

Environment

The Story So Far

China's rapid economic rise has come at a heavy environmental cost, and its population is increasingly demanding an "ecological civilization" that addresses health-threatening air pollution, heavily polluted rivers and groundwater, and contaminated land. Studies estimate premature deaths from air pollution at 1 to 2 million per year, while the World Bank puts the overall cost of China's water pollution crisis at 2.3% of GDP. Policymakers are aware of these threats: the 2013 Third Plenum set environmental reform and sustainable development as some of the government's main responsibilities. Aided by structural transition away from polluting heavy industries, initial reform efforts are making a difference. Yet much more is required to put a sustainable future within reach, let alone to raise China's air and water quality to international standards.

- In 2013, officials released the first "Air Pollution Prevention" plan, requiring major Chinese regions to meet air pollution reduction targets within four years. Beijing was required to reduce air pollution by 33%, prompting it to shutter coal-fired power stations and curtail coal-burning heaters. A 2018 "Blue Sky" action plan built on the original 2013 plan by setting out further reduction targets of at least 18% for large cities and regions that lagged 2013 goals.
- Premier Li Keqiang announced a "war on pollution" in 2014, outlining plans to reduce particulate air pollution, cut production in overcapacity industries like steel and aluminum, shift away from coal power, and develop renewable energy and resources. While previous policy efforts suffered from a lack of concrete action, a revised Environmental Pollution Law reinforced the war on pollution by increasing penalties for polluters and integrating environmental performance into local officials' performance and promotion metrics.
- The winter of 2017–2018 featured an aggressive campaign against air pollution, including a strict coal-heating ban in northern cities. However, natural gas supply shortages and preemptive coal furnace removals prompted a heating crisis in some regions and forced officials to allow some flexibility at the local level. January 2018 revisions to the tax code also implemented sliding pollution tax rates; increased penalties; and initiated new rewards for firms that cut air, water, noise, and solid waste pollution. Importantly, the law put local governments at the forefront of enforcement, enticing them with 100% of pollution tax revenue.

- The State Council created a new Ministry of Ecology and Environment (MEE) in March 2018, consolidating scattered pollution enforcement and environmental powers from seven agencies. The previous Ministry of Environmental Protection had been sharply criticized even by domestic observers for feeble policy and perceived collusion with provincial interests. The MEE was meant to streamline governance and invigorate enforcement and local inspections.

Methodology

For the air pollution index, a range of factors drives seasonal concentrations of PM 2.5; one of the largest is the domestic use of coal for heating and cooking. We source monthly average PM 2.5 data from the China National Environmental Monitoring Center (CNEMC) for 74 Chinese cities. From these data, we remove some of these seasonal effects using a decomposition analysis. We then average the data across the 74 cities to produce our index. Previously, we utilized daily U.S. State Department air quality data from five environmental monitoring stations at U.S. consulates in China. Due to both the retirement of the U.S. State Department's air quality feeds and increased reliability of China's own air quality data, we implemented a switch to CNEMC data for our analysis starting in 3Q2019.

For the water quality index, we use data from the Ministry of Environment and Ecology (MEE). Specifically, we track the average water quality for the Yangtze, Yellow, Pearl, Songhua, Huai, Hai, Liao, and Zhejiang-Fujian river basins. The average water quality from these basins is aggregated into a national indicator. The MEE publishes water quality data on a monthly basis derived from several hundred monitoring stations across the country in key watersheds. Based on 21 indicators, including total nitrogen, pH, dissolved oxygen, heavy metals, chemical oxygen demand, and others (all based on Surface Water Environmental Quality Standard: GB3838-22), these surface water bodies are put into categories ranging from I (excellent, drinking quality) to V+ (high pollution, not suitable for any use). By tracking the changes in these categories over time, our water quality index can provide an idea of the overall health of Chinese surface water supplies. As seasonal effects can change water quality, we seasonally adjust this index as well. In January 2017, the Ministry of Environmental Protection (MEP, now MEE) started issuing weekly quality reports. We rely on these data for December 2016 through June 2018.

We rebase the air quality data to November 2014 as the benchmark to track quarter-on-quarter changes. Water pollution data only go back to October 2012. We also

adjusted the World Health Organization standards to provide a comparable context.

