

2017

SHANGHAI ENVIRONMENTAL BULLETIN



SHANGHAI ENVIRONMENTAL PROTECTION BUREAU

ADD : NO.100 DAGU ROAD SHANGHAI,CHINA

TEL : (8621) 23111111

FAX : (8621) 63556010

P.C : 200003



SHANGHAI ENVIRONMENTAL PROTECTION BUREAU

According to the provision that “ the authorities of environmental protection of the people’s government at provincial level or above should issue the environmental bulletin regularly ”, which is stipulated in Article 54 of the Environmental Protection Law of the People’s Republic of China, and the provision that “ the Municipal Environmental Protection Bureau should issue a local annual environmental bulletin every year ”, which is provided for in Article 58 of the Shanghai Environmental Protection Regulations, 2017 Shanghai Environmental Bulletin is hereby issued.

Shou ZiQi

General Director

Shanghai Environmental Protection Bureau

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An Overview

2017, Shanghai city has deeply implemented the essentials of the key speeches made by General Secretary Xi Jinping and his new concept, thoughts and strategies on the governance of country and regime, studied and carried out the heart of the 19th National Congress of the Communist Party of China. All the annual goals and tasks were accomplished. Its priority was placed on building ecological civilization and environmental protection with solid promotion of central environmental protection supervision and rectification. The comprehensive improvement of regional eco-environment based on the principle of demolishing illegal land use, buildings, business, emission and residence and rectification on safety problems, unlicensed buildings, disorderliness and illegal operations, comprehensive improvement in middle and small river courses and the action plan of prevention and control of air, water and soil pollution accomplished the annual environmental protection goals and tasks successfully. The key pollutants emission has decreased further while the eco-environment quality has been improved evidently.

2017, the concentration of PM_{2.5} in ambient air was 39 μ g/m³ in Shanghai, 13.3% lower than that in 2016 and 37.1% lower than that in the reference year of 2013; the yearly average concentrations of PM_{2.5}, inhalable particles (PM₁₀) and sulfur dioxide (SO₂) also fell to the lowest ever; the quality of water environment improved as in 2016; the water quality inferior to Category V sections of the rivers dropped 15.9%; the sound intensity of regional ambient noise met the standards; and the ambient radiation was kept within normal range.





State of Environmental Quality

2017

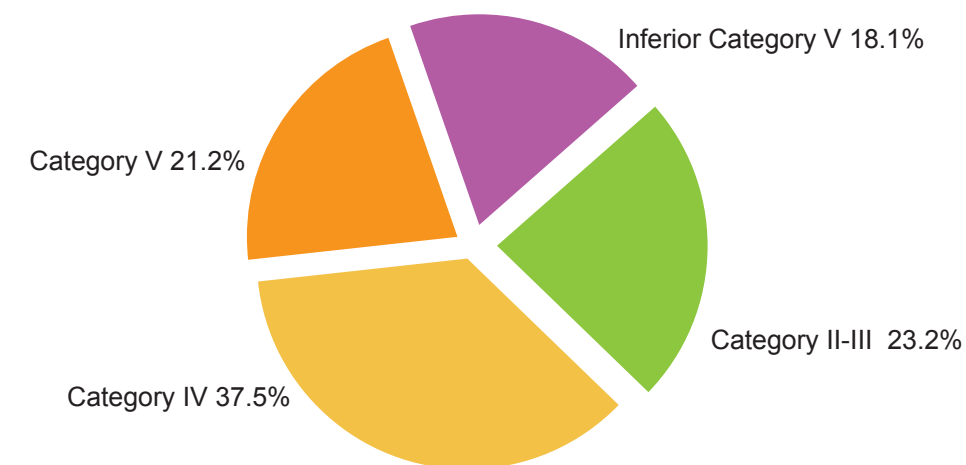
SHANGHAI
ENVIRONMENTAL BULLETIN

State of Environmental Quality

Quality of Water Environment

General Review

In 2017, the water quality at 23.2% of monitored sections^[1] of the rivers in Shanghai was up to the standard of Category II and III; at 58.7% of them the water quality fell into Category IV and V; and at 18.1% of them the water quality was inferior to Category V. Major parameters of pollution were ammonia nitrogen and total phosphorus.



The percentage of water quality categories at the monitored sections of the rivers in Shanghai in 2017

Generally, compared with that in 2016, water quality in main rivers in Shanghai improved in 2017. The water quality of monitored sections of the rivers in the Category II and III and Category IV and V has raised by 7.0% and 8.9% respectively while that of the inferior Category V has dropped by 15.9%. The average concentration of permanganate index was 4.5mg/l, 6.1% lower than that in 2016; while the average concentration of ammonia nitrogen was 1.37mg/l, 28.0% lower than that in 2016; the average concentration of total phosphorus was 0.21mg/l, dropped by 22.0% from a year earlier.

Dianshanhu Lake was slightly eutrophic, basically the same as in 2016.

¹ Total number of monitored sections of the rivers included in statistics in Shanghai was 259.

