



*Supplement of*

## **Changes in China’s anthropogenic emissions and air quality during the COVID-19 pandemic in 2020**

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**Table S1. China's monthly statistical data used in this study.**

#	Data type	Sector	Data name	Spatial resolution	Temporal resolution	Data source
1	Fuel consumption	All	Natural gas	Country	Month	1
2	Fuel consumption	Power	Coal consumption from six major power companies	Country	Day	2
3	Industrial product	Power	Thermal power generation	Province	Month	3
4	Industrial product	Industry	Industrial value-added	Province	Month	3
5	Industrial product	Industry	Manufacturing purchasing manager's index	Country	Month	3
6	Industrial product	Industry	Iron	Province	Month	3
7	Industrial product	Industry	Crude steel	Province	Month	3
8	Industrial product	Industry	Cement	Province	Month	3
9	Industrial product	Industry	Plain glass	Province	Month	3
10	Industrial product	Industry	Aluminum	Country	Month	3
11	Industrial product	Industry	Aluminum oxide	Province	Month	3
12	Industrial product	Industry	Nonferrous Metals	Province	Month	3
13	Industrial product	Industry	Coke	Province	Month	3
14	Industrial product	Industry	Crude oil	Province	Month	3
15	Industrial product	Industry	Processing Volume of Crude oil	Province	Month	3
16	Industrial product	Industry	Natural gas	Province	Month	3
17	Industrial product	Industry	Chemical fertilizers	Province	Month	3
18	Industrial product	Industry	Sulfuric acid	Province	Month	3
19	Industrial product	Industry	Machine-made Paper and Paperboards	Province	Month	3
20	Industrial product	Industry	Synthetic rubber	Country	Month	3
21	Industrial product	Industry	Tire	Country	Month	3
22	Industrial product	Industry	Ethylene	Province	Month	3
23	Industrial product	Industry	Primary plastic	Province	Month	3
24	Industrial product	Industry	Refined sugar	Province	Month	3
25	Industrial product	Industry	Beer	Country	Month	3
26	Industrial product	Industry	Wine	Country	Month	3
27	Industrial product	Industry	Liquor	Country	Month	3
28	Industrial product	Industry	Synthetic fiber	Country	Month	3
29	Industrial product	Industry	Silk and woven fabric	Country	Month	3
30	Industrial product	Industry	Cloth	Province	Month	3
31	Industrial product	Industry	Chemical medicine	Country	Month	3
32	Traffic volume	Transportation	Onroad freight ton-kilometers	Province	Month	4
33	Traffic volume	Transportation	Onroad passenger-kilometers	Province	Month	4
34	Traffic volume	Transportation	Railway freight ton-kilometers	Country	Month	3
35	Traffic volume	Transportation	Waterway freight ton-kilometers	Country	Month	3
36	Traffic index	Transportation	TOMTOM traffic index	City	Day	5
37	Real estate	Transportation	Floor space of real estate started	Country	Month	3
38	Residential activity	Residential	Index of service production	Country	Month	3
39	Residential activity	Residential	Population-weighted heating degree day	Province	Day	6

Data source note:

1: <https://www.ndrc.gov.cn/fgsj/tjsj/jjyx/mdyqy/>

2: <https://www.wind.com.cn/>

3: <https://data.stats.gov.cn/>

4: <http://www.mot.gov.cn/shuju/>

5: [https://www.tomtom.com/en\\_gb/traffic-index/](https://www.tomtom.com/en_gb/traffic-index/)

6: Daily average temperature is derived from <https://cds.climate.copernicus.eu/>. Gridded population dataset is derived from the UN WPP-Adjusted Population Count, v4.11 (<https://doi.org/10.7927/H4PN93PB>).

