SERRC
Social Epistemology
Review & Reply Collective

http://social-epistemology.com
ISSN: 2471-9560

"New Infrastructure Investment" (新基建) in China: A Proactionary Measure After the COVID-19 Crisis

Cong Wang, University of Warwick, victoriawangcong@163.com

Wang, Cong. 2020."'New Infrastructure Investment' (新基建) in China: A Proactionary Measure After the COVID-19 Crisis." *Social Epistemology Review and Reply Collective* 9 (6): 77-82. https://wp.me/P1Bfg0-4Wa.

SERRC
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Review & Reply Collective
9 (6): 77-82. 2020.
https://wp.me/P1Bfg0-4Wa

After the COVID-19 Crisis: A Chance to Go Green

COVID-19 has caused damage to the Chinese economy. On 17 April 2020, China's National Bureau of Statistics of China (国家统计局) released China's economic data for the first quarter of 2020. The data showed that China's GDP fell 6.8% in the first quarter. International Monetary Fund (IMF) forecasts that China's annual GDP growth rate will fall to 1.2% in 2020—the lowest since the "Reform and Opening-Up" (1978). And the Chinese government has not set a GDP growth target for 2020. Thus, in early March, after China had initially contained the COVID-19 and started to reopen the country, the Chinese government proposed an investment plan called "New Infrastructure Construction" (新型基础设施建设，"新基建") to deal with the economic downturn. The Chinese government's "New Infrastructure" plan refers to information technology infrastructure, transport infrastructure, and power infrastructure.

In the "New Infrastructure" plan, environment-related infrastructure has become a new focus. On 28 March, according to Ministry of Transport, 25 of China's 31 provinces released their investment plans for major projects in 2020. The plan features keywords such as "5G," "big data centers," and "new energy vehicle charging piles" (新能源充电桩). "New Energy Vehicles" (新能源汽车) in China refer to pure battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell electric vehicles(FCEVs). The "new energy vehicle charging piles" are the essentials for electric vehicles.

At the national level, new energy vehicles are also a focus. On 31 March, the State Council (国务院) announced three measures to boost new energy vehicle industry:[1]

> 1) Extend subsidies and duty-free policy of new energy vehicles for two years;
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> 2) The central finance will adopt incentives instead of subsidies to eliminate diesel trucks with National three or lower emission standards in key areas such as Beijing, Tianjin, and Hebei Province;
>
> 3) A reduction of 0.5% of the VAT on sales of used cars to enterprises from 1 May 2020 to 2023.

Following in the footsteps of the State Council, the government departments also came up with their plans. On 16 April, the State Grid Corporation of China (国家电网) announced that 78,000 new energy vehicle charging piles will be built by 2020. On 22 April the Ministry of Finance (财政部), the General Administration of Taxation (税务总局), and the Ministry

[1] http://www.189tv.com/xinwen/2020-04/01/content_5497748.htm

of Industry and Information Technology (工业和信息化部) announced a duty-free policy on new energy vehicles from 1 January 2021 to 3 December 2022.[2]

The local governments also promote new energy vehicles. For example on 31 April, Shenzhen (深圳), in Guangdong Province, announced two measures:[3]

> 1) Easing restrictions on the purchase of new energy vehicles by individuals. Both foreigners and non-Shenzhen citizens can buy new energy vehicles without the restriction of paying for local medical insurance for 24 months or more.
>
> 2) 20,000 Yuan/car subsidy for newly purchased new energy vehicles.

The Chinese government's policy for new energy vehicles can be seen as a proactionary technology policy as there are still many problems and challenges faced by new energy vehicles. For example, in May 2020, there were three accidents of new energy vehicles in one week.[4] The safety of new energy vehicles is in doubt. Still, new energy vehicles will have a positive impact on China's carbon emissions and environmental protection. In 2009, China's transport sector accounted for 48% of oil consumption (China Automotive Energy Research Center, Tsinghua 2012). Zhou, Ou, and Zhang (2013) once predicted that the proportion of oil consumption in the transport sector in China would be more than half by 2030. The promotion of new energy vehicles will effectively reduce oil consumption in the transport sector. With new energy vehicles, China is taking a step toward environmental protection.