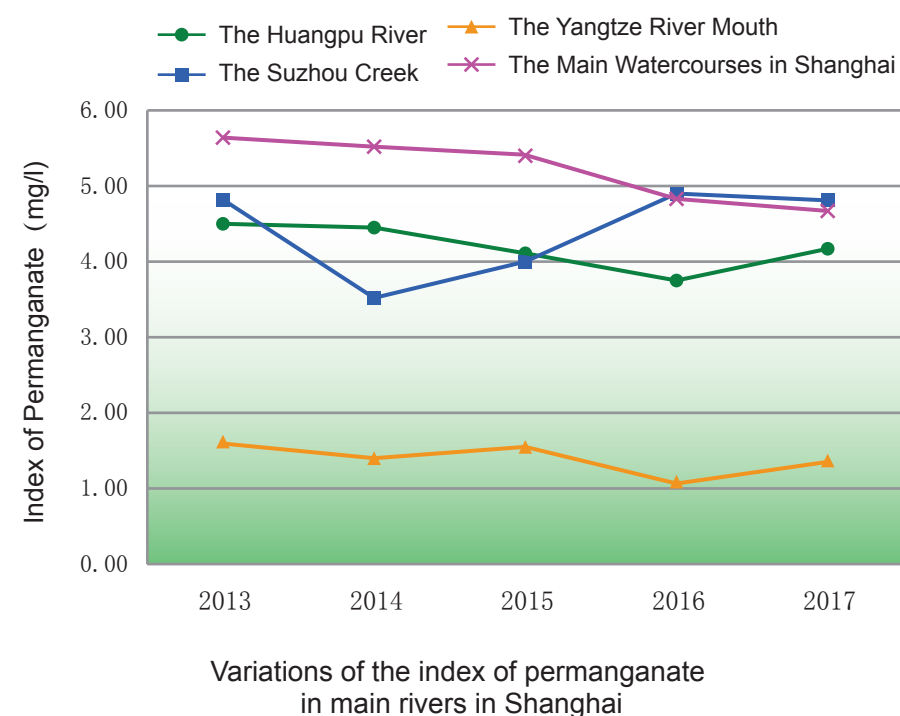
Main Rivers

The Huangpu River

The water quality at five of the six sections of the Huangpu River was up to the standard of Category III, that at the other one was classified into Category IV. Compared with that in 2016, water quality as a whole has improved a little as the concentrations of ammonia nitrogen and total phosphorus were 38.0% and 6.7% lower respectively.

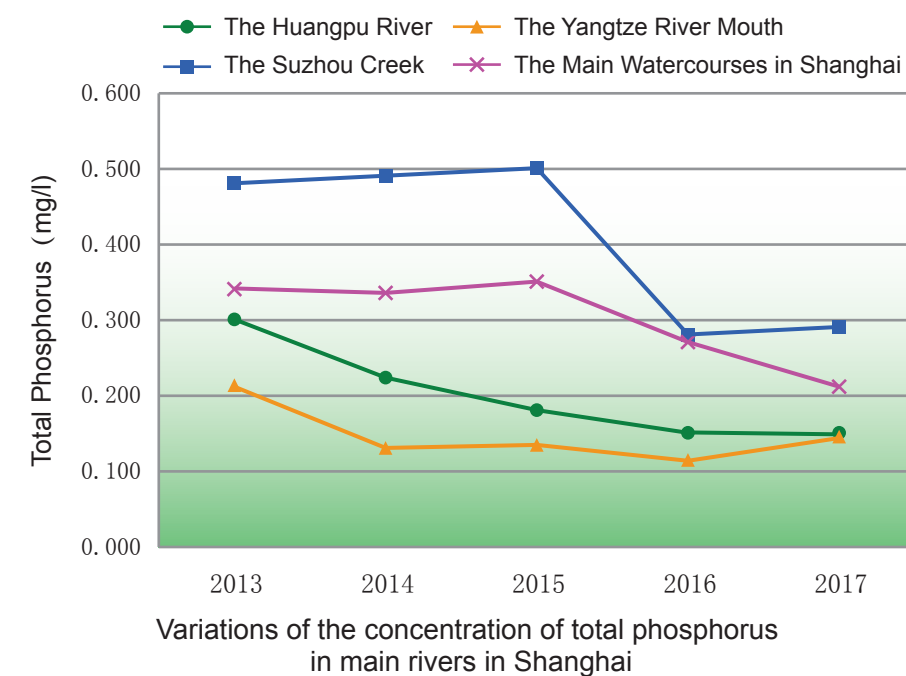
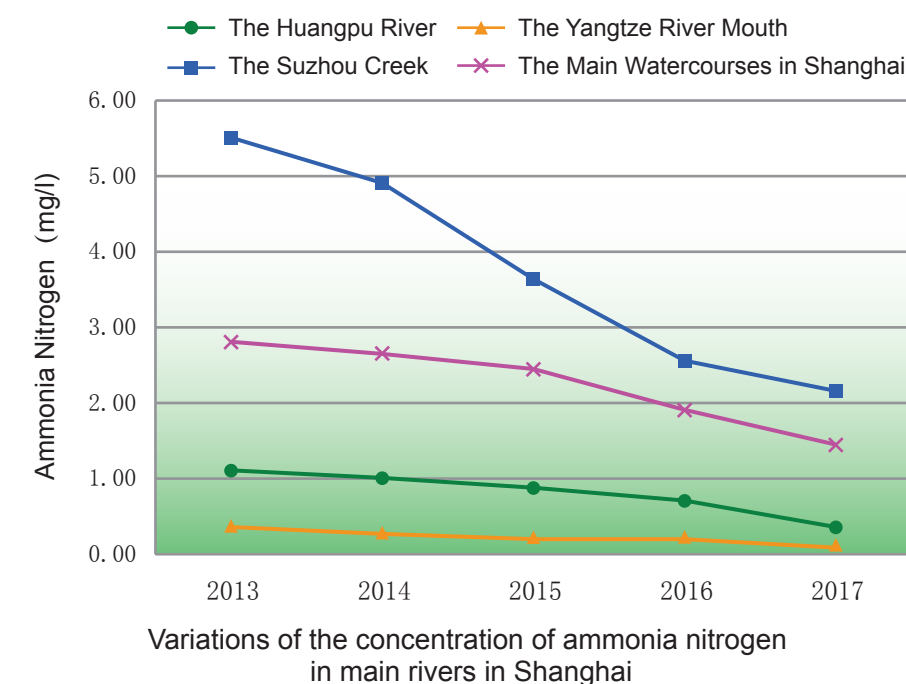
The Suzhou Creek

