

Press release

Air quality improves as China eases reliance on coal and heavy industries: Key trends from H1 2024

BEIJING/HELSINKI, 20 September 2024 - In the first half of 2024, China's national air quality improved, with PM2.5 concentrations decreasing by 2.9% year-on-year, offsetting half of the rebound observed during the same period in 2023.

According to a new report from the [Centre for Research on Energy and Clean Air](#), the most significant reduction in China's air pollution in H1 2024 occurred in southwestern China where thermal power generation saw the steepest decline. However, the rapid expansion of the chemicals and non-ferrous metals industries has led to a rise of 0.7% in ozone concentrations, making it the only pollutant to increase during this period.

In the first half of 2024, the largest drops in thermal power occurred in southwestern provinces: Qinghai (-23%), Hunan (-22%), Guangxi (-8%) and Guizhou (-7%), driven by heavy rainfall that boosted hydropower. Significant PM2.5 reductions were also seen in these places, with Guizhou, Guangxi, and Hunan decreasing concentrations by 19%, 18%, and 14%, respectively.

The benefits of clean energy are becoming evident in lower air pollution levels as China's power sector, a major emitter of particulate matter, transitions away from fossil fuels. In the first half of 2024, the power generation from solar and wind [grew](#) by 27.1% and 6.9%, respectively, fully meeting the demand growth. Hydropower also rebounded by 21.4% following previous droughts. This recent decline in air pollution also aligns with [reduced](#) carbon emissions in the second quarter, highlighting their shared sources.

Significant reductions in steel and cement outputs due to the ongoing contraction of the real estate sector have further contributed to lower air pollution levels. In the first half of 2024, cement production decreased by 10.0%, and pig iron and crude steel output fell by 3.6% and 1.1%, respectively. Production levels for these industries in the whole of 2024 are not expected to surpass those of 2023. Furthermore, China [suspended](#) all new steel plant permits due to overcapacity concerns in August. These measures are anticipated to lower steel output and with that the emission of related air pollutants.

However, ozone pollution has increased year-on-year in the first half of 2024. This rise is largely driven by the rapidly expanding chemicals industry and non-ferrous metals industry, major sources of volatile organic compounds (VOCs) and nitrogen oxides (NOx), which are key ozone precursors. In the first half of 2024, the industrial added values of the chemicals industry and the nonferrous

industry [grew](#) by 10.5% and 11.1%, respectively, with continued investment exacerbating the challenge of reducing ozone pollution.

The '[Ozone Pollution Prevention and Control Action Plan](#)', released by the Chinese State Council in 2022, aims to “effectively curb the rising trend in ozone concentration” by 2025. However, achieving this target will be a challenge because despite reduced emissions from heavy industries such as steel, cement, and power generation, ozone remains the only air pollutant that has increased compared to 2020 levels, by 4.7%.

Regionally, PM_{2.5} levels still saw an increase in the Yangtze River delta region, an economically developed region on China’s east coastline. Except for cement, thermal power generation and heavy industry outputs such as steel, chemical fibres, and non-ferrous metals continued to grow in this region. On the other hand, ozone levels surged in the northern region, which also saw persistent growth in thermal power generation and new growth in chemical and non-ferrous metal production.

As the real estate sector has slowed post-COVID-19, clean technology has taken the lead in driving industrial transformation. To curb rising ozone levels and ensure continued improvements in air quality, it is crucial to implement and enforce long-term regulatory measures and expedite the clean power transition in China.

“The power sector, a major driver of China’s emissions growth, has seen a significant slowdown in emissions increases due to robust growth in solar and wind power generation. If the trend of decreasing thermal power generation continues and expands to more provinces, it could significantly reduce associated air pollution while supporting progress towards the 1.5°C climate goal,” said Chengcheng Qiu, author of the report and China Analyst at CREA.

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Notes to editors

The report related to the press release can be found [here](#)

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About CREA

The Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions to air pollution. CREA uses scientific data, research, and evidence to support the efforts of governments, companies, and campaigning organisations worldwide in their efforts to move towards clean energy and clean air, believing that effective research and communication are the keys to successful policies, investment decisions, and advocacy efforts. CREA was founded in Helsinki and has staff in several Asian and European countries.

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About the methodology

The air quality data in this briefing are based on a dataset collected hourly from real-time measurements reported on Chinese government websites. City and province averages are calculated as a simple average of measurements from all monitoring stations in the region. Stations and cities with missing data are excluded following Chinese Ministry of Ecology and Environment criteria, and $PM_{2.5}$ and PM_{10} measurements during dust storm periods are excluded using criteria that follow the official methodology as closely as possible.

Data on energy consumption and industrial activity is similarly based on reporting by Chinese central and provincial statistical bureaus accessed through the WIND financial terminal.