



2019

**Report on the State of the
Ecology and Environment in China**

Ministry of Ecology and Environment,
the People's Republic of China

Summary

The year 2019 marked the 70th anniversary of the founding of the People's Republic of China, and it was also a crucial year to win the critical battle against pollution and to achieve the decisive victory in building a moderately prosperous society in all respects. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, various localities and departments have put into action the spirits embodied in the 19th National Congress of the CPC, the 2nd, 3rd and 4th Plenary Session of the 19th CPC Central Committee, and have earnestly implemented Xi Jinping Thought on Ecological Civilization as well as requirements made at the National Conference on Ecological and Environmental Protection. Focusing on improving ecological and environmental quality, various localities and departments have sought critical progress in the tough battle of pollution prevention and control in accordance with the decisions and deployment of the Central Committee of the Communist Party of China and the State Council.

First, we were resolute in winning the campaign of “Beat Air Pollution”. Tough measures against atmospheric pollution in the autumn and winter season in key areas were brought forward. Pilot cities for clean heating initiative in northern China have been fully implemented in the entire Beijing-Tianjin-Hebei region and its surrounding areas as well as in the Fenwei Plain, where heating for more than 7 million households previously fueled by coal now has been replaced by clean fuel. Ultra-low emission was expanded to about 890 million kilowatts of coal-fired generating units, which accounted for 86% of the total installed capacity. Such renovation to 550 million tons of crude steel production capacity was also well underway. Continued efforts were made to treat volatile organic compounds (VOCs) from industrial furnaces and key industries, and to better manage those enterprises that were in unauthorized locations, lack proper certificate and fail to meet emission standards. There were also steps to promote “road-to-railway transformation”. According to preliminary statistics, the national railway freight volume in 2019 had increased by 7.2% compared with that of 2018, among which, the railway freight volume in Beijing-Tianjin-Hebei region had increased by 26.2%. We took severe measures to crack down on illegal gas stations and poor-quality oil products, and special campaigns for clean vehicle oil products were rolled out in 31 cities. A total of 1,466 illegal gas stations and 644 gas stations where sulfur content of diesel exceeding the standard were investigated and dealt with in accordance with law. We strengthened the response to heavy air pollution, and took differentiated management and control measures in different key industries based on their environmental protection performance. Special law enforcement inspections of ODS (Ozone Depleting Substances) had been carried out in 11 provinces and municipalities.

Acid rain

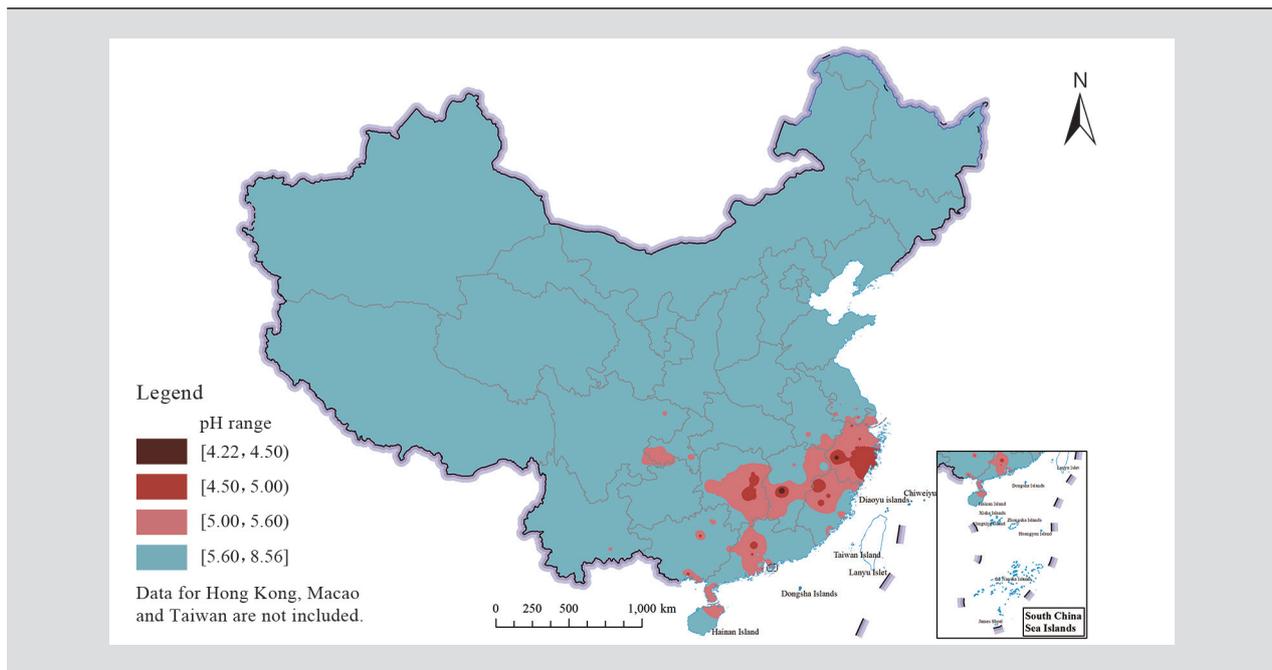
Acid rain distribution In 2019, the total area covered by acid rain was about 474,000 km², taking up 5.0% of total land area of China, down by 0.5 percentage point compared with that of 2018. Among them, the percentage of land area with relatively serious acid rain was 0.7%*. Acid rain was mainly distributed in the region south to the Yangtze River and east to Yunnan-Guizhou Plateau, mainly including Zhejiang, most of Shanghai, northern part of Fujian, central part of Jiangxi, central and eastern part of Hunan, central part of Guangdong and southern part of Chongqing.