Economy or Environment: "Old Infrastructure" vs "New Infrastructure"

When it comes to "New Infrastructure," one might recall that during the Global Financial Crisis (2007-2009) the Chinese government released a plan to deal with the economic downturn—an investment of 4 trillion Yuan to build the infrastructure. The Chinese government refers to the 2020 investment plan as "New Infrastructure" to distinguish it from the "Old Infrastructure" plan in 2008. The "Old Infrastructure" plan mainly invested in traditional infrastructure—railroads, highways, airports, water conservancy construction, and upgrading power grids (Shi and Huang 2014). The "New Infrastructure" plan focuses more on information and environmental infrastructure.

The most significant difference between the two plans is the attitude towards environmental protection. In the "Old Infrastructure" plan, in the game of economic and environmental protection, China chose the economy and, so, chose to adjust its industrial structure at the expense of the environment. The economic results were significant. The imbalance in the industrial structure of the Chinese economy was compensated (Wang and Lu 2009). China moved up in the global value chain and exports, since 2005, moved towards higher value-

[2] http://www.gov.cn/zhengce/zhengceku/2020-04/22/content_5505188.htm
[3] http://auto.people.com.cn/n1/2020/0501/c1005-31695508.html
[4] https://baijiahao.baidu.com/s?id=1666310637037673257&wfr=spider&for=pc

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added products instead of cheap ones (Mi and Meng 2017). The development gap between the Eastern Region and the Western Region narrowed. According to Shi and Huang (2014), the Western Region is better positioned than the Eastern Region in infrastructure after the implementation of the "Old Infrastructure" plan.

However, the cost to the environment is great. At the end of 2008, the Chinese government proposed an infrastructure investment plan with 4 trillion Yuan, but this plan was revised at the National People's Congress and the National Committee (两会) in March 2009. The investment in energy-saving and emission reduction was reduced from 350 billion Yuan to 210 billion Yuan, and its share was reduced from 8.75% to 5.25% (Yan and Xu 2009). The proportion of environmental improvement investment in total urban infrastructure investment dropped from 25.4% in 2000 to 21.3% in 2009 (Wu and Deng 2013). The cut in environmental protection investment caused serious consequences. China's carbon emissions have increased significantly since 2010 (Mi and Meng 2017). The Western Region in China, which was poorer than the Eastern Region and used to have fewer carbon emissions, started to exceed carbon emissions of the Eastern Region (Mi and Meng 2017).

The "New Infrastructure" plan focuses on new energy vehicles and associated facilities, which will be an effective environmental measure for the transport sector. For example, Hawkins and Singh (2013) found that electric vehicles would offer a 10% to 24% decrease in global warming potential (GWP) in Europe. The same situation also happened in China. Li and Davis (2016) showed that the electric vehicles would reduce NO_X emission in all the regions in China and SO_2 emission in the region south of the Yangtze River. They predicted that the future potential for emission reduction would from southern provinces. The study of Hao and Qiao (2017) also indicates that the adoption of electric vehicles would significantly reduce the reliance on fossil fuel in the long term in China. Therefore, the deployment of electric vehicles will contribute to energy-saving and greenhouse gas emission reduction in China's transport sector.

However, we should also note that the adoption of electric vehicles is just the first step to environmental protection in China. At present, China's power system still relies heavily on coal. A coal-based power system dominates the Northeast and North China with a proportion of 95% - 98% (Huo and Zhang 2010). Li and Davis (2016) point out that electric vehicles are shifting the use of gasoline to coal-fired power generation in China and it might be more carbon emission from the power system. Therefore, the next step for environmental protection in China might need to change its power system and use cleaner and renewable energy sources. Moreover, the recycling of electric vehicles would also be beneficial in reducing greenhouse gas emissions. The recycling of steel, aluminum, and the cathode material of traction battery in electric vehicles accounted for 61%, 13%, and 20% of the total emission reduction, respectively (Hao and Qiao 2017).