The water quality at four of the seven sections of the Suzhou Creek was inferior to the standard of Category V, that at the other three was classified into Category V. Major parameters of pollution were ammonia nitrogen and total phosphorus. Compared with that in 2016, water quality as a whole was slightly improved as the concentration of ammonia nitrogen was 15.9% lower, while that of total phosphorus remained unchanged.



The Yangtze River Mouth

The water quality at all the seven sections in the Yangtze River Mouth met the standard of Category III, remaining the same as that in 2016. The concentration of ammonia nitrogen was 19.4% lower, while that of total phosphorus was 19.7% higher.



◎ Ambient Air Quality

General Review

In 2017 there were 275 days when air quality index (AQI) varied in the range between excellent and good, one day less than in 2016; and the annual rate of excellent/good-AQI days was 75.3%, 0.1 percentage points lower than in 2016. Among the 365 days, there were

- 58 days when AQI was good;
- 217 days when AQI was moderate;
- 71 days when AQI denoted light pollution;
- 17 days when AQI denoted medial pollution; and
- 2 days when AQI denoted heavy pollution, which remains the same in 2016.

Among the 90 days when air pollution occurred, there were

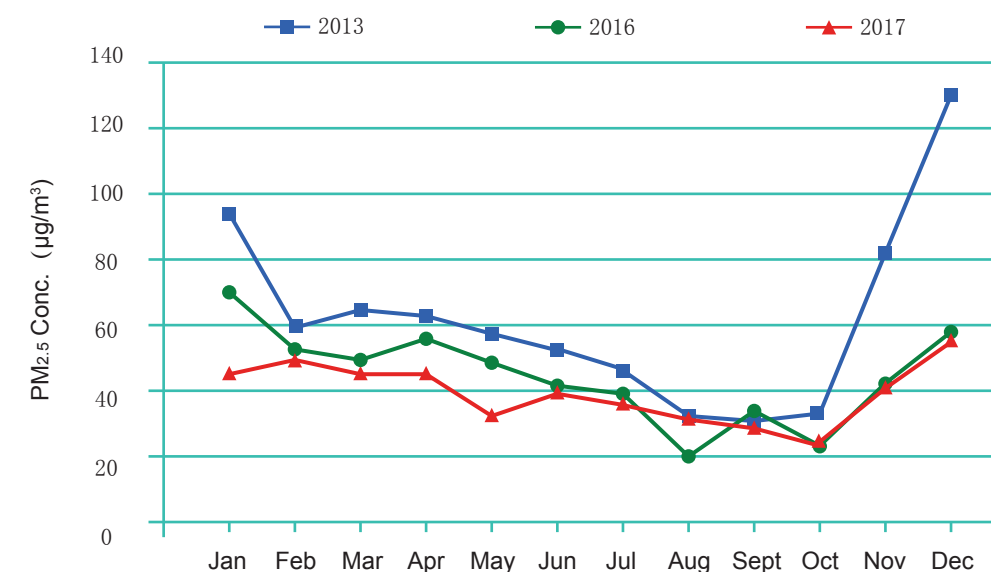
- 23 days, 25.6% of the total 90 days, when fine particulate matter (PM_{2.5}) was the primary pollutant;
- 52 days, 57.8% of the total 90 days, when primary pollutant was ozone;
- 12 days, 13.3% of the total 90 days, when primary pollutant was nitrogen dioxide;
- 2 days, 2.2% of the total 90 days, when primary pollutant was inhalable particles (PM₁₀) (affected by sand dust transferring)
- 1 day, 1.1% of the total 90 days, when primary pollutants were both fine particulate matter (PM_{2.5}) and nitrogen dioxide



