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## PEAKING CARBON EMISSIONS IN CHINA'S POWER SECTOR FROM A REGIONAL PERSPECTIVE

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**C**hina, the largest greenhouse gases (GHGs) emitter in the world, pledged to peak its carbon emissions by 2030. Considering the great contribution of power industry on the CO<sub>2</sub> emissions and its main role for peaking China's CO<sub>2</sub> emissions prior to 2030, this study aims to investigate the peaking time of CO<sub>2</sub> emissions in China's power industry from a regional perspective. Only each regional power industry peaks its carbon emissions prior to 2030 will peak China's power industry its carbon emissions by 2030. Consequently, we develop a national energy technology-power (NET-power) model to assess the impacts of technological improvement and energy structure shift on the carbon emissions for each region, and further answer the question of carbon emissions peak in the power industry. The results show that when taking joint actions of promoting advanced technologies and shifting to more renewable energy, China's power industry could peak its CO<sub>2</sub> emissions at 3717.99 MtCO<sub>2</sub> in 2023. All regional power industries will achieve the goals of peaking their CO<sub>2</sub> emissions by 2030 except East. After taking the advantage of promoting nuclear power generation technology vigorously in the East region, it can peak its CO<sub>2</sub> emissions in 2040. Due to the development of wind power and solar power generation technologies, North and Northeast could peak their CO<sub>2</sub> emissions at 1358.55MtCO<sub>2</sub> in 2026 and at 224.86 MtCO<sub>2</sub> in 2020, respectively. Center area could peak its CO<sub>2</sub> emissions at 407.14MtCO<sub>2</sub> in 2023 if increasing the capacity of hydro power by 52.65% until 2030 compared to 2015. Northwest will peak its CO<sub>2</sub> emissions in 2023 as well and could achieve all the electricity generated by renewable energy in 2050. The power industry in South would peak its CO<sub>2</sub> emissions earliest in 2015 with 343.55 MtCO<sub>2</sub>.

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