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Beijing Municipal Ecology and Environment Bureau

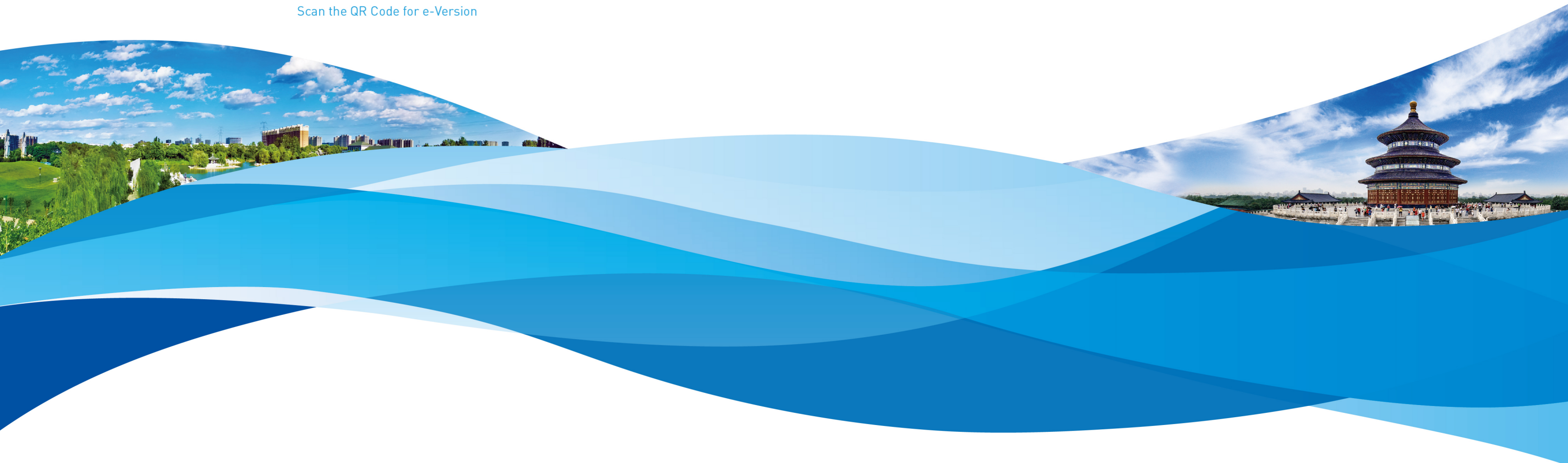
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2020

Beijing Ecology and Environment Statement



Beijing Ecology and Environment Statement 2020

The *Beijing Ecology and Environment Statement 2020* is hereby announced in accordance with the *Environmental Protection Law of the People's Republic of China*.

Beijing Municipal Ecology and Environment Bureau
May, 2021

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OVERVIEW

The year 2020 marked the grand finale for completing the 13th Five-Year Plan (2016-2020) and securing the decisive victory in building a moderate prosperous society in all respects. Beijing acted on the Xi Jinping Thought on Ecological Civilization, the instructions of the General-Secretary Xi Jinping in his important speeches to Beijing, and fully implemented the decisions and assignments by the CPC Central Committee and the State Council. Under the guidance of the new development philosophy and centering on the strategic goal of building a world-class harmonious and livable city, Beijing took comprehensive measures to strengthen ecological and environmental protection, won the tough battle against pollution, and strived to promote both high-quality economic development and high-standard environmental protection. All the binding targets of the 13th Five-Year Plan and interim objectives of the battle against pollution had been accomplished, rendering significant improvement in the ecological and environmental quality of Beijing. The annual average concentration of fine particles (PM_{2.5}) hit another record low, entering the “30+” range for the first time. Eight districts of Beijing saw their PM_{2.5} density meeting the Grade II national standard, covering approximately 80% of the city’s territory. Surface water quality kept improving, with no water sections inferior to Grade V standard found under the national monitoring program. The environmental quality of soil remained good. Carbon dioxide emissions per 10,000 *yuan* of gross domestic product (GDP) represented the best level in the country. In short, the overall ecological and environmental status of the city kept improving.



ECOLOGY AND ENVIRONMENTAL QUALITY

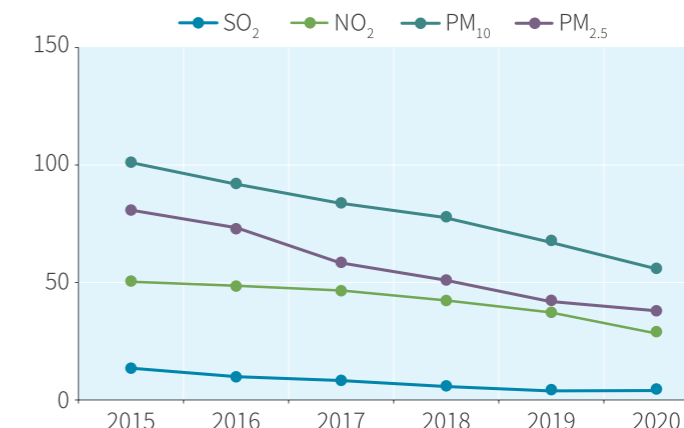
Air Quality

During the 13th Five-Year Plan period, Beijing's air quality kept improving. In 2020, the annual average concentrations of all the criteria air pollutants decreased, with the annual average concentrations of sulfur dioxide (SO₂), nitrogen dioxide (NO₂) and inhalable particles (PM₁₀) meeting the Grade II limit of National Ambient Air Quality Standard (NAAQS) of China. In terms of fine particles (PM_{2.5}), the annual average concentrations of 8 districts met the Grade II limit of NAAQS, covering approximately 80% of the city's territory.

Air Quality Status

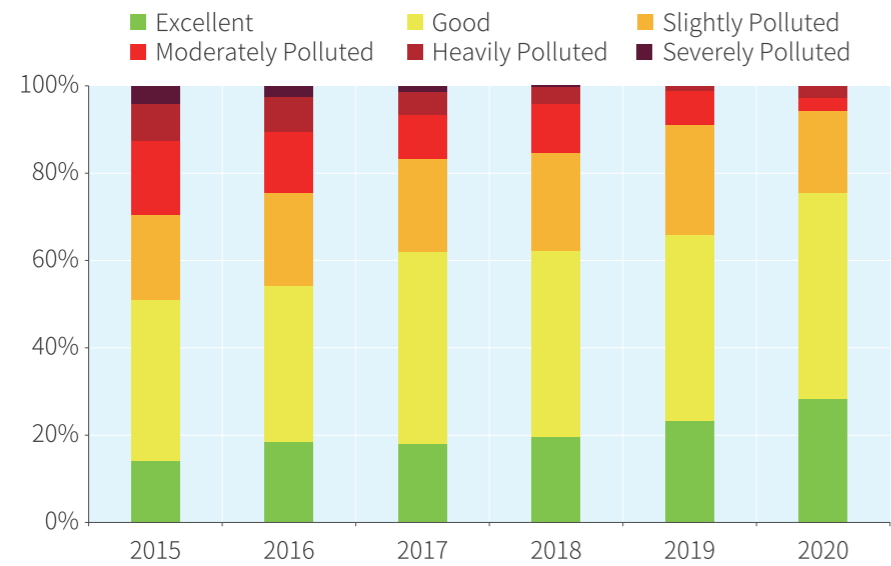
The annual average concentration of PM_{2.5} throughout Beijing was 38μg/m³, down by 9.5% compared with last year, yet still exceeding the Grade II annual limit of NAAQS (35μg/m³) by 8.6%. This has brought the three-year (2018-2020) average concentration of PM_{2.5} to 44μg/m³, down by 12% year on year. The annual average concentration of sulfur dioxide (SO₂) was 4μg/m³, equivalent to last year, which was well below the Grade II limit of 60μg/m³ in NAAQS, and remained in the single digits for the fourth consecutive year. The annual average concentration of nitrogen dioxide (NO₂) was 29μg/m³, down by 21.6% compared with last year and in compliance with the Grade II limit of 40μg/m³ set by the NAAQS. The annual average concentration of inhalable particles (PM₁₀) was 56μg/m³, down by 17.6% compared with last year and in compliance with the Grade II limit of 70μg/m³ set by the NAAQS. Compared with 2015, the annual average concentrations of PM_{2.5}, SO₂, NO₂ and PM₁₀ in Beijing decreased by 52.9%, 70.4%, 42.0% and 44.8%, respectively.

For carbon monoxide (CO), the 95th percentile value of the 24-hour average concentrations was 1.3mg/m³, down by 7.1% compared with last year and in compliance with the Grade II limit of 4mg/m³ set by the NAAQS. For ozone (O₃), the 90th percentile value of the daily maximum 8-hour average concentrations was 174μg/m³, down by 8.9% compared with last year and exceeding the NAAQS Grade II limit of 160μg/m³ by 9%. The O₃ exceedances were found during April to September, and were more likely to occur during the time periods of afternoon to evening in spring and summer. Compared with 2015, the 95th percentile value of the 24-hour average concentrations of CO and the 90th percentile value of the daily maximum 8-hour average concentrations of O₃ in Beijing decreased by 63.9% and 14.1%, respectively.

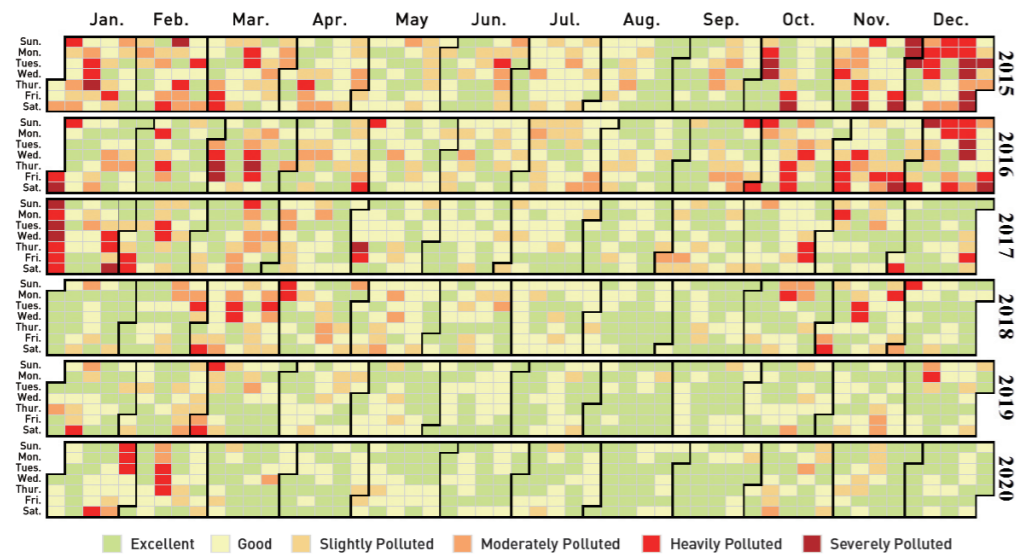


Trends of Annual Concentrations for Criteria Air Pollutants in Beijing, 2015-2020

In 2020, Beijing's air quality met the national standard (levels of excellent and good) in 276 days, accounting for 75.4% of the year, which is 90 days more than 2015. The number of days with heavy pollution episode (levels of heavily polluted and severely polluted) was 10 days, with an occurrence rate of 2.7%, and was 36 days less than 2015. There was no severely polluted day in the whole year of 2020.



