

Greenpeace Warns of High Risk for Further Waves of New Coal Plant Approvals in China: data

English Summary

29 March 2021

On 29 March, 2021, Greenpeace East Asia's Beijing office released a briefing on research that tracked coal approvals across China. The research briefing includes data on coal approvals across the four fiscal quarters of 2020 and across the five years from 2016 to 2020 (the 13th Five-year plan period).

This English summary of that briefing includes:

1. Key findings	Pg. 1
2. A new coal boom	Pg. 2
3. Figures and tables	
1. Figure 1: New approved coal v. overcapacity risk alerts	Pg. 3
2. Table 1: 2020 new approved coal by province by quarter	Pg. 4
3. Table 2: 13th FYP new approved coal by province by year	Pg. 5
4. Overcapacity risks	Pg. 6
5. Regional discrepancies in coal approval and energy intensity	Pg. 6
6. International impacts of China's new coal approval spree	Pg. 6
7. Recommendations	Pg. 7

Key findings

- 46.1 gigawatts (GW) of coal-fired power plants were approved by local development and reform commissions (DRCs) in China during 2020, 231.6% more capacity than was approved in 2019, and a total 31.9% of the total capacity approved during the 13th Five-year Plan period (2016 - 2020).
- Twelve provinces continued to approve coal projects in the fourth quarter, notably after the government's announcement of a carbon emissions reduction target of Net Zero by 2060. These twelve provinces together approved a total 8.1GW(17.5% of the total capacity approved in 2020) during the fourth quarter.
- From 2016 to 2020, DRCs in coal-rich provinces and autonomous regions that still have coal-intensive industrial economies approved around three times the capacity of developed provinces along the eastern seaboard, with Inner Mongolia (25.9 GW), Shaanxi (18.7 GW), and Shandong (15.8 GW) approved the most new capacity.
- While 231.6% more capacity was approved in 2020 than in 2019, and 63.1% more capacity had been approved in 2019 than in 2018, the National Energy Administration's pre-warning system for coal power planning and construction risks has decreased the number of provinces that received "red" or "orange" warnings for overcapacity risks from 27 in 2017 to 10 in 2019 and finally six in 2020.

A new coal boom

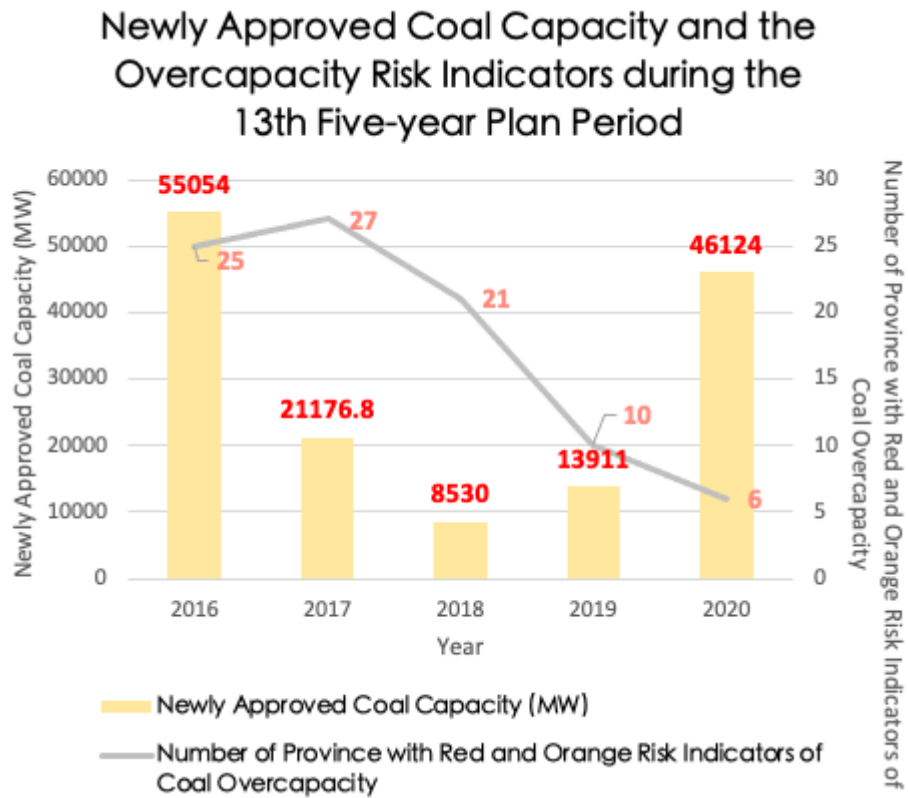
Coal still dominates China's power sector despite the larger share of the energy mix that now comes from solar, wind, and other renewable energy sources. China is the world's largest coal consumer. In 2020, coal-fired power plants generated 60.8% of China's total electricity supply. The installed coal-fired power generating capacity of coal is 1080 GW, amounting to 49.1% of the total power generating capacity currently online in China.