**Table S2. Monthly growth rates (%) in 2020 compared to the same month of 2019 in China.**

#	Data name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Natural gas	3.4	-1.9	2.8	8.8	7.4	3.5	-0.9	2.5	7.0	18.9	19.0	-1.7
2	Coal consumption from six major power companies	-12.6	-16.9	-20.0	-13.1	7.1	-18.4	/	/	/	/	/	/
3	Thermal power generation		-8.9*	-7.5	1.2	9.0	5.4	-0.7	6.2	0.2	-1.5	6.6	9.2
4	Industrial value-added		-13.5*	-1.1	3.9	4.4	4.8	4.8	5.6	6.9	6.9	7	7.3
5	Manufacturing purchasing manager's index	0.8	-43.8	2.7	3.1	2.9	5.1	3.6	3.1	3.3	6.1	4.0	1.9
6	Iron		3.1*	1.1	-1.2	2.4	4.1	8.8	5	6.9	9.4	4.7	5.4
7	Crude steel		3.1*	-1.7	0.2	4.2	4.5	9.1	8.4	10.9	12.7	8	7.7
8	Cement		-29.5*	-18.3	3.8	8.6	8.4	3.6	6.6	6.4	9.6	7.7	6.3
9	Plain glass		2.3*	0.5	-6.8	-0.6	-3.9	0.6	3.1	1.6	1.7	7.4	2.4
10	Aluminum		2.4*	2.3	1.5	-0.1	0.8	3.1	5.5	7.9	9.7	8.7	7.6
11	Aluminum oxide		-13*	-3.6	-3.2	-4.6	-1.8	-1.6	6.6	13.9	9	11.3	3.2
12	Nonferrous Metals		2.2*	1.6	3.8	4.1	3.1	3.3	6.9	7.3	9	6.1	8.6
13	Coke		-5.5*	-2.4	-1.3	-3.2	-4.2	0.3	2.9	2.6	2.2	4.5	1.2
14	Crude oil		3.7*	-0.1	0.9	1.3	0.7	0.6	2.3	2.4	1.4	1.2	0.9
15	Processing Volume of Crude oil		-3.8*	-6.6	0.8	8.2	9	12.4	9.2	1.3	2.6	3.2	2.1
16	Natural gas		8.0*	11.2	14.3	12.7	11.3	4.8	3.7	7.6	11.9	11.8	13.7
17	Chemical fertilizers		-4.1*	5.1	-1.4	-2	-1.9	-6.7	-5.3	-3.1	0.7	2.9	-8.7
18	Sulfuric acid		-10.4*	-8.7	8.6	0.7	0.8	-0.5	2.4	-3.5	2.1	0.6	6.3
19	Machine-made Paper and Paperboards		-17.8*	-2.1	2.8	-0.5	4.1	4.9	5.3	5.3	8.1	8	2.9
20	Synthetic rubber		-14.8*	1.1	2.3	7.1	5	7.1	9.2	5.1	15.8	2.1	-4.7
21	Tire		-27.2*	-7.8	-12.2	-4.6	0.5	5.5	13.4	15.4	15.2	18.8	18.2
22	Ethylene		5.6*	-1.4	-1.4	-2.7	-4.3	3	8.6	12.6	16.5	11.6	11.3
23	Primary plastic		-3.8*	1.2	3.7	7.9	7.7	5.1	13.1	12.3	11.7	11.6	6.3
24	Refined sugar		-1.5*	-43.2	-28	82.4	81.4	67.8	27.3	25.2	60	2.4	3.2
25	Beer		-40.0*	-21.5	7.5	14.6	7.6	0.7	-3.8	2.3	-11.3	-6.8	-12.1
26	Wine		-67.6*	-31.3	26.9	-19.2	-21.2	-23.1	-22.2	-13.9	15.6	-10	-26.9
27	Liquor		-16.9*	-6.5	-2.4	4.3	-2.3	-8.9	-15.3	-7.8	-9.7	-6.8	9.1
28	Synthetic fiber		-13.3*	-4.3	3.3	6.7	8.2	2.3	2.3	2.7	2.9	4.1	12.2
29	Silk and woven fabric		-17.3*	-16.3	-30.2	-22.4	-9.4	-13.1	-22.1	-15.3	-16.9	-18.7	-15.1
30	Cloth		-36.0*	-24.9	-21.8	-19.6	-18.9	-18.8	-15.6	-12.6	-0.6	-4.8	-4.3
31	Chemical medicine		-22.2*	-2.4	1.2	0.9	0.8	1.0	-1.0	5.8	-3	6.9	7.8
32	Onroad freight ton-kilometers	-20.6	-41.5	-14.5	1.6	1.6	6.6	4.6	6	8.8	10.7	8.9	10.5
33	Onroad passenger-kilometers	-11.2	-87.7	-71.6	-58.4	-51.1	-44.6	-43.4	-40.8	-38.7	-37.1	-37.9	-41.2
34	Railway freight ton-kilometers	-3.4	3.8	-5.2	-10.2	-2.3	5.6	6.5	4.8	3.4	3.2	2.7	2.4

35	Waterway freight ton-kilometers	-13.8	-17.5	-7	-5.7	-4.3	1.9	-3.8	1.9	2.4	3.7	7.2	2.4
37	Floor space of real estate started		-44.9*	-10.5	-1.3	2.5	8.9	11.3	2.4	-1.9	3.5	4.1	6.3
38	Index of service industrial production		-13.0*	-9.1	-4.5	1.0	2.3	3.5	4.0	5.4	7.4	8	7.7
39	Population-weighted heating degree day	-3.6	-9.1	-3.4	/	/	/	/	/	/	/	-0.7	1.0

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\* represents the growth rates of the sum of data in January and February.