Annual Proportion of Air Quality Levels, 2015-2020



Ambient PM_{2.5} Level Calendar, 2015-2020

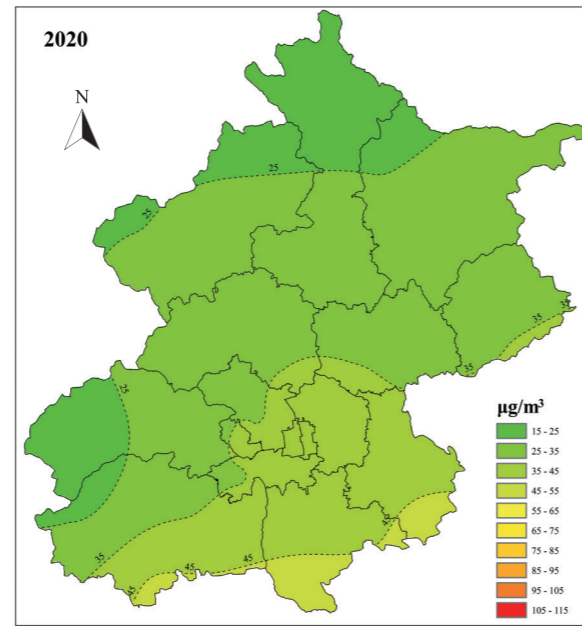
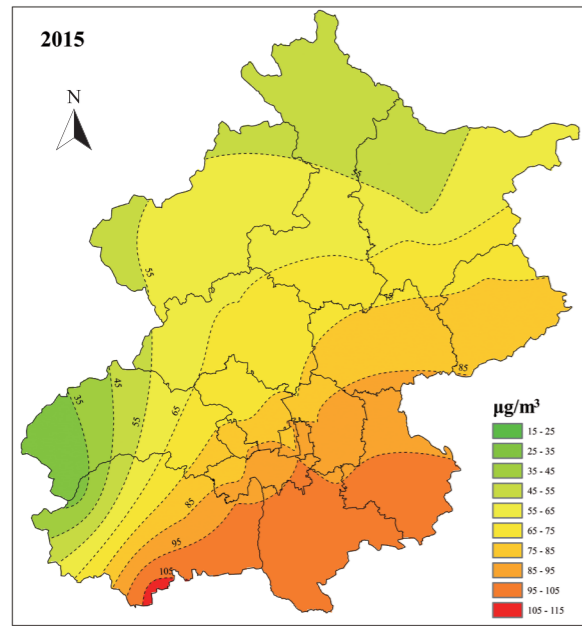
Spatial Distribution

The PM_{2.5} annual average concentration of different districts in Beijing varied from 29-40µg/m³. Following Miyun District and Huairou District, which took the lead to meet the NAAQS Grade II limit in 2019, another 6 districts such as Yanqing met the national standard. The SO₂ annual average concentration of different districts ranged within 3-4µg/m³, and all met the Grade II limit in NAAQS. The NO₂ annual average concentration of different districts ranged within 17-34µg/m³, all in compliance with the Grade II limit in NAAQS. The PM₁₀ annual average concentration of different districts ranged within 46-68µg/m³, all in compliance with the Grade II limit in NAAQS.

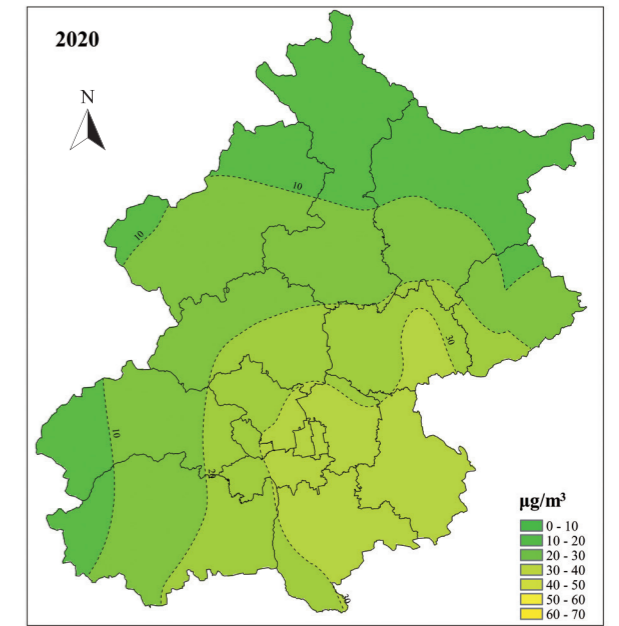
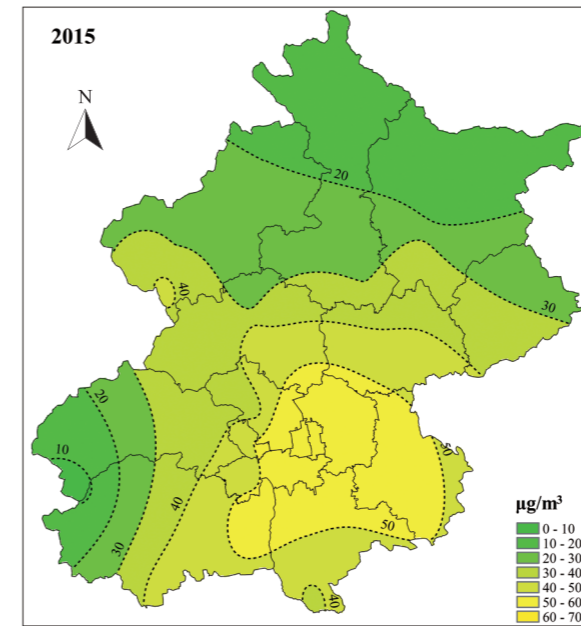
Annual Average Concentrations of Criteria Air Pollutants at District Level Unit: µg/m³

	PM _{2.5}	NO ₂	PM ₁₀	SO ₂
Dongcheng	40	30	55	4
Xicheng	40	32	58	4
Chaoyang	39	33	60	4
Haidian	36	31	56	3
Fengtai	36	29	61	3
Shijingshan	37	31	62	4
Mentougou	32	24	55	3
Fangshan	35	28	64	3
Tongzhou	37	34	68	4
Shunyi	35	25	56	3
Daxing	37	33	64	3
Changping	33	23	53	3
Pinggu	34	20	52	3
Huairou	29	17	46	3
Miyun	29	19	48	3
Yanqing	31	20	50	4
Beijing Economic-Technological Development Area	37	33	64	4

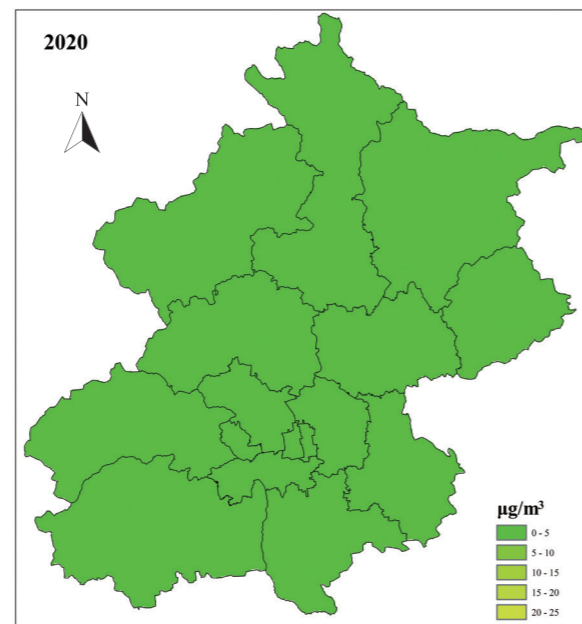
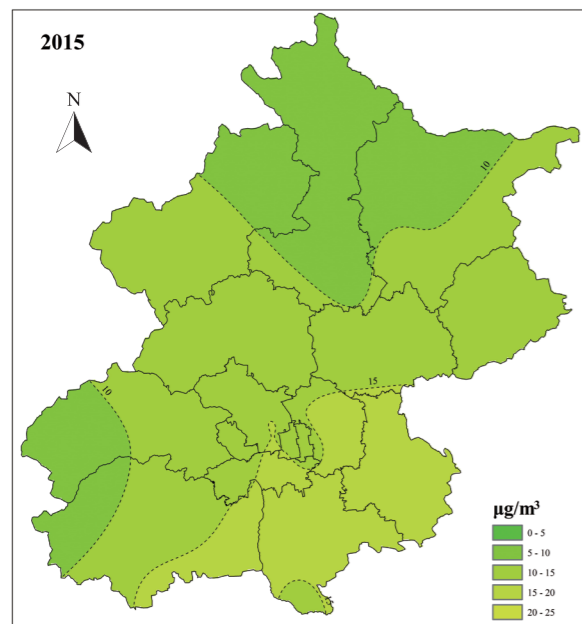
*Source: monitoring data from urban stations at district level