Provincial DRCs, which hold the authorization power for new coal power plants, approved a total of 46.1 GW of new coal capacity in 2020 which is 3.3 times the amount approved in 2019. New coal power capacity approvals had dropped significantly from 2016 to 2018, after a rather large amount of coal capacity had been approved during the "12th Five-year Plan" period from 2010 to 2015. But there has been an upward trend in approvals for new coal capacity since 2018, when the China National Energy Administration relaxed the coal-power overcapacity risk index since 2017, impacting new coal capacity approvals, as shown in Figure 1. In 2016, the National Energy Administration instituted a pre-warning system for coal power planning and construction risks. Each year, the NEA rates each province, municipality, or autonomous region's risk of overcapacity on a color-coded index that indicates overcapacity risk for that province in the next three years. A "red" warning indicates there is an overcapacity and no coal projects are allowed. An "orange" warning indicates that there is risk and decisions on coal-fired power plants should be made carefully. Since 2017, there has been a gradual relaxation in the pre-warning system. In 2017, 27 provinces had "red" or "orange" warnings. In 2020, only six.

Across all provinces, new approved capacity dropped in the fourth quarter of 2020 compared with the first three quarters of 2020, with an average 36.3% less new approved capacity than any of the first three quarters. Among some provinces, municipalities, and autonomous regions, there was a marked shift in coal approvals after Beijing's Net-Zero commitment, though it remains unclear how lasting they will be unless incentives for local DRCs are shifted to incentivize decarbonization. Inner Mongolia's DRC approved 25.9 gigawatts from 2016 to 2020 -- the highest of any local DRC -- and 5,680 megawatts and 5,000 megawatts in Q2 and Q3 of 2020, respectively -- also the highest on both accounts by far. In Q4 of 2020, however, the Inner Mongolia DRC approved no new coal capacity.

The bar graph portion of Figure 1 indicates newly-approved coal capacity, in megawatts, each year from 2016 to 2020. The line graph portion indicates the downward trend in the number of provinces that received "red" or "orange" risk indicators from the NEA.

Figure 1. New approved coal capacity and the overcapacity risk indicators 2016-2020.



**Table 1. Approved coal capacity by DRC in 2020 by quarter and by province.
1,000 megawatts (MW) = 1 gigawatt (GW)**

Table 1. Numbers of newly approved coal capacity by local DRCs in 2020 by quarter and by areas.					
province/municipality/autonomous regions	Q1 (MW)	Q2 (MW)	Q3 (MW)	Q4 (MW)	Grand Total (MW)
Inner Mongolia	1320	5680	5000	0	12000
Shaanxi	7300	50	1320	0	8670
Hubei	0	1380		2700	4080
Anhui	0	2640	47	80	2767
Zhejiang	27	600	2027	60	2714
Jiangsu	38	0	100	2057	2195
Jiangxi	2000	66	0	50	2116
Shanxi	0	24	2024	0	2048
Guangdong	2000	0	0	0	2000
Guangxi	0	22.5	700	732	1454.5
Guizhou	0	0	0	1320	1320
Shandong	0	0	1000	115	1115
Heilongjiang	0	168	580	245	993
Hebei	0	50	544	0	594
Henan	0	200	0	265	465
Jilin	0	90	170	150	410
Chongqing	0	120	218	0	338
Ningxia	0	36	0	300	336
Fujian	190	80	0	0	270
Liaoning	206	0	0	0	206
Hunan	0	32.5	0	0	32.5
Grand Total (MW)	13081	11239	13730	8074	46124