Quarterly Assessment and Outlook

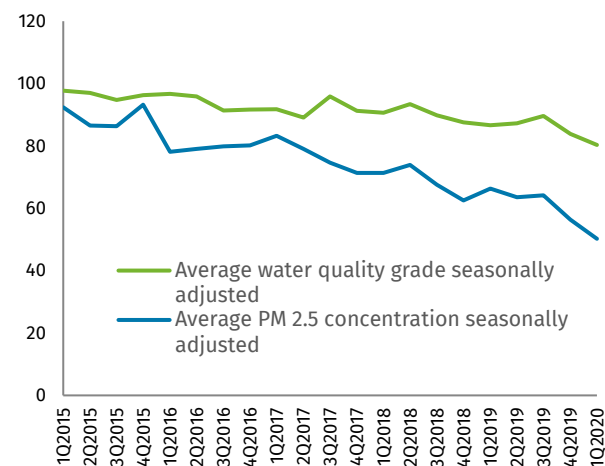
- Our environmental policy reform assessment remains unchanged for 1Q2020. Air pollution in China dropped to record lows as a result of China’s response to COVID-19, but these effects were temporary.
- COVID-19 affected every one of our indicators: the share of renewable power increased as coal plants were temporarily taken offline amid reduced demand, while new energy vehicle sales plummeted due to a broader consumption downturn.
- As the COVID-19 crisis begins to subside, authorities in Beijing are struggling to strike a balance between kick-starting growth and meeting environmental targets.

This Quarter’s Numbers

As China’s economy shut down in response to COVID-19, air pollution plummeted to the lowest levels in our records (see **Environmental Impacts**). Average PM 2.5 pollution levels fell to 30 micrograms per square meter in 1Q2020. This is the closest China has come to meeting the World Health Organization’s recommended air quality standard of 25 micrograms per square meter.

Primary Indicator: Water and Air Quality Trends

Index, Nov 2014 = 100



Source: Ministry of Ecology and Environment, US Department of State, Rhodium Group.

However, the first-quarter reduction in air pollution was a temporary phenomenon tied to pandemic-related lockdowns rather than reform. In January, the last month before the lockdowns, pollution levels in every northern Chinese province were worse than the previous year. Tellingly, pollution levels have risen rapidly since April, when the lockdowns were eased.

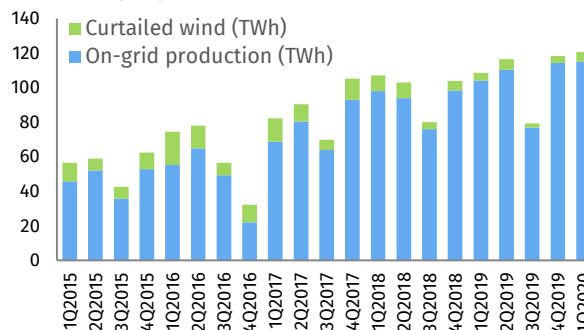
Water quality also improved modestly during the COVID-19 crisis, with six of the eight river systems we track showing improvements. Unlike the air quality data, water quality improvements better reflect the impact of environmental reform policies. These include water pollution enforcement in the Yangtze and Pearl Basins under the “Water Ten” plan from 2015 and other region-specific measures.

As COVID-related lockdowns led to better environmental conditions in the short term, they also disrupted Beijing’s long-term plans to transition China’s auto fleet toward environmentally friendly electric vehicles. COVID-19 ravaged China’s auto market in 1Q2020, with the sales of **New Energy Vehicles (NEVs)** dropping 62% year-on-year (yoy), and accounting for only 3% of all auto sales. This is the sharpest drop in our dataset. Lockdowns limited in-person sales and production, while consumers deferred big purchases. Accordingly, in January, Beijing delayed plans to phase out NEV purchase subsidies that were set to expire this year, extending them to 2022. Although this may buoy sales in the short term, it also undermines China’s goal of consolidating the NEV market and building a self-sufficient industry that can make up 25% of all auto sales by 2025.

The amount of wind energy that was wasted because it could not be transmitted to the grid increased slightly in 1Q2020 (see **Wind Energy Curtailment**). COVID-19 had an impact here as well: wind turbines continued to spin during the crisis; however, as lockdowns and a broader economic downturn reduced energy consumption, the amount of power that was actually needed by the grid declined. This increased the percentage of wasted electricity. Policymakers must develop interprovincial grids to reduce power costs and ensure that new capacity is not wasted.

Supplemental 1: Wind Energy Curtailment

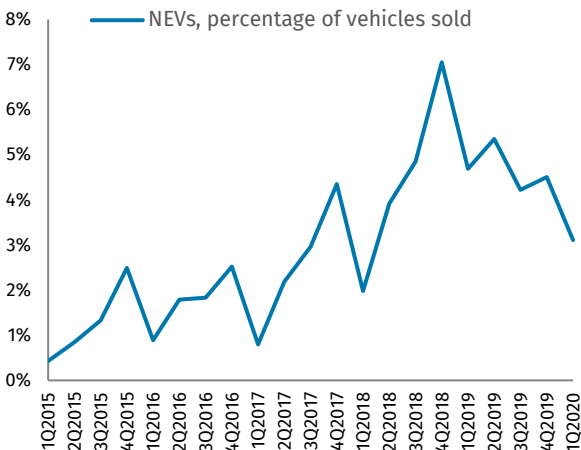
Terawatt hours (TWh)



Source: China Electricity Council, Rhodium Group.