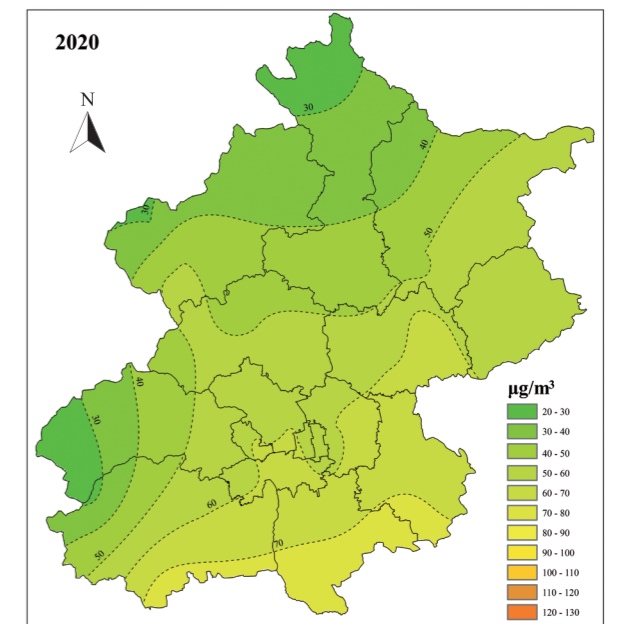
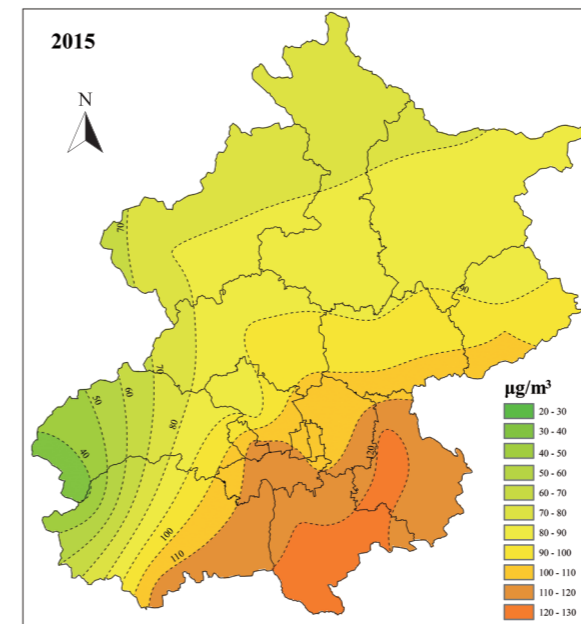
Spatial Distribution of PM_{2.5} Annual Average Concentration



Spatial Distribution of NO₂ Annual Average Concentration



Spatial Distribution of SO₂ Annual Average Concentration



Spatial Distribution of PM₁₀ Annual Average Concentration

Assessment by Monitoring Stations with Special Functions

Results from the inter-provincial pollution monitoring stations showed that, the average value of the PM_{2.5} annual concentrations monitored from the 3 stations located near the southwestern, southeastern and southern inter-provincial border of Beijing was 50µg/m³, 31.6% higher than the average level of the whole city; whilst the average value monitored from the 2 stations located near the northeastern and northwestern inter-provincial border was 32µg/m³, 15.8% lower than the average level of the whole city.

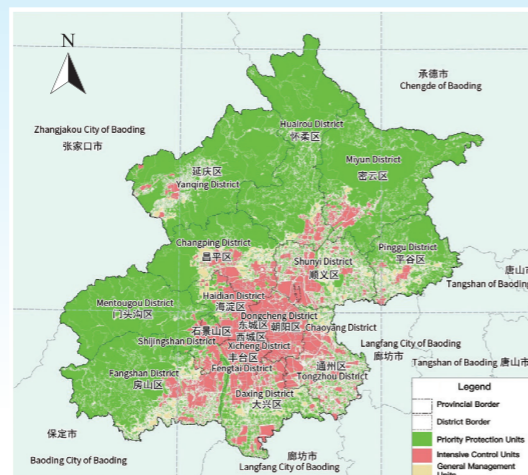
Results from the traffic pollution monitoring stations showed that, for traffic-populated roadsides, the PM_{2.5} annual average concentration was 40µg/m³, 5.3% higher than the average level of the whole city; the NO₂ annual average concentration was 43µg/m³, 48.3% higher than the average level.

For the urban background monitoring station at Dingling, Changping District, the PM_{2.5} annual average concentration was 32µg/m³, 15.8% lower than the average level of the whole city.

Special Column

Beijing's "Three Lines and One List" Officially Released

On December 25, 2020, Beijing issued the *Opinions on the Implementation of Ecological and Environmental Zoning Management*. Based on the seven constraining factors of ecological space, atmospheric environment, water environment, soil environment, water resources, land resources and energy, the whole city is divided into three types of units: priority protection units, intensive control units and general management units. A multi-tiered negative list system for eco-environmental access has been established, covering the levels of Beijing Municipality, its functional zones and the above mentioned management units. Aiming at improving the quality of the ecological environment, the "Three Lines and One List" (ecological protection red line, environmental quality baseline, resource utilization ceiling, and negative list on eco-environmental access) have been put into action as hard constraints in the environmental management units. In this way, area-specific strategies can be made as the battle against pollution goes further, which enables the city to continue advancing the pollution control in a targeted, scientific and law-based manner. It will also promote the development of spatial layouts, energy mix, industrial structures, and ways of work and life that help conserve resources and protect the environment.

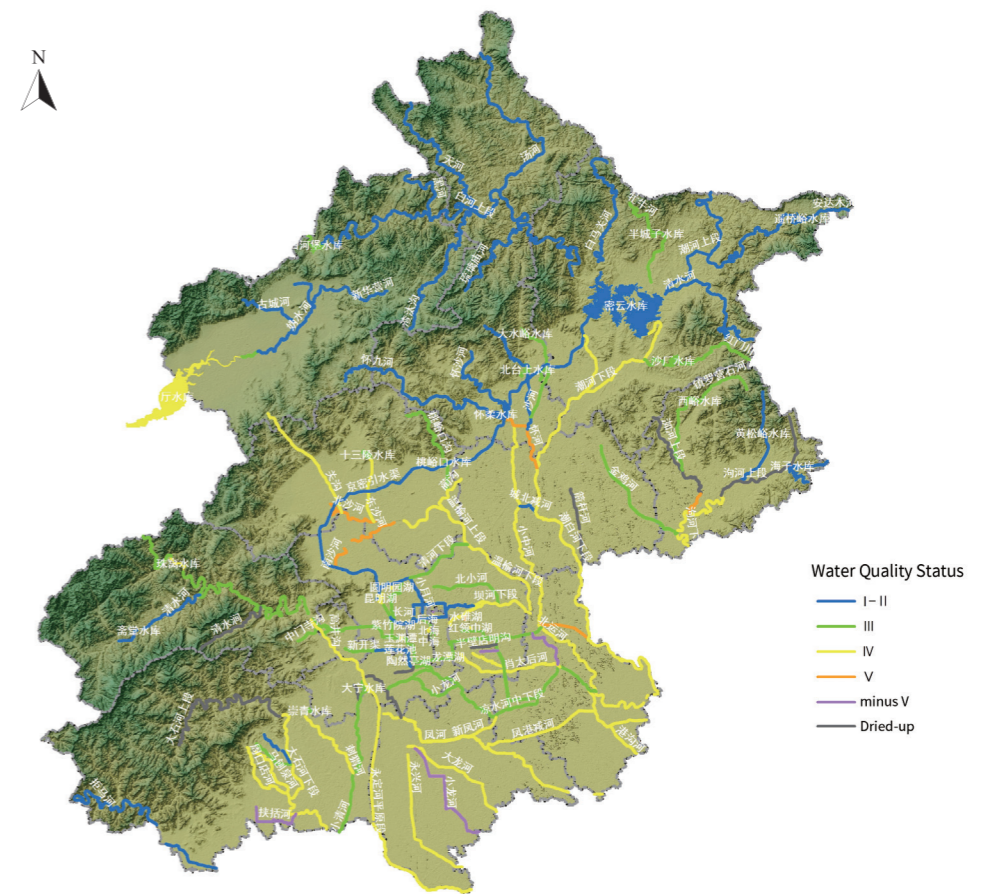


Water Quality

During the 13th Five-Year Plan period, Beijing's water quality witnessed significant improvement. In 2020, the annual average concentrations of major pollutants in surface water and the number of water bodies that fail the Grade V national standard in key watersheds further decreased, with no water sections inferior to Grade V standard found under the national monitoring program. The water quality of centralized surface drinking water sources keeps meeting national standard. Groundwater quality remained stable.

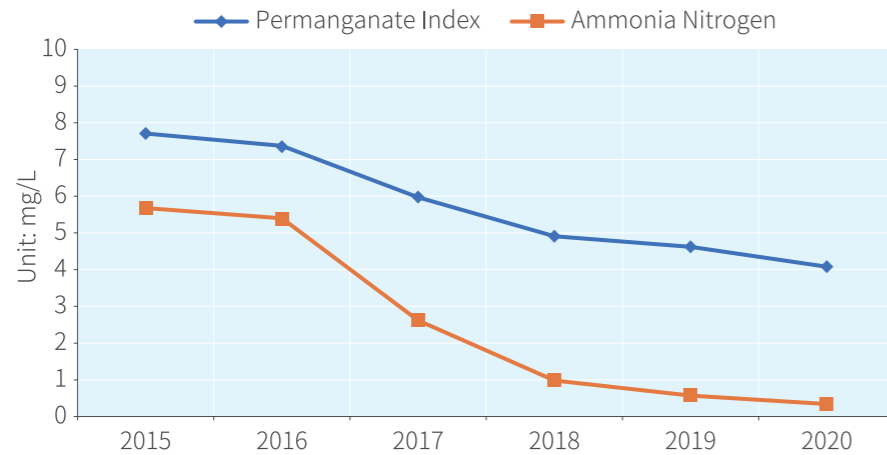
Surface Water Quality

The water quality showed a clear spatial difference. Generally, the water quality of upper-stream was better than down-stream.



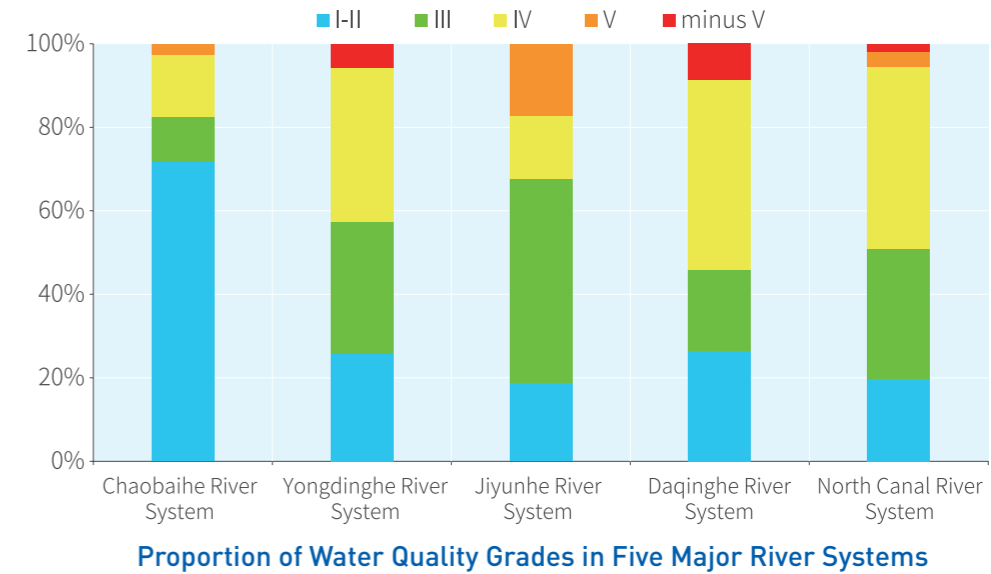
Water Quality Status Category in Beijing

Averaged from all surface water monitoring sections in Beijing, the annual permanganate index was 4.08mg/L, annual ammonia nitrogen concentration was 0.34mg/L, with a year-on-year decline of 11.7% and 40.4%, and a decline of 47.1% and 94.0% compared with 2015, respectively. Among all types of surface water bodies in Beijing, the water quality of reservoirs was more preferable, followed by lakes and rivers.