Table 2. Newly approved coal capacity by DRC during the 13th five-year plan period by year and by province. 1,000 megawatts (MW) = 1 gigawatt (GW)

Table 2. Newly approved coal capacity by local DRCs during the “13th five-year plan” period by year and by province.						
province/municipality/autonomous regions	2016 (MW)	2017 (MW)	2018 (MW)	2019 (MW)	2020 (MW)	Grand Total (MW)
Inner Mongolia	5174	7390	1320	0	12000	25884
Shaanxi	9980	0	6	0	8670	18656
Shandong	7590	5953	1043	100	1115	15801
Guizhou	700	615	2600	4120	1320	9355
Gansu	6720	0	0	0	0	6720
Shanxi	4330	160	52	115	2048	6705
Guangdong	60	2000	0	2480	2000	6540
Anhui	1374	128	1466	32	2767	5767
Jiangxi	1320	187	256	1350	2116	5229
Xinjiang	3400	1320	0	0	0	4720
Hubei	240	250	0	0	4080	4570
Jiangsu	1454	6	100	515	2195	4270
Zhejiang	1320	0	0	20	2714	4054
Fujian	1335	0	32	1883	270	3520
Hebei	1450	77.8	193	1200	594	3514.8
Ningxia	270	2056	54	280	336	2996
Henan	1915	50	113	140	465	2683
Heilongjiang	812	616	165	60	993	2646
Guangxi	720	38	0	230	1454.5	2442.5
Sichuan	2000	0	0	0	0	2000
Qinghai	1980	0	0	0	0	1980
Shanghai	0	0	0	1300	0	1300
Chongqing	500	0	279	86	338	1203
Liaoning	0	130	791	0	206	1127
Jilin	60	200	60	0	410	730
Tianjin	350	0	0	0	0	350
Hunan	0	0	0	0	32.5	32.5
Grand Total (MW)	55054	21176.8	8530	13911	46124	144795.8

Overcapacity risks

As of November 2020, China's maximum load electricity consumption was 1180 GW. The installed capacity of thermal power generators was 1230 GW. The total generating capacity is above the maximum load of consumption experienced so far. The spree of new approvals for coal power generating capacity further intensifies the overcapacity, which will present obstacles for China's energy transition.

Coal power plants normally operate for 25 to 30 years once they go online, after construction is finalized. New capacity approved in 2020 will, once it goes online, face increased overcapacity and competition, and lower marginal benefits with an overall higher risk of getting shelved. Coal power plants become stranded assets in this case, as the fixed costs cannot be recovered or turned into liabilities.

Professor Yuan Jiahai from North China Electric Power University has calculated that, if coal power capacity reaches 1,200 GW in 2030, stranded assets will exceed 100 billion RMB. If installed capacity reached 1,300 GW, stranded assets will exceed 400 billion RMB.

During the "Thirteenth Five-year Plan" period, China's wind power and solar power generation installed capacity grew at an average annual rate of 17.55% and 35.00%, and the average annual growth rate of power generation was 17.97% and 40.77%, respectively.

Regional discrepancies in coal approval and energy intensity

During the 13th Five-year Plan period from 2016 to 2020, a total of 27 provincial DRCs approved new coal power. Coal-rich provinces, municipalities, and autonomous regions approved 76.4 GW (52.8% of the national total) during this period while developed provinces along the eastern seaboard approved 25.8 GW (17.8%).

In early 2021, the National Development and Reform Commission (NDRC) announced that the Inner Mongolia province had failed to cut emissions to meet climate goals, totaling 184% of the target emissions. The announcement came from a 2019 regional assessment for dual-control targets for total energy consumption and energy intensity.