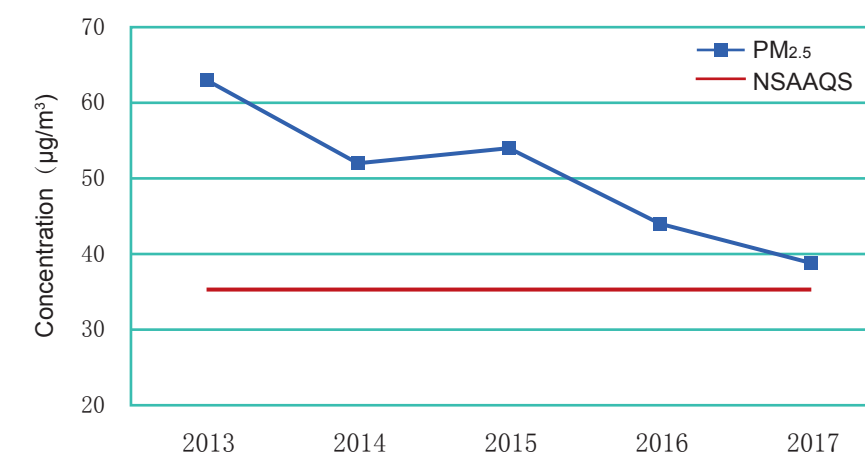
Primary indicatives of pollution

Fine Particulate Matter (PM_{2.5})

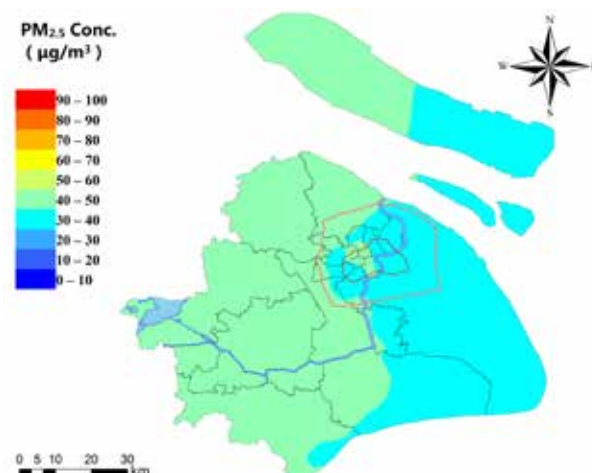
In 2017 the average concentration of PM_{2.5} in Shanghai was 39 $\mu\text{g}/\text{m}^3$, 4 $\mu\text{g}/\text{m}^3$ higher than that provided for in the National Second Ambient Air Quality Standards (NSAAQS), 13.3% lower than that in 2016, and 37.1% lower than that in the reference year of 2013. The lowest average concentration of PM_{2.5} occurred in October at 24 $\mu\text{g}/\text{m}^3$ while the highest occurred in December at 54 $\mu\text{g}/\text{m}^3$. The data monitored in the past five years showed generally the annual average concentration of PM_{2.5} in Shanghai was decreasing. Spatial distribution of the concentration of PM_{2.5} in Shanghai showed a downward trend from west to east.



Variations of monthly average concentration of PM_{2.5} in 2013, 2016 and 2017



Variations of annual average concentration of PM_{2.5} from 2013 to 2017

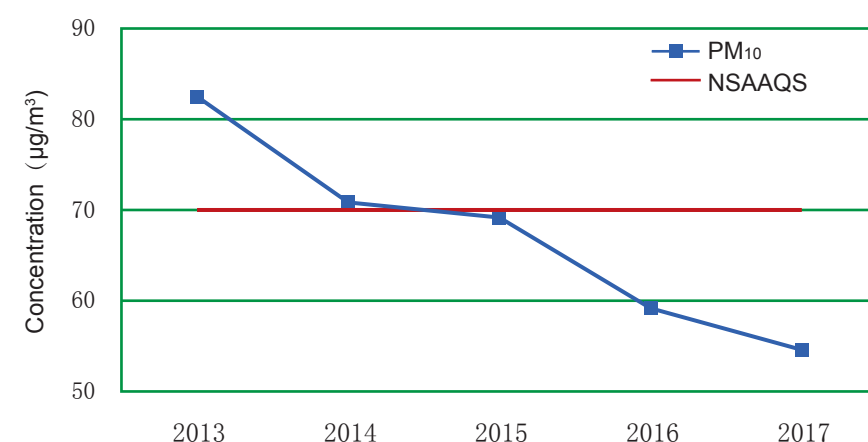
Spatial distribution of the concentration of PM_{2.5} in Shanghai in 2017

Inhalable Particulate Matter (PM₁₀)

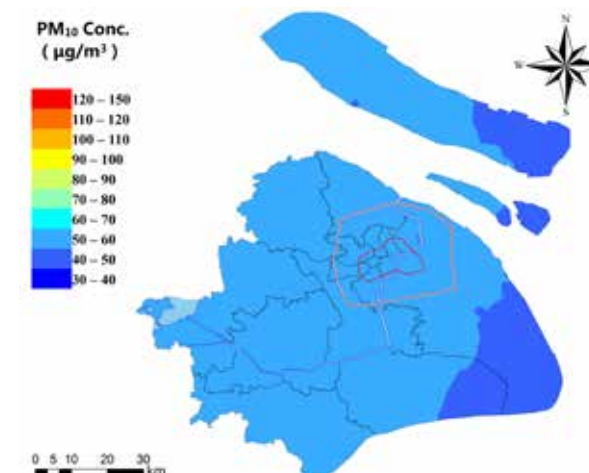
In 2017 the annual average concentration of PM₁₀ in Shanghai was 55µg/m³^[2], meeting the NSAAQS and 6.8% lower than that in 2016.