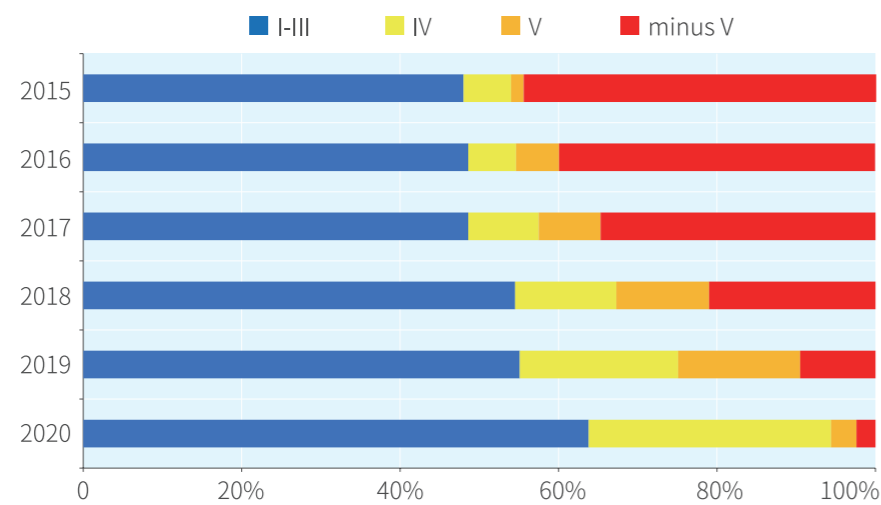
Trend of Annual Average Permanganate Index and Ammonia Nitrogen Concentration of Surface Water, 2015-2020

Among the five major river systems, Chaobaihe River system had the best water quality, followed by Yongdinghe, Jiyunhe, Daqinghe and the North Canal River systems.



Rivers

In 2020, a total of 95 rivers from the five major river systems were monitored, covering a length of 2338.8km. Within the total length, 63.8% met the Grade I-III national standard for water quality, 33.8% had Grade IV or V water quality, and 2.4% failed to meet the Grade V national standard, a 7.1% decrease compared with last year. Compared with 2015, the proportion of river lengths meeting the Grade I-III national standard increased by 15.8%, and the proportion of river lengths failing to meet the Grade V national standard decreased by 42.1%. Major pollution indicators include COD, BOD and total phosphorus, and the type of pollution was organic pollution.



Annual Proportion of Water Quality Grades in River Lengths, 2015-2020

Special Column

The Ecological and Environmental Water Quality

In 2020, in order to comprehensively and objectively evaluate the ecological status and environmental quality of surface water bodies, Beijing carried out research-oriented monitoring of the 70 mainstems and tributaries in its 5 major river systems, as well as 20 major lakes and 17 large and medium-sized reservoirs across the city, using biological indexes of aquatic life such as phytoplankton, zooplankton, benthic animals, fishes, etc.

A total of 119 species of phytoplankton were observed in the surface waters, most of which from the phylums of *Chlorophyta* and *Bacillariophyta*, followed by *Cyanophyta*. Meanwhile, 161 species of zooplankton and 180 species of benthic animals were monitored, which were dominated by *Rotifera* and *Arthropoda*, respectively. The monitoring also found 41 species of fish, mainly from the family of *Cyprinidae*, with *Pseudorasbora parva* and *Rhodeus ocellatus* as the dominant species. For rivers in mountainous areas with rapid-flow habitats, the dominant fish species were *Pseudorasbora parva*, *Rhynchocypris lagowskii*, *Zacco platypus*, *Hemiculter leucisculus* and *Micropercops swinhonis*; while for rivers in plain areas with slow-flow habitats, the dominant fish species were *Pseudorasbora parva*, *Rhodeus ocellatus*, *Squalidus chankaensis chankaensis* and *Carassius auratus*.

A comprehensive index approach, which integrates the physical and chemical indicators of water quality, habitat indicators and aquatic life indicators, was used to comprehensively evaluate the ecological status and environmental quality of major rivers, lakes and reservoirs in the city.

Lakes

In 2020, a total of 20 lakes were monitored, covering a water surface area of 6.676 million m². Within the total monitored area, 12.6% met the Grade I-III limit of national standard for water quality, 84.6% were of Grade IV or V water quality, and 2.8% failed to meet the Grade V limit of national standard. Compared with 2015, the proportion of lakes failing the Grade V limit of national standard decreased by 15.8%. Major pollution indicators include total phosphorus, COD and BOD.

Seven lakes including Tuancheng Lake, Tongzihe Lake and Zhanlanguanhou Lake were mesotrophic lakes. The rest of the lakes were all at light to medium eutrophication levels.

Reservoirs

In 2020, a total of 18 reservoirs were monitored, with an average total impoundage of 3.06 billion cubic meters. Within the total monitored impoundage, 84.6% came from reservoirs meeting Grade I-III national standard for water quality, the rest 15.4% was from reservoirs of Grade IV water quality. Compared with 2015, the proportion of reservoirs meeting Grade I-III national standard increased by 4.6%. The major pollution indicators were total phosphorus, COD, BOD and fluoride.

The water in Miyun Reservoir and Huairou Reservoir met the national standard for drinking water sources. The water in Guanting Reservoir was at Grade IV, with major pollution indicators of COD and fluoride.

Groundwater Quality

The groundwater monitoring results showed that, the groundwater quality was generally stable. Due to the close relation with surface water and precipitation, the quality of shallow groundwater was susceptible to disturbances; while the quality of deep groundwater remained in a natural state, mainly affected by the hydro-geological and chemical factors such as iron, manganese and fluoride.

Soil Quality

During the 13th Five-Year Plan period, Beijing's soil environment remained in good conditions. Through the classified management of agricultural land and the risk control of construction land, the environmental risks of soil were effectively controlled. A detailed investigation on the soil pollution status was successfully completed, and results from soil environment sites under the municipal monitoring program were all below the threshold values for the risk control of soil pollution.

Special
Column

Detailed Investigation on the Soil Pollution Status

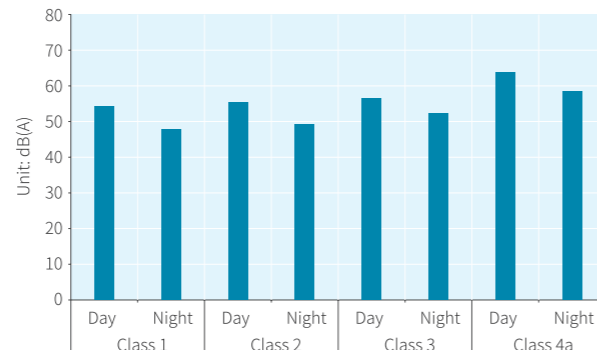
The detailed investigation on the soil pollution status, which focused on agricultural land and land use by enterprises in key industries, is a major survey on the country's conditions, as well as a major livelihood project to promote soil pollution risk control and safeguard public health. In accordance with the directions of the Ministry of Ecology and Environment (MEE), Beijing successfully completed the detailed investigation on the soil pollution status through four years from 2017 to 2020. The investigation of agricultural land focused on arable land, taking into account also garden plots and artificial pastures, and found out initially the area, distribution and degree of soil pollution. The investigation of land use by enterprises in key industries, with survey sites selected by criteria of industry category, enterprise size, production years, manufacturing techniques, raw and auxiliary materials, etc, provided an initial recognition of the soil pollution status and the distribution of contaminated sites. Preliminary results indicated that the environmental status of soil in Beijing was in general favorable.

Acoustic Environment

The acoustic environment throughout Beijing was generally stable.

Acoustic Environment of Functional Areas

The acoustic environment of urban functional areas remained stable comparing with last year. For day time, the annual average equivalent sound levels of Class 1, 2, 3, and 4a Areas were all in compliance with the national standard. For night time, the annual average equivalent sound levels of Class 1 and 4a Areas exceeded the national standard, while those of Class 2 and 3 Areas were in compliance. In general, the acoustic environment of urban functional areas in 2020 showed no significant difference compared with 2015 levels.



Noise Level of Functional Areas in Beijing

In terms of the spatial distribution patterns of noise in the functional areas, for Class 1 and Class 2 Areas, the noise levels in the six central urban districts¹ were roughly even with those of suburban areas. For Class 3 Areas, the noise level in the six central urban districts¹ was lower than that of suburban areas. For Class 4 Areas, the noise level in the six central urban districts¹ was higher than that of suburban areas.

Regional Environmental Noise

The annual average noise level in the built-up area of Beijing was 53.6dB(A), equivalent to last year. The annual average noise level in the built-up area in different districts varied from 49.6-58.9dB(A), among which the annual average noise level in the built-up area of the six central urban districts¹ was 53.1dB(A), and that of suburban districts was 54.4dB(A). In general, the annual average noise level in the built-up area of Beijing in 2020 was roughly even with that of 2015.

Road Traffic Noise

The annual average noise level from road traffic in the built-up area of Beijing was 69.0dB(A), roughly even with last year. The annual average noise levels from road traffic in the built-up area of different districts varied from 61.2-71.4dB(A), among which the annual average noise level from road traffic in the built-up area of the six central urban districts¹ was 69.2dB(A), and that of suburban districts was 66.9dB(A). In general, the annual average noise level from road traffic in the built-up area of Beijing in 2020 was roughly even with that of 2015.

¹The six central urban districts include Chaoyang, Haidian, Fengtai, Shijingshan, Dongcheng and Xicheng.

Radiation

The environmental radiation level throughout Beijing stayed normal.

Ionizing Radiation

The environmental ionizing radiation level throughout Beijing was within the normal range of background fluctuations.

Real-time continuous air absorbed dose rate and accumulative dose were both within the range of natural background fluctuations. The activity concentration of natural radioactive nuclides in the air was at background level, and no abnormalities were observed on the activity concentration of artificial radioactive nuclides.

In water bodies including rivers, lakes, reservoirs and groundwater, the total α and total β activity concentrations were within the range of natural fluctuations, the activity concentration of natural radioactive nuclides was at background level, and no abnormalities were observed on the activity concentration of artificial radioactive nuclides.

In soil, the activity concentration of natural radioactive nuclides was at background level, and no abnormalities were observed on the activity concentration of artificial radioactive nuclides.