Acid rain frequency In 2019, the average acid rain frequency of 469 cities (districts or counties) under precipitation monitoring was 10.2%, down by 0.3 percentage

point compared with that of 2018. The rate of cities with acid rain occurrence was 33.3%, down by 4.3 percentage points compared with that of 2018. The percentage of cities with acid rain frequency over 25%, 50% and 75% was 15.4%, 8.3% and 2.6% respectively.

Precipitation acidity In 2019, the annual average pH value of precipitation across the country ranged from 4.22 (Ji'an of Jiangxi province) to 8.56 (Korla of Xinjiang autonomous region) with the average value of 5.58. The rate of cities with acid rain, relatively serious acid rain and serious acid rain was 16.8%, 4.5% and 0.4% respectively.

Chemical composition In 2019, the main cations in precipitation were calcium ion and ammonium, with an equivalent concentration ratio of 26.3% and 16.8% respectively. The key anion was sulfate radical with an equivalent concentration ratio of 18.9%, and the equivalent concentration ratio of nitrate radical was 9.7%. In general,

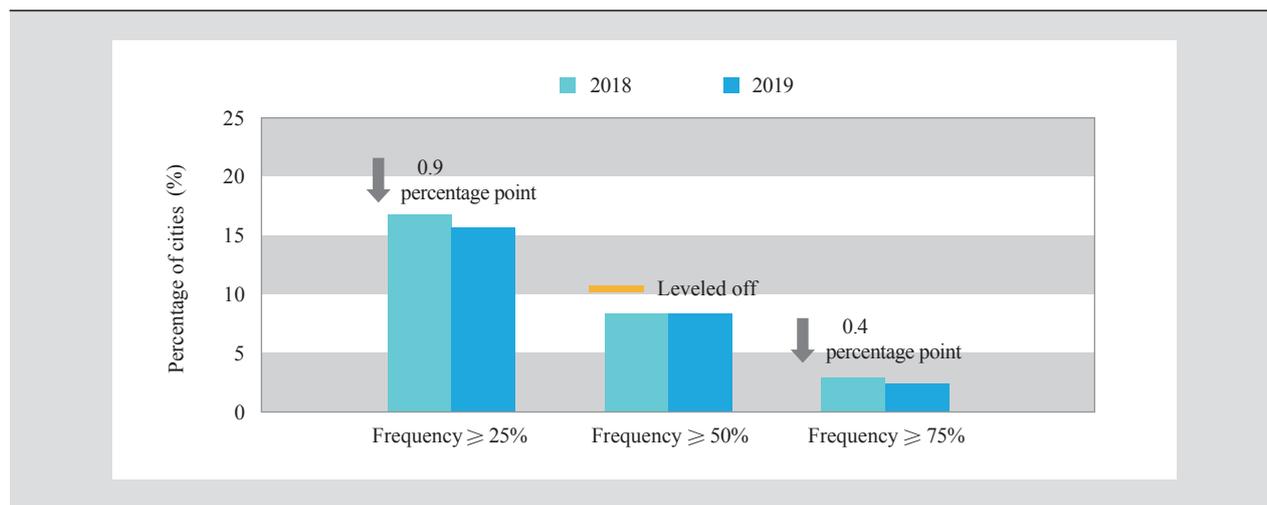


The isoline of annual average pH value of precipitation in China in 2019

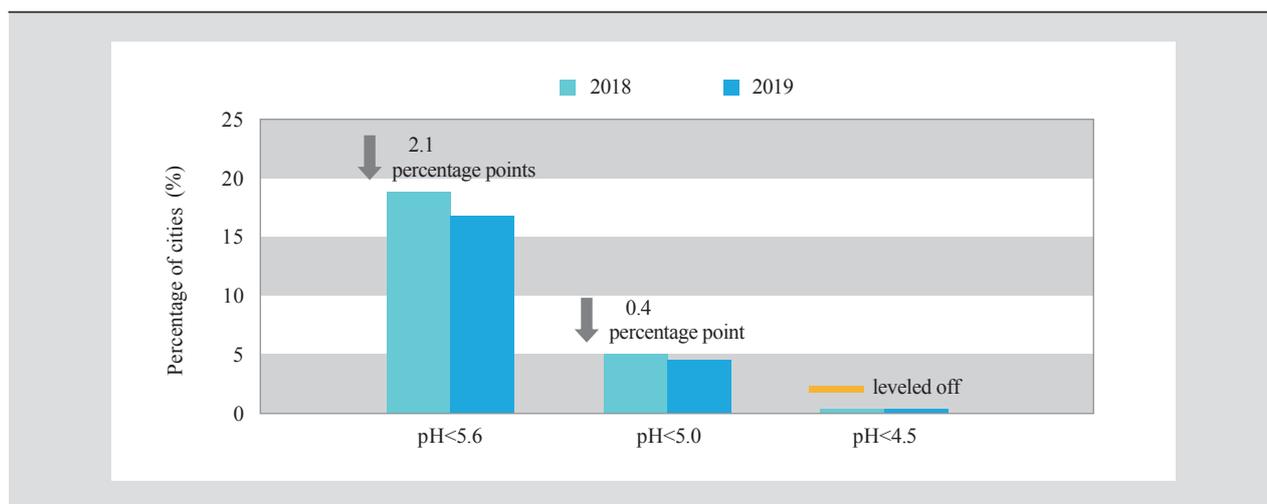
*The acid rain is defined when the precipitation pH value is below 5.6; relatively serious acid rain is defined when the pH value is below 5.0; serious acid rain is defined when the pH value is below 4.5.

the type of acid rain can still be classified as sulfuric acid. Compared with that of 2018, the percentage of concentration of sulfate radical, chloridion and sodion went down slightly,

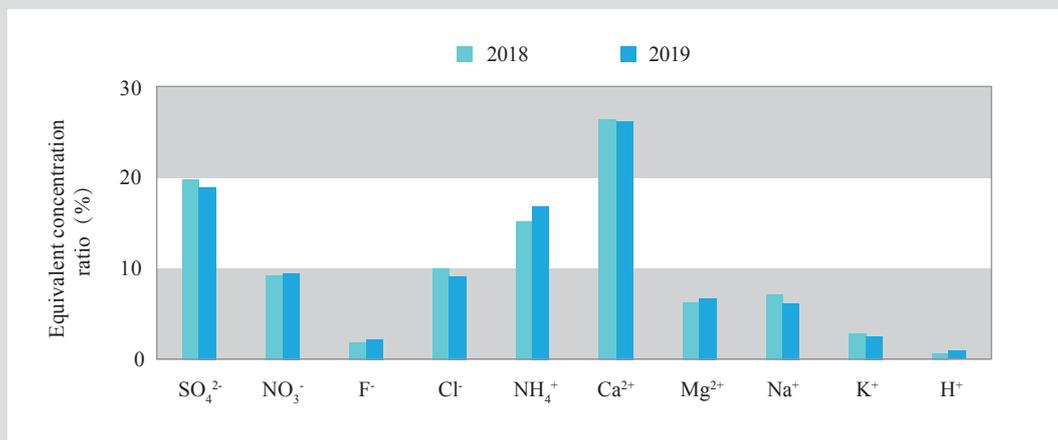
while the percentage of concentration of fluorid ion, ammonium ion, magnesium ion went up a bit, and that of other ion equivalents kept at a stable level.



Comparison of the percentage of cities with different acid rain frequency between 2018 and 2019



Comparison of the percentage of cities with different annual pH value of precipitation between 2018 and 2019



Comparison of main ion equivalent concentration ratio of precipitation between 2018 and 2019