The data monitored in the past five years showed that the annual average concentration of PM₁₀ has been falling down, and has met the NSAAQS for consecutive three years.

In 2017 spatial distribution of the concentration of PM₁₀ in Shanghai showed a downward trend from west to east.

Variation of annual average concentration of
inhalable particulate matter in Shanghai from 2013 to 2017

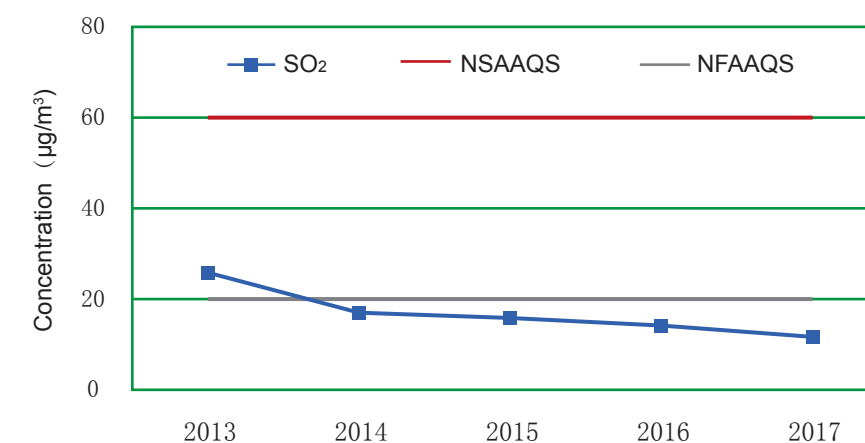
²Although Shanghai was negatively impacted by the dust transportation process in May, 2017, the annual average concentration of PM₁₀ in Shanghai declined from 56µg/m³ to 55µg/m³ due to the exemption rules of MEP.

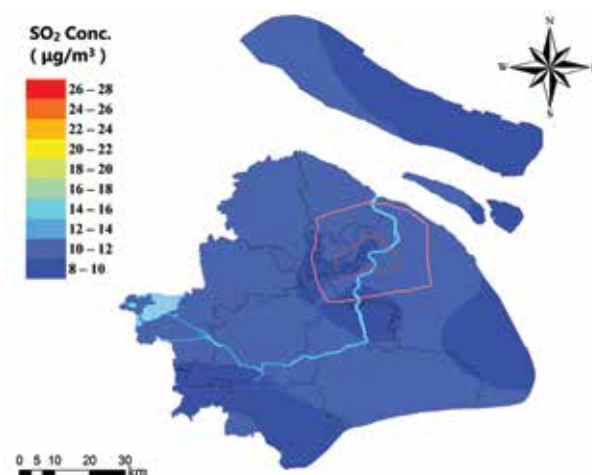


Spatial distribution of the concentration of inhalable particulate matter in Shanghai in 2017

Sulphur Dioxide

In 2017 the annual average concentration of sulphur dioxide in Shanghai was 12µg/m³, 20.0% lower than in 2016, conforming to the National First Ambient Air Quality Standards (NFAAQS). The data monitored in the past five years showed that the annual average concentration of sulphur dioxide in Shanghai kept meeting NSAAQS and was on the downward trend on the whole with meeting NFAAQS in four consecutive years. Generally, the concentration of sulphur dioxide in all districts in Shanghai in 2017 was low.

Variation of annual average concentration of sulphur dioxide
in Shanghai from 2013 to 2017