Electromagnetic Radiation

The electromagnetic radiation level reflected by environmental electromagnetic radiation monitoring sites in Beijing was far below the limit value for human exposure set by the *Controlling Limits for Electromagnetic Environment (GB8702-2014)*.

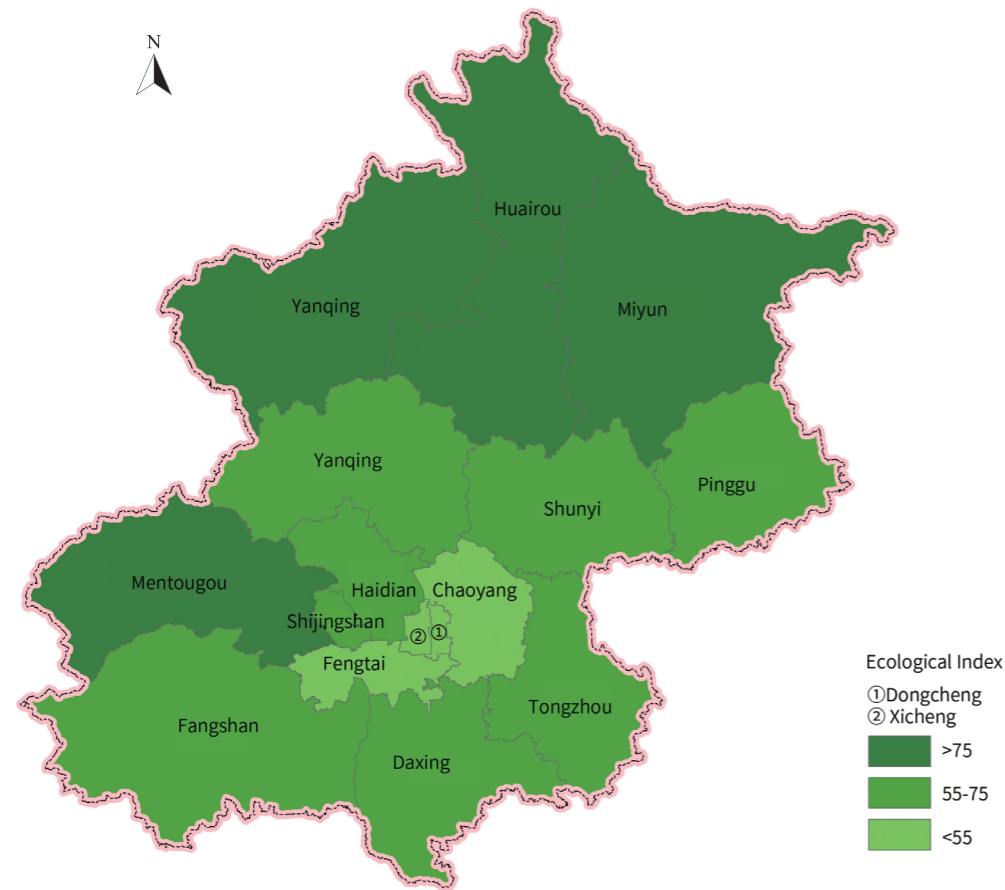


Natural Ecology

During the 13th Five-Year Plan period, the overall ecological and environmental status of Beijing stayed good, with a trend of steady improvement.

Ecological Status

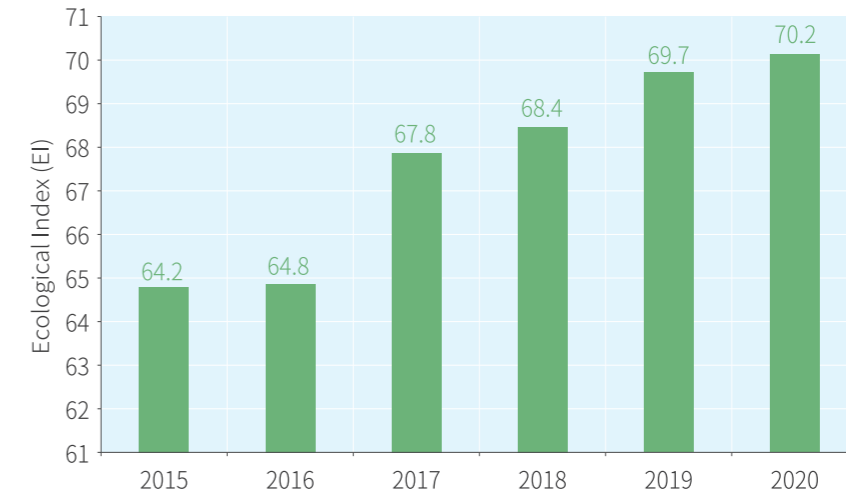
Beijing's ecological status in 2020 was rated "good" by the Technical Criterion for Ecosystem Status Evaluation (HJ192-2015), with an Ecological Index (EI) of 70.2, which is 0.7% higher than last year, and the sixth consecutive year with improvement. The ecological conservation areas of Beijing maintained a stable and excellent ecological environment.



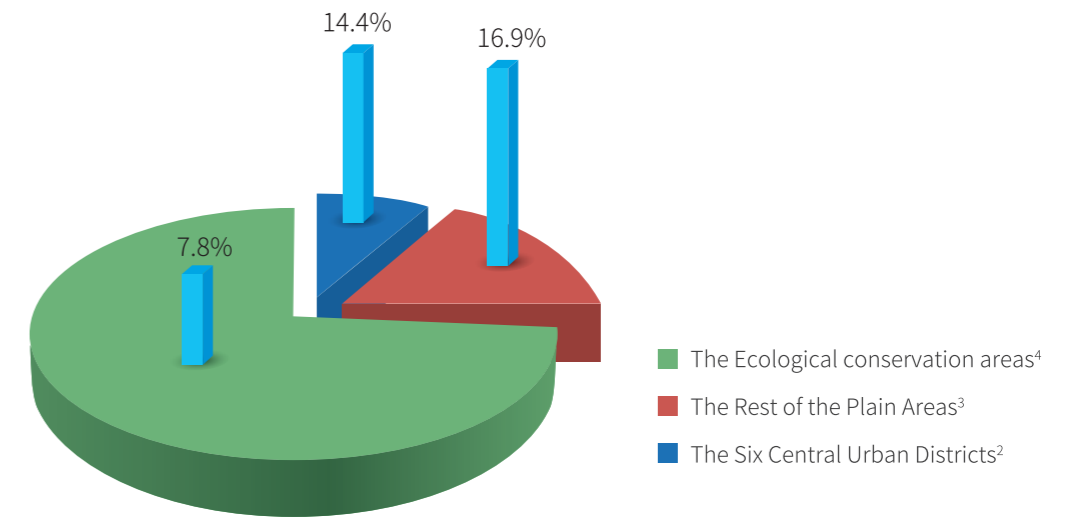
Spatial Distribution of Ecological Index (EI) in Beijing, 2020

During the 13th Five-Year Plan period, the Ecological Index (EI) of Beijing increased by 9.3% as a whole. In terms of functional zones, the EI growth registered 15.1%, 14.4% and 16.9% for the core area serving capital functions¹, the six central urban districts² and the rest of the plain areas³,

respectively, suggesting improvements in ecological service capacity. The EI value of ecological conservation areas⁴ rose by 7.8%, indicating more stable ecological shields.



Trend of Beijing's Ecological Index during the 13th Five-Year Plan Period



EI growth of functional zones during the 13th Five-Year Plan Period

Beijing implemented a new round of afforestation projects in the plain areas, carried out remediation of abandoned mines and closed hillsides to facilitate afforestation in the mountainous areas. For the city proper, more land was vacated and reclaimed for greening, with "pocket parks" and "mini greens" being created. These efforts have increased our citizens' sense of benefit from the environment. Thanks to the South-to-North Water Diversion Project and the Replenishment Project for Yongdinghe River, Beijing's water network density has been significantly increased and urban ecological space has been expanded.

¹ The core area serving capital functions refers to Dongcheng and Xicheng Districts.

² The six central urban districts include Chaoyang, Haidian, Fengtai, Shijingshan, Dongcheng and Xicheng.

³ The rest of the plain areas refer to Daxing, Tongzhou and Shunyi Districts. Geographically speaking, the smaller parts of Fangshan District and Changping District also fall in this category, but for convenience of EI calculation, they are not included.

⁴ The ecological conservation areas include Pinggu, Miyun, Huairou, Yanqing, Changping, Mentougou and Fangshan Districts. Geographically speaking, the smaller parts of Fangshan District and Changping District are plains, but for convenience of EI calculation, these two districts are considered as ecological conservation areas in general.

Biodiversity

With complex topography, various habitat types and rich biodiversity, Beijing plays a pivotal role in the overall ecological pattern of the Beijing-Tianjin-Hebei Region. The conservation of biodiversity is critical for improving the quality and stability of regional ecosystems, as well as in maintaining the capital city's ecological safety.

In the six central urban districts, more wildlife habitats have been created by means of vacating and reclaiming land for green space, and making use of all available spots for greening.



Curtos costipennis



Erinaceus amurensis

In the rest of the plain areas, through the construction of countryside parks and the restoration of rivers, lakes and wetlands, the green and ecological space has been expanded, along with richer biodiversity.



Pelophylax nigromaculatus



Sarcocheilichthys nigripinnis

In the ecological protection areas, the best habitats in Beijing are being conserved through the establishment of protected natural areas and wildlife habitats, as well as restoration of the waters' ecological functions.



Batrachium pekinense



Ophiogomphus spinicornis

In 2020, a total of 82 natural and semi-natural ecosystem formations, including forests, shrubs, tussocks, meadows and grasslands, wetlands, etc., were observed through surveys that divided the whole city into 212 grids. The abundance of ecosystem types is essential to the diversity of species. A total of 5,086 species were recorded in the surveys. Field surveys found 70 newly recorded species in Beijing, including 3 species of vascular plants, 16 species of insects, 40 species of bryophytes, and 11 species of macro fungi. Among them, 12 species were found for the first time in China, including 11 species of macro fungi and 1 species of insects. Besides, 19 invasive alien species were identified according to the four batches of *List of Invasive Alien Species in China*.

Biodiversity also serves as a comprehensive indicator for the ecological status and environmental quality. Field surveys found that some indicator species sensitive to environmental quality had a broader niche. For example, aquatic species that demand high water quality, such as *Batrachium pekinense* and *Sarcocheilichthys nigripinnis*, were found in Huairou, Miyun, Yanqing and a few of the six central urban districts. This indicates to a certain extent that comprehensive river management and ecological restoration have improved the water environment.

Special Column

Demonstration of Ecological Civilization

With the issuing and implementation of the *Measures for the Promotion and Recognition of Ecological Civilization Pilots in Beijing (Trial)*, the rules and procedures for the districts to establish ecological civilization pilots have been cemented and standardized. In 2020, Mentougou District was recognized as the 4th batch of National Pilot Cities/Counties in Demonstration of Ecological Civilization, and Miyun District and Huairou District were given the title of the 4th batch of Innovation Bases for Practicing the Philosophy of "Lucid Waters and Lush Mountains are Invaluable Assets".