Since the onset of the COVID-19 crisis, the Chinese government prefers new energy vehicles in the transport sector. This preference might yield two benefits. First, new energy vehicles could serve as a new hot spot of consumption. Second, new energy vehicles could reduce air pollution in the transport sector. The idea is embodied in the 2020 Government

Work Report (政府工作报告 2020) at the National People's Congress and the National Committee (两会) in May 2020. In the report, Li Keqiang (李克强) suggested that China's investment in 2020 would focus on "New Infrastructure," "New Urbanization," and key projects in transportation and water conservancy (两新一重). Among the "New Infrastructure" initiatives, Li highlighted the construction of new energy vehicle charging piles and the promotion of new energy vehicles to "stimulate new consumer demand and facilitate industrial upgrading."[5] New energy vehicles are seen as an important part of industrial upgrading and energy-saving and environmental protection industry.

Yet, after the COVID-19 crisis, China could make few changes in its energy mix and remain coal-based. According to the report, for the power system, the main goal for 2020 is to guarantee energy security. The main measure to achieve environmental protection in the power system is to improve the clean and efficient use of coal.[6] Clean energy will serve as a supplement.

Thus, after the COVID-19 crisis, we might see China's environmental achievements mainly in the transport sector thanks to the use of new energy vehicles. While the power system still has a long way to go in terms of environmental protection.

Proactionary Approaches to the Crisis

Although the attitude of the "Old Infrastructure" and "New Infrastructure" plans toward environmental protection is very different, they remain proactionary principles that the Chinese government adopted in response to the crisis. In the game of environment and economy, the Chinese government has chosen to pollute first and then regulate. This process is similar to what More calls "learn by acting" (Holbrook and Briggle 2013). The Chinese government focused on solving economic difficulties after the Global Financial Crisis but caused a serious problem of environmental pollution. Therefore, the Chinese government is concerned about environmental protection after the COVID-19 crisis.

Both the precautionary principle and the proactionary principle is about weighing the pros and cons before making a decision (Holbrook and Briggle 2013). One who adopts the proactionary principle is usually more willing to face uncertainty because they will view the uncertainty as a Gestalt switch (Fuller 2020). In this way, the uncertainty can be seen as turning from a potential threat into an opportunity (Fuller and Lipinska 2014).

The proactionary principle is the policy choice of the Chinese government in response to the crisis. This option is also suited to China's situation. China's centralized system can shift between the two extremes. Therefore, by comparing the "Old Infrastructure" plan with the "New Infrastructure" plan, China can easily switch from economy-centric to environment-centric. Moreover, because China's centralized system can easily move from one extreme to

[5] http://www.gov.cn/zhuanti/2020lhzfgzbg/index.htm
[6] http://www.gov.cn/zhuanti/2020lhzfgzbg/index.htm

the other, it is able to withstand the risks posed by the choice and can compensate for the adverse consequences caused by the previous policy. However, China's science and technology policy is easily leading to extreme consequences. For example, the large amount of carbon emissions generated in the implementation of the "Old Infrastructure" plan requires greater efforts to address. China's "learn by acting" strategy can also lead to a lack of long-term goals and fall in the trap that only focuses on solving the problems left before. After the COVID-19 crisis, China will address the environmental issues that resulted from the last proactionary measure in 2008. For China, the crisis might be an opportunity to achieve environmental protection.

COVID-19 has caused great damage to the economy not only in China but also worldwide. Still, there are new opportunities for human beings to protect the environment. During the lockdown we also saw some rare scenes; for example, we saw a clear river in Venice, a blue sky in India, and the potential environmental benefits brought by the "New Infrastructure" plan in China. As Fuller (2012) says, we can take a proactionary attitude towards the crisis and "never let a good crisis go to waste" (chapter 4). If we are prepared, we can also turn the COVID-19 crisis into a successful environmental protection opportunity. As Lao Tzu said: "Difficult and easy interdepend in completion" (难易相成) (*Wisdom of Laotse,* Yutang Lin translation).

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