The provinces, municipalities, or autonomous regions with the largest coal-fired capacity now approved by their local DRCs are all coal-rich areas: Inner Mongolia (25.9 GW), Shaanxi (18.7 GW), and Shandong (15.8 GW). The coal-rich regions in China have approved new coal power capacity of 76.4 GW during the "13th Five-year Plan" period, which is 52.8% of the national total. The developed eastern regions approved 25.8 GW and is 17.8% of the national total. In general, during the 13th Five-year Plan period, coal-rich areas had passed around three times the coal capacity of the developed eastern provinces (Table 2).

Impacts of China's new coal approval spree

While China was the first developing country to establish a "Net Zero" carbon emissions reduction plan and the first to put a hard deadline on that ambition (by 2060), the country remains in the primary stage of planning for those goals. On the international stage, China has not yet clearly mapped out how it will achieve that reduction target. But the announcement has certainly brought more attention to what specific steps China is (or is not) taking in its climate response. Attitudes toward coal power will impact China's influence on the international community or its ability to promote climate governance.

As the COVID pandemic requires an economic reboot, one ulterior impact is the opportunity to jumpstart renewable energy's share of China's energy mix. But this jumpstart could only happen within the window

of opportunity presented by economic stimulus. Power consumption during the 14th Five-year Plan period is likely to grow. New infrastructure, an increase in power consumption from various levels of tourism, finance and trading, and other “tertiary industries” (第三产业) will contribute to increased electricity demand. This means China could be at a decisive moment to enable access to renewable energy and pump the brakes on coal consumption.

As the world’s biggest developer of renewable energy technologies, China is well-positioned to take advantage of green finance and sustainable investment incentives. This will benefit not only China’s development but also its role in overseas energy investment and sustainable development. That in turn also impacts China’s image and role in international fora, especially in global pushes for green and just recoveries post-COVID.

Recommendations

In order to avoid a recurring coal approval spree as seen in 2020, Greenpeace East Asia’s Beijing office recommends:

1. Keep the scale of coal-fired power capacity within 1100GW in the 14th Five-year energy plan to catalyze decarbonization and make it possible to reach peak emission sooner. Policymaking for the 14th Five-year plan should overall be vigilant about the impact of new-approved coal, as seen in 2020, on China’s climate commitments.
2. In the upcoming 2024 Risk Alert, restrict all provinces from further approving coal power projects. Moving forward, the NEA should coordinate and assess provinces’ approval process for new electricity generating capacity, power load, and peak shaving and, as soon as possible, assess provincial energy installation. Incorporate “generation-grid-load-storage” to coordinate potential emissions peaking schedules. In its current form, China’s climate commitment requires active participation from local DRCs to study and implement energy strategies. Continuing to invest in coal-fired power generation that increases economic and environmental risk is not active participation.
3. Local DRCs need to carefully examine power sectors’ mid- and long-term energy transitions. During the “14th Five-year Plan” period, this means diversifying energy sources during a period of high capital investment rather than doubling-down on coal, efficiently using “generation-grid-load-storage” coordination and putting forward practical action plans to implement NDRC and National Energy Administration guidance on promoting the integration of power source, network, and storage, and diversifying energy generation are all important steps. Developed provinces along the east seaboard need to lead on decarbonization. The coal-rich regions should enact industrial transformation with the total energy consumption and total carbon emission targets, and accelerate new economic growth while shutting down the traditional high-emissions coal power industry.

Disclaimer:

This report provides a public service and informational disclosure and does not provide any sort of investment or decision-making advice. Greenpeace East Asia does not assume any legal responsibility to actions thus taken. Due to public access to information, Greenpeace East Asia cannot provide any definitive guarantee for the timeliness, accuracy or completeness of the information provided here.

For more information, contact:

August Rick
august.rick@greeneace.org

info.eastasia@greenpeace.org
Greenpeace East Asia

www.greenpeace.org/eastasia/