In 2020, the four pioneering districts, i.e. Yanqing, Miyun, Mentougou and Huairou, all rendered "excellent" EI performance. With growing ecological conservation capacities and improving institutions and systems for advancing ecological civilization, the path to practice the above-mentioned philosophy has become broader for the four districts, and distinct local features and brandings have emerged on the road to high-quality development. A development pattern featuring good ecological environment, strong conservation capacity and high quality development has taken shape.

ACTIONS

Advancing Ecological Civilization and Reforms

Advancing Ecological Civilization

The CPC Beijing Committee's Commission for Advancing Ecological Civilization undertakes the role of holistic planning, overall coordination, progress control, and performance supervision. It coordinated the implementation of the *Green Beijing Strategy*, completed 55 major tasks of the year and processed 116 official documents in support of policy-making, which has pushed the capital city to new heights in advancing ecological civilization.

Major interim achievements have been made in the battle against pollution, with best environmental quality ever recorded. New progress has been made in advancing green development. The system to control both the total amount and intensity of energy consumption was improved, and the action plan for water conservation was issued and implemented. As a result, the reductions of both energy and water consumption per 10,000 *yuan* of GDP over fulfilled the targets set by the 13th Five-Year Plan. Green lifestyles such as garbage sorting, "empty your plate" campaign and green travel became conscious choices of citizens. Control over the capital's natural resources and spatial planning for land use was also tightened. Beijing kicked off work for integration/optimization of protected natural land and protection/restoration of natural forests, and carried out the preparation of natural resource balance sheets and the auditing of officials on natural resources when leaving office in an orderly way. Efforts have been made to promote the establishment of a scientific and orderly territorial spatial planning system. By drawing up a clear line for ecological conservation and demarcating the boundaries for urban development, land use for urban and rural construction kept decreasing. On the other hand, green ecological space continued to expand. With 210,000 *mu* (around 14,000 hectares) of new afforestation, forest coverage and green coverage increased to 44.4% and 48.9%, respectively. The 2nd batch of wetland inventory was also released. The three-year action plan to improve rural living environment successfully came to an end. Sewage collection and treatment facilities have been built in 300 villages and 755 rural toilets have been renovated, raising the ratio of non-polluting private toilets to 99.4%. Household garbage from 99% of all administrative villages have been treated, among which 5 districts including Mentougou, Daxing, Pinggu, Huairou and Yanqing were built as demonstration areas for rural household garbage sorting and utilization. Manure utilization rate of large-scale livestock farms reached 95%.

Institutional Reforms for Advancing Ecological Civilization

Aiming at the modernization of Beijing's governance system and capacities in the field of ecological civilization, the Special Group on Institutional Reforms for Advancing Ecological Civilization, under the CPC Beijing Committee's Commission for Further Reform, identified and developed 23 major reform measures, which provide an institutional guarantee for promoting ecological progress. Beijing formulated a working plan for building a modern environmental governance system; issued and implemented Party regulations and reform documents such as the *Regulation on Division of Responsibilities for Ecological and Environmental Protection in Beijing*; and established an ecological and environmental inspection, appraisal and accountability system. By issuing the *Working Plan for Building a Market-Oriented Green Technologies Innovation Mechanism in Beijing* and facilitating the settlement of the Institute of Finance and Sustainability in Beijing, the driving force of green development got enhanced in technological and financial aspects. Focusing on resource conservation, reform was carried out to put in place the property rights system for natural resource assets, and performance evaluation was conducted with regard to the fulfillment of accountability targets in farmland protection. Beijing also moved faster to set up the policy and legal framework for green production and consumption, including the formulation and amendment of 3 regulations, and the implementation of 22 policies such as the *Beijing Action Plan for Plastic Pollution Control (2020–2025)*. Legislation on ecological protection and green development of ecological conservation areas was also promoted.

Pollution Control Battle

Battle for Blue Sky

Focusing on PM_{2.5} pollution control, the "One Microgram" campaign continued with in-depth actions. Laying equal emphasis on emission reduction projects and management tools, Beijing has undertaken extraordinary measures and efforts to control air pollution. Beijing's success in air pollution prevention and control has been included in United Nations Environment Programme (UNEP)'s case studies. Green transformation of industrial structure was advanced by unswervingly relieving Beijing of functions nonessential for the capital. By the end of 2020, a total of 2,154 general manufacturing and polluting enterprises had been shut down, and tertiary industry share in GDP reached 83.8%. To achieve a green and low-carbon energy mix, clean energy retrofits targeting coal-fired power plants, coal-fired boilers and residential use of bulk coal were carried out. As a result, the total consumption of coal in the city was reduced to less than 1.5 million tons, raising the share of high-quality energy¹ to 98% in the energy mix, and making Beijing the first northern city in China

to solve the coal pollution problem. Vehicle structure was also optimized through implementation of policies such as the phasing out and replacement of old vehicles, citywide travel restriction of diesel trucks on China III emission standards, and low-emission zones for off-road mobile machinery. A total of 1.09 million old motor vehicles had been removed from road, and the volume of new energy fleet exceeded 400,000. The city took on a green and clean look. Precise dust control was enabled by the combination of road dust load monitoring, bare-ground satellite remote sensing and other methods. In 2020, the dust fall of the city was reduced to 5.1 tons/km² per month.

In 2020, Beijing's SO₂ and NO_x emissions were cut by 97.0% and 43.0% compared with 2015 levels, over fulfilling the national targets of 35% and 25%, respectively.

Battle for Lucid Waters

Beijing advanced the battle for lucid water in line with the principle of "preserving good waters and remedying poor waters". Through continued effort to control water pollution, the sewage treatment rate throughout the city reached 95%, with 1.2 billion m³ of reclaimed water used, and 142 sections of black and odorous water bodies were basically cured of their root pollution problems with permanent mechanisms. Following the protocol of "inspection, measurement, tracking, treatment and management", the "clean inlet action" was carried out to facilitate the control of river inlets by class and grade. A three-dimensional layered groundwater environmental quality monitoring system has been established, and pilot projects were conducted to remediate contaminated groundwater. Beijing made every effort to ensure the safety of drinking water sources. It continued to push for the standardization of drinking water sources, carried out annual environmental status surveys and assessments of water sources, and dynamically rectified environmental problems in the water source protection areas. Miyun Reservoir Protection Area implemented fully enclosed management with reservoir-wide video surveillance. To achieve continued improvement of the water environment, Beijing launched a major investigation on the ecological status and environmental quality of its surface water bodies. With focus on ecological conservation areas, 60 ecologically clean small watersheds were created. A total of 68 beautiful rivers and lakes were identified, and the Liangshuihe River section in Beijing Economic-Technological Development Area was recognized as the first batch of national demonstration rivers/lakes. With 160 million m³ of ecological water replenished in spring and autumn, Yongdinghe River has realized full-length water flow for the first time in 25 years.

In 2020, COD and NH₃-N emissions in Beijing were reduced by 46.6% and 52.5% compared with 2015 levels, over fulfilling the national targets of 14.4% and 16.1%, respectively.

¹ High-quality energy here refers to all non-coal energy sources.

Battle for Clean Soil

In the battle for clean soil, Beijing took agricultural land and construction land as the priority, and carried out in-depth actions for the prevention and control of soil pollution, which effectively ensures the safety of soil environment. In terms of agricultural land, classified management was applied. According to the soil quality status (comparing to the filtering value and threshold value), an inventory of arable land by class has been established and dynamically updated. The arable lands are categorized as priority protection, cautious utilization and strict control, respectively, and all those with contamination have been put under safe use mechanisms. With the issuing of measures for the management of soil quality in landscaping land, the management level of the landscaping industry have been gradually improved. In terms of construction land, land use access have been tightened by introducing the soil pollution risk control and remediation directory system, as well as an innovative supervision approach that integrates remote sensing monitoring and on-site inspection. In 2020, 12 plots of contaminated construction land in the city, with an area of about 770,000 m², were rendered eligible for development and reuse after risk control and remediation, making the total number of remediated land to 42 plots and about 4.34 million m². In addition, the detailed investigation on the soil pollution status was successfully completed; the North China center for soil sample preparation and circulation was established; and the technical guidelines for soil pollution investigation and risk assessment of construction land was released and implemented, which consolidated the foundation of soil environmental management in Beijing.

Addressing Climate Change

Focusing on the target set by the 13th Five-Year Plan for Energy, Resource Conservation and Addressing Climate Change in Beijing, coordinated efforts have been made in addressing climate change. By releasing and implementing the annual plan for priority tasks on climate change, Beijing continued to push for the greenhouse gas (GHG) emission reductions in key sectors such as energy, industry, buildings and transportation. Quarterly reviews were conducted on the progress towards both our annual carbon reduction targets, and targets set by the 13th Five-Year Plan.

Beijing continued to improve the local carbon emissions trading market, by means of updating the technical specifications, adjusting the base-line years, expanding the coverage of enterprises and public institutions and managing their carbon emissions by sectors. In 2020, there were 843 key carbon emitters, all of which fulfilled their compliance tasks. The total volume and worth of the transactions hit 5.38 million tons and 274 million yuan, respectively. The rising trend of the carbon price has reflected the increasing market value of carbon emissions quota as both a commodity and management tool.

In 2020, CO₂ emissions per 10,000 yuan of GDP in Beijing fell by more than 5% year-by-year, and decreased by more than 23% from the 2015 level, successfully completing the target of a 20.5% reduction during the 13th Five-Year Plan period.

Ecological and Environmental Management

Regulations and Standards

The system of local regulations and standards on ecology and environment has been improved. The *Regulation on Prevention and Control of Pollution from Motor Vehicles and Off-Road Mobile Machinery in Beijing* was formulated and put in force, which calls for stronger regional coordination in Beijing-Tianjin-Hebei region to promote the joint control of mobile pollution sources. The *Regulation on Prevention and Control of Environmental Pollution by Hazardous Waste in Beijing* was issued to prevent environmental pollution caused by hazardous waste, and promote its harmless disposal. A total of 9 local environmental standards were formulated and issued, including the *Code for environmental vibration control of sensitive building projects near the metro main line*, and Requirements for carbon dioxide emission accounting and reporting - Power generation enterprises, etc.

