COVID-19 Induces Emissions Cut and the Development of the Digital Economy

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The quarantine policy in China for controlling the spread of COVID-19 has led to suspension of city operations, including entertainment activities, tourism, transportation, and shopping. Traffic data shows that the number of passengers dropped by half compared to 2019. Factories have been shut down completely and the Purchasing Managers' Index fell to 35.7, which is an historically low record. Satellite images released by NASA shows COVID-19 has dramatically reduced pollution throughout China (NASA, 2020).

The energy sector is heavily affected by the current health crisis. Our estimate suggests that the outbreak of coronavirus reduces China's energy consumption and thus greenhouse gases, in particular carbon emissions, in the short run. In February, coal consumption for electricity generation was reduced by 63.3 Mt, equivalent to about 142 million tons of reduction in carbon dioxide emissions. The consumption of natural gas was reduced 2.76 billion cubic meters, corresponding to an emission reduction of 6 million tons. State Grid Energy Research Institute estimated that the outbreak of COVID-19 has reduced the demand for oil by 3 million barrels per day, about a 20% reduction. The reduced emissions from oil consumption is about 36 million tons. In total, the epidemic control policy has lowered China's carbon emissions by over 184 million tons in February. If emission from production of other industrial sectors are considered, the total number will be much higher.

Such reduction is expected to persist in the long run. This may finally change the emission trajectory of greenhouse gases not only in China but also worldwide, as the duration is being prolonged and the number of countries being quarantined increases. According to the World Health Organization, infections have been detected in over 100 countries (WHO, 2020). An increasing number of countries and regions have been locked down. The emissions of greenhouse gases in these regions will decline accordingly in the coming months.

The COVID-19 epidemic will continue its impact of cutting carbon emissions in the long run through structural change of industry mix and energy mix. The shutdown of production exacerbates the overstocking of bulk commodities such as steel and cement. This will crowd out excessive production capacity of those high-emitting industries. In addition, governmental supporting policy aimed for firms to survive excludes emission intensive industries, while digital and high-tech industries experience explosive growth as the streamline of online work and education creates new demands. The energy transition towards renewables also cuts carbon emissions.

China's experience has also shown the power of the information network and digital society on curbing the spread of coronavirus. Information on COVID-19 infection was limited before January 20, 2020. The announcement of "human-to-human transmission" on that day provoked public panic and supply shortages. The Chinese central government responded swiftly to report the number of confirmed cases on a daily basis and asked local governments of all levels to disclose the statistics at least once per day. This significantly helps eliminate potential social unrest.

Four days later, WeChat, the Chinese version of Twitter, was connected to the Inspection platform of the State Council. In two days, it received 75 million visits. Besides providing timely official information, it offers the public a channel to report any local information on the epidemic, and it also connects to 220 hospitals for online services. The WeChat platform service has been used over 1.7 billion times in the 20 days after going online. Similar service is also offered by Alipay, a counterpart of Apple pay. People in China can now access the recent update of COVID-19, both within the country and abroad.

As the quarantine continues, China is moving towards digitalization. Online conferencing and online education are turning into a routine in Chinese people's daily life, thanks to the high penetration of the internet and coverage of mobile devices. The digital network helps the government restore public confidence in quickly defeating the coronavirus, by disseminating information in a transparent and timely manner; meanwhile, the coronavirus has significantly accelerated the development of the digital society. AI technology and 5G technology have been adopted by many more cities and provinces in China following such practice as it significantly reduced the risks of infection.

Scientists worry that weaker health-care in vulnerable nations will slow the defeat of the coronavirus (Mallapaty, 2020). We urge high-risk countries to learn from the Chinese experience. Countries may further develop their 5G technology and information infrastructure in the near future, which will accelerate the structural change of the economy and thus lower its greenhouse gases emissions. However, one environmental threat of digitalization is the potential increase in emissions from growing electricity demand, as electricity is mainly generated using fossil fuels in China. Therefore, the development of renewable energy, or storage technology for renewables has to speed up to meet such demand.

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