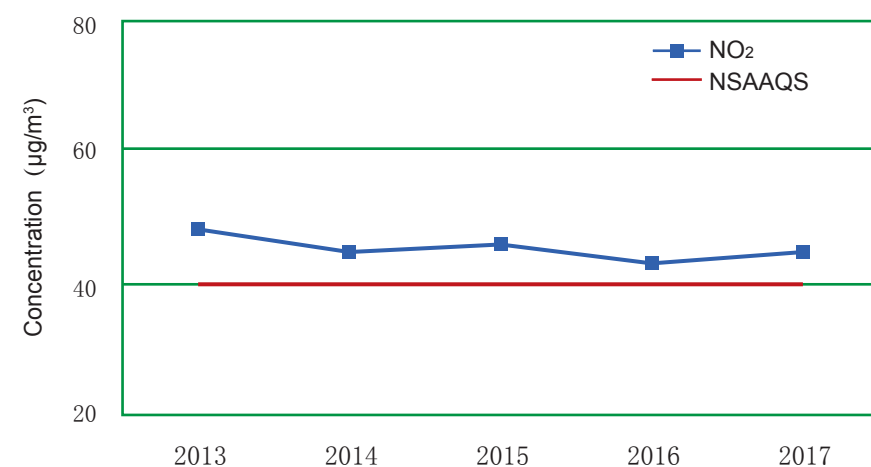


Spatial distribution of the concentration of sulphur dioxide in Shanghai in 2017

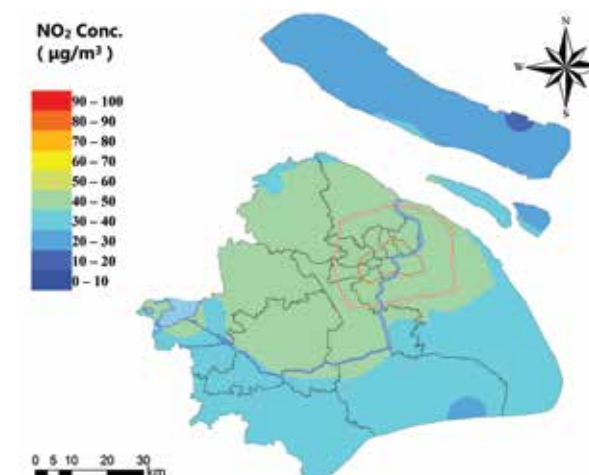
Nitrogen Dioxide

In 2017 the annual average concentration of nitrogen dioxide in Shanghai was $44\mu\text{g}/\text{m}^3$, $4\mu\text{g}/\text{m}^3$ higher than the NSAAQS standard and 2.3% higher than that in 2016. The data monitored in the past five years showed that the annual average concentration of nitrogen dioxide in Shanghai failed to meet NSAAQS.

In 2017 the spatial distribution of the concentration of nitrogen dioxide in Shanghai showed a situation that it decreased gradually from downtown towards all directions. Generally, it was higher in west of the Huangpu River than in east of the river.



Variation of annual average concentration of nitrogen dioxide in Shanghai from 2013 to 2017



Spatial distribution of the concentration of nitrogen dioxide in Shanghai in 2017

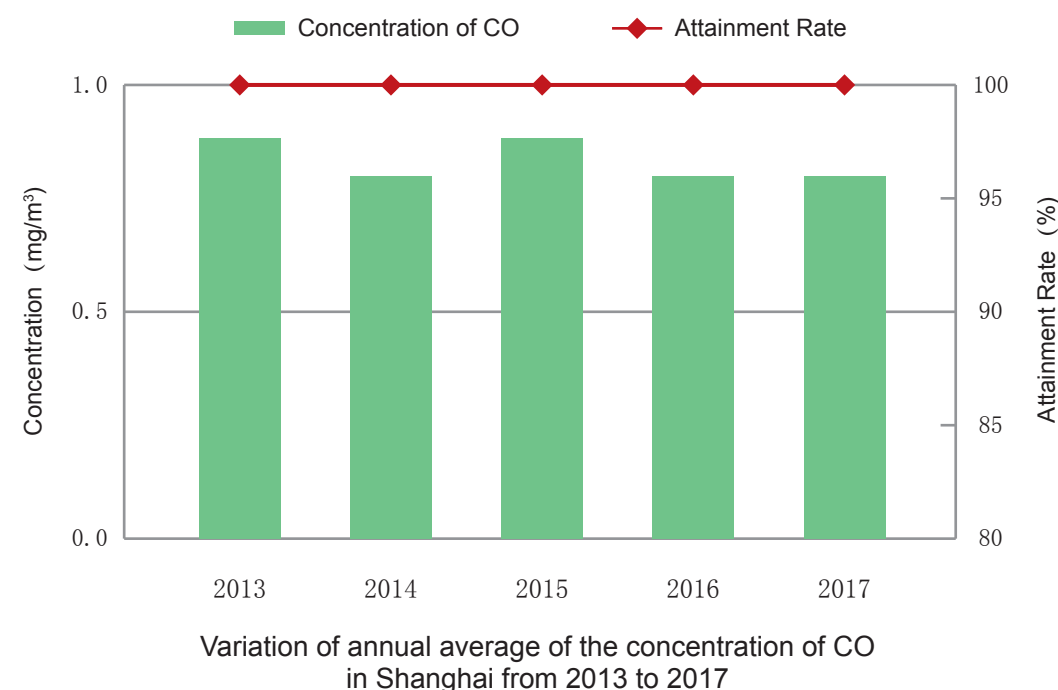
Ozone

In 2017 the average concentration of ozone in Shanghai, which was the ninetieth percentile monitored daily in the eight peak hours, was $181\mu\text{g}/\text{m}^3$, 10.4% higher than that in 2016, $21\mu\text{g}/\text{m}^3$ higher than the NSAAQS standard. 79.1% - 88.4% data of the average concentration of ozone monitored daily in eight peak hours at the state-controlled spots in Shanghai were up to NSAAQS, yet lower by degrees than in 2016.