Local Environmental standards issued by Beijing in 2020

No.	Code	Name	Date of issuance
1	DB11/T 1735-2020	Code for environmental vibration control of sensitive building projects near the metro main line	June 30, 2020
2	DB11/T 1736-2020	Technical specification for pollution prevention and control of volatile organic compounds emission from laboratory	June 30, 2020
3	DB11/T 1781-2020	Requirements for carbon dioxide emission accounting and reporting - Power generation enterprises	December 24, 2020
4	DB11/T 1782-2020	Requirements for carbon dioxide emission accounting and reporting - cement enterprises	December 24, 2020
5	DB11/T 1783-2020	Requirements for carbon dioxide emission accounting and reporting - Petrochemical enterprises	December 24, 2020
6	DB11/T 1784-2020	Requirements for carbon dioxide emission accounting and reporting - Heat production and supply enterprises	December 24, 2020
7	DB11/T 1785-2020	Requirements for carbon dioxide emission accounting and reporting - Service enterprises	December 24, 2020
8	DB11/T 1786-2020	Requirements for carbon dioxide emission accounting and reporting - Road transportation enterprises	December 24, 2020
9	DB11/T 1787-2020	Requirements for carbon dioxide emission accounting and reporting - Other industrial enterprises	December 24, 2020

Environmental Access

The business environment was optimized. A positive list for environmental impact assessment (EIA) approval was drawn up to facilitate the resumption of work and production. The scope of exemption was expanded, and a notification-commitment system was introduced to smooth the green channel for epidemic prevention and control projects. In 2020, more than 5,000 projects in Beijing were exempted from EIA procedures; 33 projects were approved under the notification-commitment system; and 85 construction projects of three types urgently needed for epidemic prevention and control were approved or registered, contributing to the capital city's combat against the epidemic and resumption of work and production in an environmental way.

In terms of the reform of administrative approval system, Beijing continued to eliminate the hidden restrictions and hindrances for market access and liberate market productive forces. Reform of the system for construction project approval was furthered. EIA of regulatory detailed planning at community level was promoted, with technical guidelines issued to guide its implementation. Beijing Daxing International Airport Economic Zone was granted the EIA approval authority.

In terms of high-quality government services, the administrative approval system for EIA was incorporated to the municipal administrative approval portal. A smooth channel was established for the public and enterprises to feedback their evaluations and opinions, which contributes to the continuous improvement of government services. An account system for EIA applications was established to keep track of key projects and help with their timely implementation. A "reminder" system for post-approval procedures was put into trial operation, and notifications were given before the applications were filed, providing intimate and heart-warming services to enterprises.

In terms of the implementation of the permitting system for pollutant discharge, a total of 17,000 permits were issued and registered for emitters of regulated industries in the city, which basically realized the full coverage of stationary pollution sources in the classified management directory. Post-permit supervision was strengthened by special law enforcement actions on the observance of pollutant discharge permits.

Scientific and Technological Support

Science and technology was given full play in supporting environment governance. Beijing conducted task tackling research on the monitoring and control of key pollutants, such as VOCs, and major pollution sources such as heavy-duty diesel vehicles, cooking fume and the petrochemical industry. By taking an active part in the national research project on the cause and control of heavy air pollution, a mutually-supporting mechanism between governance and research has been established, featuring "problem orientation, scientific breakthrough, joint consultation

and expert interpretation". In terms of promoting the commercial application of scientific research achievements, the Beijing Remote Monitoring and Management System for Emissions of Heavy-duty Vehicles was built as a demonstration platform, which monitors the emissions of heavy-duty vehicles in a real-time manner and supports the management and control of new vehicles, in-use vehicles and transit vehicles. Meanwhile, scientific and technological support played a more important role in the uphill battle against pollution and regional coordinated emission reduction, covering emission reduction technology, pollution source apportionment and early warning of heavy pollution.

Eco-environmental Monitoring

Towards the establishment of a three-dimensional and modern monitoring network for eco-environmental quality, steps have been made to adjust and optimize the monitoring network and sites for air, surface water, groundwater and soil quality under both national and municipal monitoring programs in the 14th Five-Year Plan period (2021-2025), providing continued support as the battle against pollution goes further. Monitoring of environmental quality, ecological status and pollution sources was carried out on all fronts, providing authentic, accurate and comprehensive monitoring data for the high-quality economic development and high-standard environmental protection in a coordinated manner. Beijing also tightened the quality requirements for eco-environmental monitoring and supervision of eco-environmental monitoring agencies of all types and at all levels.

Guarding Ecological and Environmental Safety

Beijing coordinated the work in epidemic prevention and control and environmental protection to strictly prevent secondary environmental risks and comprehensively improve its medical waste disposal capacity. Ruentex's medical waste disposal project Phase II was completed and put into production ahead of schedule, adding the medical waste disposal capacity by 20,000 tons /year, which supports the timely and proper collection and disposal of various epidemic-related wastes. Beijing also stepped up environmental supervision. A three-year campaign for special rectification of hazardous waste management was launched, under which 102 waste producing entities and 17 entities engaged in hazardous waste operations were inspected as per standards. In 2020, a total of 28 types and about 370,000 tons of hazardous wastes were produced in the city, all of which were treated and disposed in a harmless manner. Beijing also continued to strengthen risk control and contingency preparations for environmental emergencies, so as to improve emergency response capabilities and properly handle emergent environmental incidents.

Beijing tightened nuclear and radiation safety supervision. An inter-departmental coordination mechanism was established to assist medical institutions in radiation safety management amid the epidemic. Strict access restriction was applied to high-risk sources, and supervision was strengthened over high-risk activities such as transportation and relocation of radioactive materials. A three-year campaign was launched to defuse potential radiation safety hazards, and special inspections were conducted for more than 30 entities, covering radiographic flaw detection and logging sources. The surrounding environment of key nuclear and radiation facilities were also monitored, and mandatory monitoring was applied to supervise key radiation entities. Environmental management of electromagnetic radiation facilities such as power transmission and transformation was strengthened. Research on environmental impact of electromagnetic radiation as well as popularization of the scientific knowledge was also conducted. Radioactive sources and ray devices in the city were under safe control, with a total of 169 waste radioactive sources and 4,450 liters of radioactive waste safely collected and stored.

Ecological and Environmental Protection Inspection

National Inspection

Ecological and environmental protection inspection is a major decision and plan initiated and advanced by General Secretary Xi Jinping himself as an important institutional arrangement for promoting ecological progress and environmental protection. With the approval of the CPC Central Committee and the State Council, the No.1 National Ecological and Environmental Protection Inspection Team inspected Beijing from August 31 to September 30, 2020. Beijing attached great importance and gave full cooperation to this second round of national inspections. Such inspection provided important guidance and impetus for Beijing to thoroughly implement the Xi Jinping Thought on Ecological Civilization, resolve prominent environmental problems, improve environmental quality, promote high-quality economic development and move faster to build Beijing into a beautiful city.

Municipal Inspection

Targeted ecological and environmental protection inspections were carried out at the municipal level. In terms of special inspections over key areas, the special inspections on fugitive dust control covered

415 sites such as construction sites, roads and bare land, and transferred problem clues to the local authority once identified and urge for their rectification. In terms of routine inspections over key tasks, focus was put on problems fed back by national ecological and environmental inspections and tasks urged by public petition letters and visits. Centering on the evaluation of performance in completing the key tasks for the battle against pollution, routine inspections were carried out in certain townships (streets) and district-level departments to further guarantee that local authorities fulfill their duties.

Institutional Guarantee

Beijing pushed for the standardization and legalization of ecological and environmental protection inspection. In March 2020, the *Measures for Implementing the Regulation on National Ecological and Environmental Protection Inspections in Beijing* was issued, which specified for the first time in the form of Party regulation, the framework, procedures and protocols, powers and responsibilities of ecological and environmental protection inspections, and further standardized the working mechanisms. Supporting policies were also released to further strengthen the use of inspection results, such as the provisions on admonishment meetings and provisions on transfer of accountability clues during ecological and environmental protection inspections.

Ecological and Environmental Law Enforcement

Upholding the principles of "precise strength, targeted punishment and refined management", Beijing has integrated the management and public service functions into law enforcement, and strengthened comprehensive law enforcement actions over stationary sources, mobile sources and other areas of environmental protection.

In terms of stationary sources, a total of 4,890 cases were filed as violations throughout the year, with a total fine of 106 million yuan imposed. Meanwhile, 674 major cases of violations were investigated and handled, of which seizure and confiscation were applied to 646 cases, administrative detention to 17 cases, and 11 cases suspected for environmental crimes were transferred for further investigation.

In terms of mobile sources, the work model of testing by environmental authorities and punishment by public security authorities was continued and improved. A total of 2,907,100 heavy-duty diesel vehicles (times) were inspected through spot checks throughout the year, of which 158,900 vehicles were found to fail emission standards. Meanwhile, 202,200 heavy-duty diesel vehicles (times) were inspected at home, of which 13,400 vehicles were recorded as violations with a fine of 7.121 million *yuan*. Besides,

a fine of 17.166 million *yuan* was imposed on 1,541 cases of violations from the 20,500 units (times) of off-road mobile machinery inspected. Motor vehicle testing sites were punished by 1.391 million *yuan* for 11 environmental violations, and oil storage and transportation facilities by 3.935 million *yuan* for 126 environmental violations. Beijing also intensified inspections over nature reserves and protected areas for drinking water source, and severely cracked down on various environmental violations.

The municipal eco-environmental department carried out five rounds of targeted law enforcement actions in 37 townships (streets) of 10 districts, 2 industrial parks/clusters or key areas, covering a total of 1,468 sites and identified 381 environmental problems. District-level eco-environmental departments carried out 432 times of targeted inspections over 52,605 enterprises and found 5,847 environmental problems.



Formation of the Comprehensive Law Enforcement Team for Ecological and Environmental Protection

Pursuant to the *Beijing Implementation Plan for Deepening the Reform in Comprehensive Administrative Law Enforcement*, the Beijing Municipal Comprehensive Law Enforcement Team for Environmental Protection was officially established on December 18, 2020.

The Team is responsible for the centralized exercise of power to impose administrative punishment with respect to pollution control, ecological protection, nuclear and radiation safety, as well as related administrative inspections and administrative compulsions, which should be exercised by provincial environmental authorities by laws, regulations and rules. It is also responsible for the investigation and handling of major, tough and complex cases and cross-regional cases in related fields; and the supervision and guidance, overall coordination, assessment and evaluation of district-level ecological and environmental law enforcement.

The Team was originally founded under the name of Beijing Municipal Environmental Protection Inspection Team in 1991, which later reformed into Beijing Municipal Environmental Inspection Department, and then the Beijing Municipal Comprehensive Law Enforcement Team for Ecological and Environmental Protection. After nearly 30 years of construction and development, the Team has become larger and more competent in environmental law enforcement, with the scope of responsibilities expanded from stationary sources to the whole field of ecological environment.



