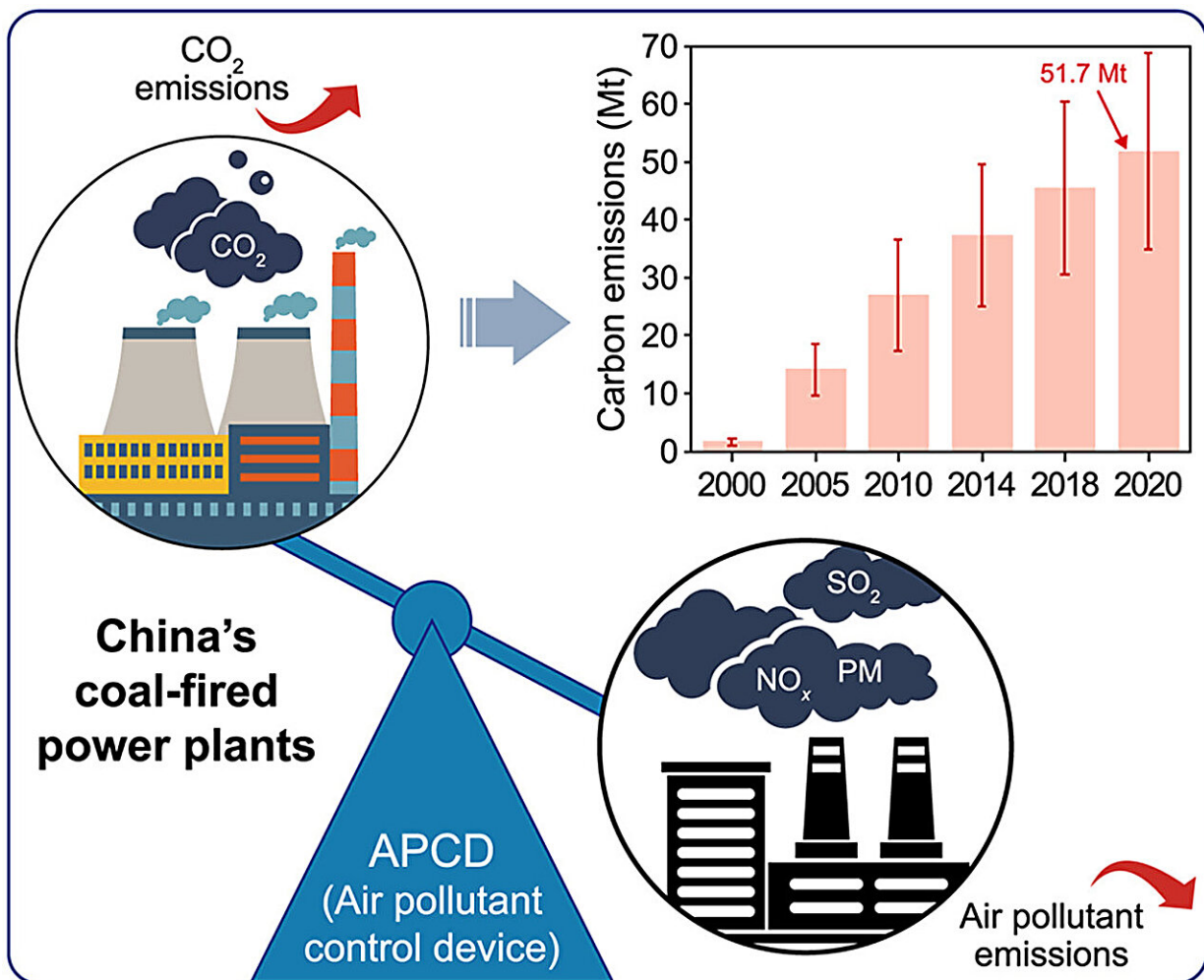


Overlooked CO₂ emissions induced by air pollution control devices in China's coal-fired power plants

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Credit: *Environmental Science and Ecotechnology* (2023). DOI: 10.1016/j.ese.2023.100295

China has implemented various environmental regulations, including the widespread use of air pollution control devices (APCDs) in CFPPs. While APCDs have successfully reduced air pollutants, their electricity consumption has led to indirect carbon dioxide (CO₂) emissions. The extent of these CO₂ emissions has remained uncertain, prompting researchers to delve deeper into this overlooked environmental concern.

In a new study published in the journal *Environmental Science and Ecotechnology*, researchers from Shandong University conducted a study revealing that the proportion of APCD CO₂ emissions in [total emissions](#) from CFPPs surged from 0.12% in 2000 to 1.19% in 2020. Notably, desulfurization devices were the primary contributors, accounting for approximately 80% of APCD CO₂ emissions in 2020, followed by dust removal and denitration devices.

The researchers also projected future APCD CO₂ emissions under different scenarios, highlighting the significant impact of CFPPs' lifespan on emissions. They identified Nei Mongol, Shanxi, and Shandong provinces as potential hotspots for high emissions due to large-scale newly built CFPPs.

To tackle this emerging environmental issue, the researchers proposed various measures, including enhancing APCD energy efficiency and providing low-carbon electricity through photovoltaic power or biomass co-firing with coal. They emphasized the need for comprehensive environmental impact assessments to ensure that policies aimed at reducing air pollutants do not inadvertently increase CO₂ emissions. Furthermore, the study's analysis framework offers valuable insights for other emission-intensive sectors, such as [steel production](#) and waste incineration.

Highlights

- CO₂ emissions induced by air pollution control devices are quantified.
- A plant-level CO₂ emission inventory is compiled.
- Future emissions under diverse climate targets are simulated.
- Hotspots of future emissions are identified.

The study's findings have emphasized the importance of adopting integrated strategies to balance the reduction of both air pollutants and carbon [emissions](#). The findings are expected to inform policymakers, industry stakeholders, and environmentalists alike, paving the way for more informed and holistic approaches to addressing China's environmental challenges.

More information: Pengfei Zhang et al, Overlooked CO₂ emissions induced by air pollution control devices in coal-fired power plants, *Environmental Science and Ecotechnology* (2023). [DOI: 10.1016/j.ese.2023.100295](#)

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