Supplemental 2: Sale of New Energy Vehicles

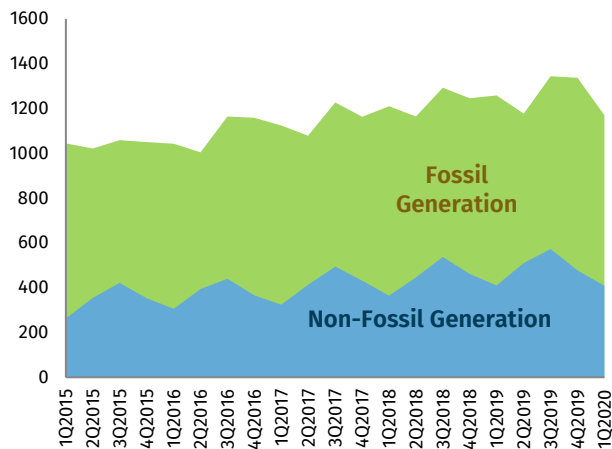
Percent



Source: China Association of Automobile Manufacturers, Rhodium Group.

Supplemental 3: Overall Electricity Generation

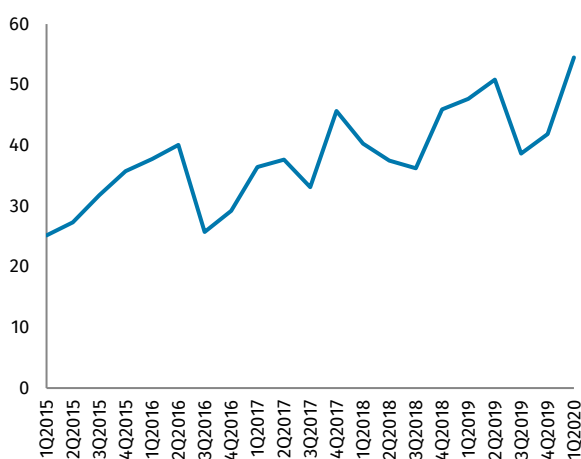
Billion Kilowatt-Hours



Source: National Bureau of Statistics, China Electricity Council, Rhodium Group.

Supplemental 4: Non-Fossil Electricity Generation

Index



Source: National Bureau of Statistics, China Electricity Council, Rhodium Group.

Policy Analysis

In the wake of the COVID-19 crisis, officials are under pressure to deliver growth and are therefore reassessing their environmental plans for 2020. These plans foresaw a phasing out of subsidies for new energy and green industries (like NEVs and renewables). They also placed limits on new polluting projects, particularly in industries suffering from overcapacity, like coal and steel. Unfortunately, a sharp economic contraction in the first quarter and a challenging growth outlook for the rest of the year have shifted priorities, with provincial officials pushing hard to support local industries. Early indications suggest that this will lead to a relaxation of environmental restrictions.

Provinces have pushed forward new coal projects in 2020 to stimulate local economies. Between January and June 2020, China’s provinces approved more new coal capacity than in the years 2018 and 2019 combined, threatening to exacerbate overcapacity and air pollution problems. On June 18, the National Development and Reform Commission (NDRC) pushed back by issuing guidelines that affirm the need to limit construction of new coal power plants and instruct all provinces to look to renewables or energy imports from other provinces before approving new coal projects. However, it is uncertain how effective these guidelines will be. Under China’s “traffic light” system, most of the country (25 of 31 provinces) can develop new coal plants with no or minimal restrictions. Provinces still control the coal approval process and are therefore likely to continue to increase coal capacity in 2020, threatening air pollution goals.

While attempts are being made to clarify responsibilities for environmental policy enforcement, this may end up undermining enforcement consistency between regions. On June 13, China’s State Council issued rules formally splitting environmental protection duties (and costs) between the central and local governments. Under the new rules, the central government has responsibility for developing national environmental plans and handling cross-province policies, while local governments are on the hook to fund, monitor, and enforce environmental laws in their jurisdictions. This could hurt nationwide monitoring and enforcement if cash-strapped local governments, which are already turning a blind eye to polluting local industries, lack the funds to carry out their duties.