JOINT EFFORTS



Regional Coordination

Coordinated prevention and control of air pollution was carried out on a regional scale. Under the leadership of the Steering Group for the Prevention and Control of Air Pollution in Beijing-Tianjin-Hebei and Surrounding Areas, Beijing made every effort to promote aligned legislation and unified standards. The *Regulation on Prevention and Control of Pollution Caused by Motor Vehicles and Off-road Mobile Machinery* was enacted and put into force in the Beijing-Tianjin-Hebei Region. Joint prevention and control of air pollution targeting key time periods and key sectors was strengthened. Under the guidance of the Ministry of Ecology and Environment and other departments, campaigns to tackle autumn and winter air pollution and summer VOCs were jointly carried out in Beijing-Tianjin-Hebei and Surrounding Areas. In the meantime, the grading criteria for early warnings of heavy air pollution episodes was also unified, and joint efforts were made to establish an emergency response list where key industries were graded by their environmental performances and subjected to differentiated control measures. This coordinated response to heavy air pollution episodes has accelerated the overall improvement of regional air quality.

Coordinated protection and governance of water environment in river basins was strengthened. With the steady implementation of the *Horizontal Ecological Compensation Agreement for Water Conservation Areas of the Chaobaihe River in the Upper Reaches of Miyun Reservoir*, Beijing and Hebei Province continued to strengthen the coordinated protection of Miyun Reservoir. The districts of Miyun, Huairou and Yanqing of Beijing and the cities of Chengde and Zhangjiakou of Hebei Province signed a water conservation agreement together, forming a “community of shared concern in water conservation”. Beijing also continued to advance the comprehensive treatment of the upper streams of the Xiong’an New Area, the Yongdinghe River Basin etc., and improved the mechanism for coordinated prevention and control of water pollution in case of emergencies.

Citywide Mobilization

By actively practicing the concept of ecological civilization, Beijing embraces a situation of joint efforts in environmental protection, including government leadership, enterprise self-discipline and public participation. For government departments at all levels, efforts were made to advance ecological progress while securing epidemic prevention and control, with task tackling campaigns continued in the battle against pollution, and all other lawful duties regarding supervision and management of ecological and environmental protection fully performed. For enterprises and public institutions of various kinds, in an active effort to assume their primary responsibilities for ecological and environmental protection, applicable technologies were adopted proactively for the reduction of pollution and GHG emissions, pollutant discharge permits were applied in accordance with laws and regulations, and environmental information was disclosed voluntarily for public supervision. 63 enterprises and public institutions, including Beijing Enterprises Green Sea Energy Environmental Protection Co., Ltd. and Tongzhou Renewable Energy Power Plant, joined the “open-gate online” activity, using pictures, videos and VR technology to enable virtual visits by millions of netizens. For the general public, environmental awareness was further enhanced. The citizens took an active part in environmental protection activities and practiced simple, moderate, green and low-carbon lifestyles. The share of green trips in central urban areas reached approximately 74%. A total of 750 million people (times) joined, either in online or offline ways, environmental protection events such as the 7th Beijing Environmental Cultural Week, the 3rd Session of selection for “Environmental Protection Stars”, and the 5th Beijing Children’s Environmental Art Festival. The general public also learned environmental protection knowledge via the cloud platform, among which “Cloud Classrooms” for environmental education covered over 260 schools in the city; over 30,000 citizens listened online to more than 120 lectures on “Green Beijing, Green Action”; and about 2 million citizens visited “Cloud Exhibitions” to learn about environmental protection.

Citizens were mobilized for ecological and environmental protection and supervision, offering their views and suggestions for environmental protection and building a beautiful Beijing. News media told stories about joint efforts in pollution control in a panoramic and multi-dimensional manner through TV, radio, newspapers, Internet and other integrated media platforms, which enriches the supply of ecological and environmental cultural products. As “One Microgram Campaign” moved further, public engagement as a strong force has been fostered, and environmental culture becomes ever richer. The general public actively reported environmental violations. In 2020, the public reported 338 cases of environmental violations, of which according to regulations, 67 reporters of proved cases were rewarded.

A Review of Environmental Progress During the 13th Five-Year Plan Period (2016-2020)

During the 13th Five-Year Plan period (2016-2020), Beijing advanced the uphill battle against pollution on all fronts under the guidance of Xi Jinping Thought on Ecological Civilization and instructions of President Xi Jinping in his important speeches to Beijing. It issued the opinions on comprehensively strengthening environmental protection and resolutely fighting against pollution, and developed and implemented action plans for the three major battles for blue sky, lucid water and clean soil. With the joint efforts of the whole city and the coordinated governance of neighboring provinces, regions and municipalities, important progress was made, with continuous and substantial improvement of environmental quality. Citizens have an ever stronger sense of fulfillment, happiness and security in terms of the ecological environment, adding a bright background to the endeavor to build a moderately prosperous society in all respects. To sum up, the work of environmental protection was “unprecedented” in six aspects.

Unprecedented Priority on Ecological and Environmental Protection

The Municipal Commission for Advancing Ecological Civilization was set up under the CPC Beijing Committee, which includes seven special working groups, to comprehensively strengthen the Party's leadership over the development of ecological civilization. The *Regulation on Division of Responsibilities for Ecological and Environmental Protection in Beijing* was released as a Party regulation, which further improves the accountability system for environmental protection and provides an institutional guarantee for municipal authorities with supervisory responsibilities to form synergy.

The *Measures for Implementing the Regulation on National Ecological and Environmental Protection Inspections in Beijing* was issued to further standardize routine inspections. Mechanisms such as inspections and supervisions by river (lake) chiefs, joint governance of contaminated sites, leadership responsibility for assigned areas, and governmental assistance and guidance were further improved. All districts and departments worked together to produce a strong joint force.

Unprecedented Fast Improvement of Environmental Quality

The concentrations of major air pollutants in Beijing continued to set record lows in monitoring history, suggesting fundamental progress towards blue sky. The annual average concentration of PM_{2.5} dropped to 38µg/m³ in 2020, the lowest ever recorded. Surface water quality improved significantly, with no sections inferior to Grade V standard found under the national monitoring program. Soil environmental risks were effectively controlled, over fulfilling the targets for safe use of contaminated farmland and contaminated sites.

Emissions of SO₂, NO_x, COD and NH₃-N were all cut by magnitudes much larger than the binding targets of the 13th Five-Year Plan, and interim objectives of the battle against pollution had been accomplished successfully.

Unprecedented Intensive Efforts to Tackle Pollution

In terms of air pollution control, measures were refined and strengthened, with focus on heavy-duty diesel vehicles, VOCs and fugitive dust. New energy vehicles and gasoline/diesel vehicles of China V/VI standards accounted for more than 60% in the fleet. The control of VOCs pollution made headway and the responsibilities for dust control became clearer.

In terms of water pollution control, the second three-year action for the construction of sewage treatment and reclaimed water utilization facilities came to an end, and the third three-year action plan for sewage treatment was launched. More emphasis was put on rural sewage treatment and living environmental improvement.

In terms of soil pollution control, the detailed investigation on soil pollution was successfully completed, and the target of above 90% safe utilization rate for contaminated farmland and contaminated sites was over fulfilled.

Unprecedented Contributions of Science and Technology

Online monitoring of heavy-duty diesel vehicle emissions was made possible, further expanding the scope of off-site supervision. Through the registration of off-road mobile machinery and introduction of mobile law enforcement applications, law enforcement efficiency was greatly improved. Remote sensing was used to monitor changes in key construction plots and bare land, which helps to pinpoint problems in a timely manner. On-road mobile surveillance of VOCs facilitated the identification of high-concentration locations, providing proof for targeted law enforcement and more precise environmental supervision. Based on the analysis of VOCs formation characteristics and a new round of PM_{2.5} source apportionment, pollution control pathways were dynamically adjusted and optimized to ensure the correct direction for pollution control.

Unprecedented Strong Joint Force for Regional Coordination

As regional coordinated pollution prevention and control went deeper, mechanisms for joint law enforcement in border areas, joint monitoring of key river basins and joint environmental emergency response were improved and further applied to district (city, county) levels. In terms of air pollution prevention and control, under the organization of the Ministry of Ecology and Environment, regional coordinated prevention and control, as well as targeted and precise emission reduction were carried out, driving the simultaneous improvement of air quality on a regional scale. In terms of water protection and governance, an ecological compensation mechanism was established for the Chaobaihe River Basin in the upper reaches of Miyun Reservoir, which contributes to the continuous reduction of inflow total nitrogen (TN) concentration. Beijing and Hebei Province jointly issued and implemented the *Integrated Plan for Environmental Protection of the Chaohe River Basin* and the *Working Mechanism for Water Pollution Prevention and Control of Inter-provincial (city) Rivers in the Baiyangdian River Basin*. Through coordinated governance of the upper and lower river basins, the problem of transboundary water pollution was effectively solved.

Unprecedented Broad Public Support and Engagement

Public participation campaigns under the theme of “Building a Beautiful China, We are in Action” were launched three years in a row to support the fight against pollution. New media played a bigger role, with over 2.7 million followers on WeChat and Weibo platforms, and clips on short video platforms played more than 20 million times. Thematic activities such as Environmental Cultural Season for Capital Universities, Children's Environmental Art Festival and Environmental Protection Classroom were carried out, attracting more than 20,000 teachers and students each year. Recommended by multiple departments, the number of environmental education bases was increased to 52. Together with 63 environmental protection facilities, they opened gates and received public visits of about 2 million people every year. A green media alliance was founded by Beijing Internet Association, Beijing Journalists Association and other organizations, making the publicity pattern more three-dimensional and open. Besides, *A Review of 20 Years' of Air Pollution Control in Beijing*, released by UNEP, sharing Beijing's experiences with the international community. Understanding “same future, shared responsibility, concerted effort”, the general public has acted in electricity and water conservation, green travel and garbage classification, and actively practiced green lifestyles. Both the degree of participation and the sense of fulfillment have been greatly improved, and the level of public satisfaction with the ecological environment is increasing year by year.



OUTLOOK

After the first centenary goal of building a moderately prosperous society in all respects is achieved, the 14th Five-Year Plan period (2021-2025) marks the first five years on a new journey towards the second centenary goal of fully building a modernized socialist country. The year 2021 marks the start of the 14th Five-Year Plan and the centenary of the Communist Party of China. Beijing will continue to follow the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, follow the visions outlined at the 19th CPC National Congress, the second, third, fourth and fifth plenary sessions of its 19th Central Committee and fully implement the decisions and plans of the CPC Central Committee and the State Council. Based on the new development stage, Beijing will stay committed to the new development philosophy and contribute to the creation of the new development paradigm. Adhering to the “First and Best” standards, Beijing will strive to build a modern environmental governance system as a megacity, coordinate efforts to tackle climate change and fight pollution, promote the continuous improvement of environmental quality, and make new headway in advancing ecological civilization.