The research team uses satellite measures of both crop greenness and NO_x during 2018–2020 to evaluate crop impacts for five major agricultural regions. They find consistent negative associations between NO₂ and greenness across regions and seasons. These effects are strongest in conditions where ozone formation is NO_x limited but remain significant even in locations where this pathway is muted, suggesting a role for direct NO_x damage. Using simple counterfactuals and leveraging published relationships between greenness and growth, the study estimated that slashing NO_x emissions could raise yields in China by about 25% for winter crops and 15% for summer crops. The study found the next highest crop exposures to nitrogen oxides were in India and Western Europe, where it estimated crop yield could increase by about 10% with significant emissions reductions.

Global Steel Transformation Tracker was launched to measure progress in key indicators of the global steel transformation ([Agora Energiewende](#))

In order to reach the goals of the Paris Agreement, enhanced climate action in the 2020s will be required. The global steel sector must play a vital role in this, as the steel sector itself will be facing a crucial decade: before 2030, more than 70% of coal-based blast furnaces will reach the end of their operating lifetime and require major reinvestments. Meanwhile, emerging economies with rising steel demand will require at least 170 Mt of new capacity. Meeting these needs with coal-based capacity will create long-term carbon lock-in and lead to stranded assets. Instead, the global steel sector must use the 2020s to invest massively in low-carbon steelmaking technologies. This will help to transition millions of jobs from coal-based to green, future-proof jobs while putting the global steel sector on a pathway compatible with 1.5°C. The Global Steel Transformation Tracker is a digital tool that measures progress in key indicators of the global steel transformation. It includes country-specific information on reinvestment and new investment requirements of coal-based steelmaking capacity. It tracks companies' announcements on low-carbon steel capacity before 2030. The tracker also sheds light on the 2020s transformation gap—that is, whether low-carbon steel announcements in a country are sufficient to substitute coal-based steelmaking capacity that will reach the end of its technical operating life before 2030. Finally, in the context of a just transition, the tool estimates employment effects of the steel transformation. The tracker is a live tool that will be continuously updated.