Carbon Monoxide

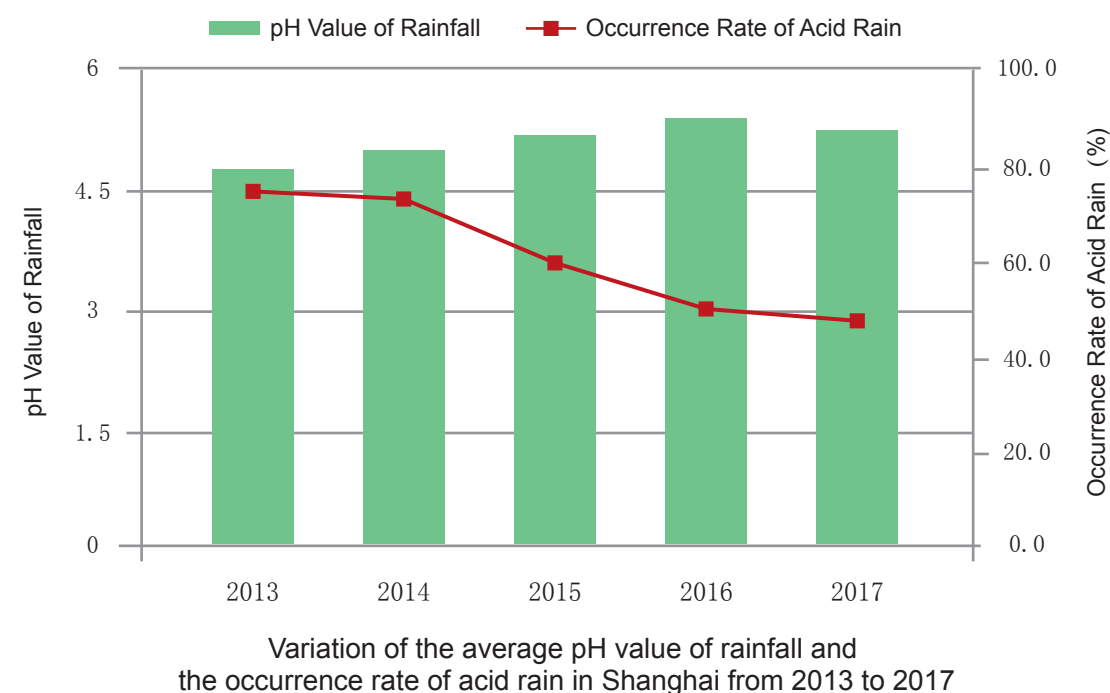
In 2017 the daily average concentration of carbon monoxide monitored in Shanghai varied between $0.4\text{ mg}/\text{m}^3$ and $1.8\text{ mg}/\text{m}^3$, meeting NSAAQS. The annual average concentration of carbon monoxide was $0.76\text{ mg}/\text{m}^3$, 3.8% lower than that in 2016.

The data monitored in the past five years showed that the daily average concentration of carbon monoxide has 100% met NSAAQS as the annual average concentration of carbon monoxide remained below $1.0\text{ mg}/\text{m}^3$.



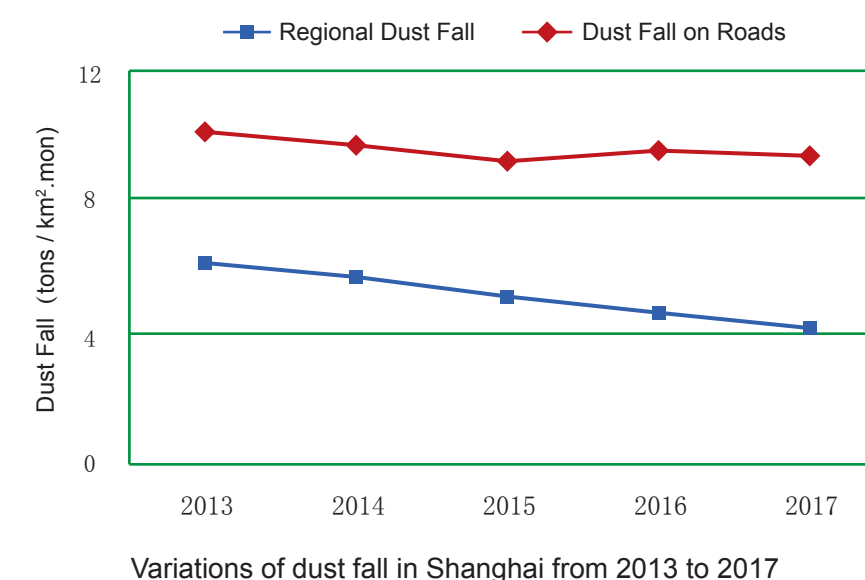
Acid Rain

The average pH value of rainfall in 2017 was 5.12; the occurrence rate of acid rain was 47.6%, 2.8% lower than that in 2016. The data monitored in the past five years showed that the occurrence rate of acid rain in Shanghai was coming down.



Dust Fall

The average regional dust falls in Shanghai in 2017 was 4.1 tons/km² per month, 0.4 tons / km² per month lower than that in 2016; the average dust fall on roads was 9.3 tons / km² per month, 0.2 tons / km² per month lower than that in 2016. The data monitored in the past five years showed that dust fall in Shanghai was on the downward trend.



Quality of Sonic Environment

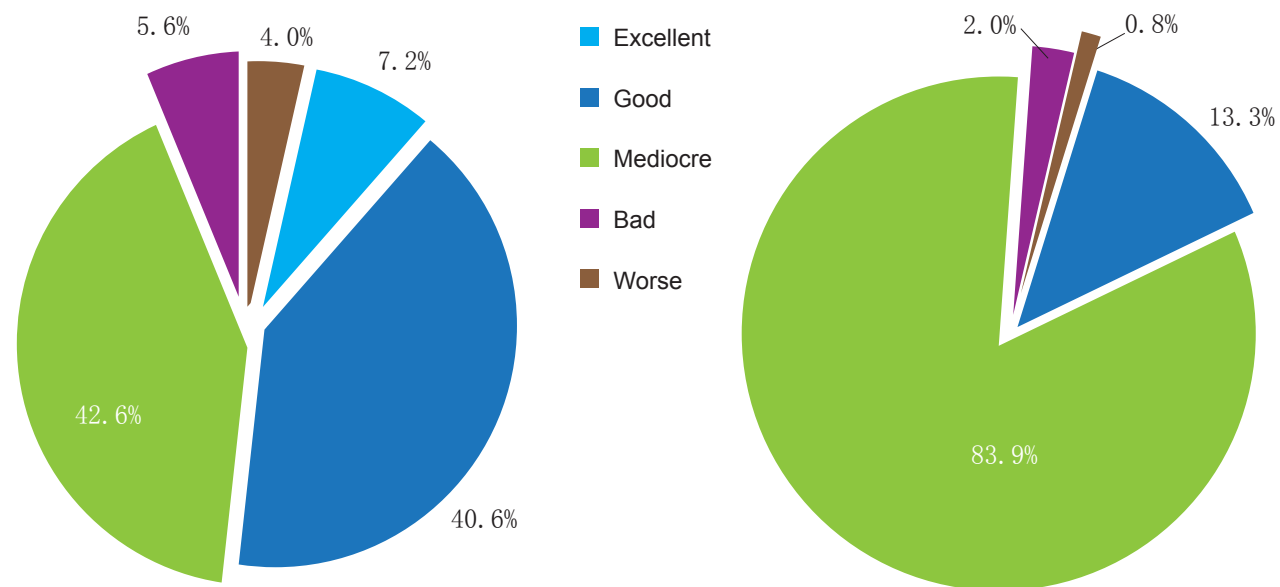
General Review

In 2017 the intensity of regional ambient noise in Shanghai remained at a general level. Road traffic noise was controlled within a good range at both daytime and night.

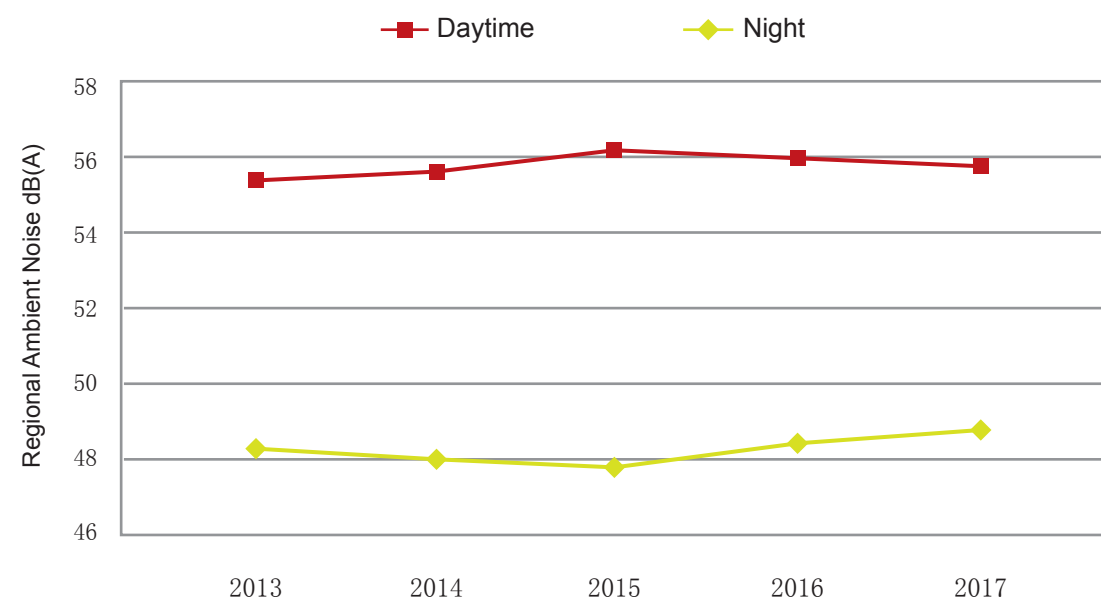
Primary Indicators of Noise Pollution

Regional Ambient Noise

In 2017 the average equivalent sound intensity of regional ambient noise in Shanghai at daytime was 55.7 dB (A), 0.3 dB (A) lower than that in 2016; at night it was 48.8 dB (A), 0.3 dB (A) higher than that in 2016. The data monitored at daytime at 90.4% of the monitoring spots were excellent, good or mediocre, while at night the data monitored at 97.2% of the monitoring spots were good or mediocre.

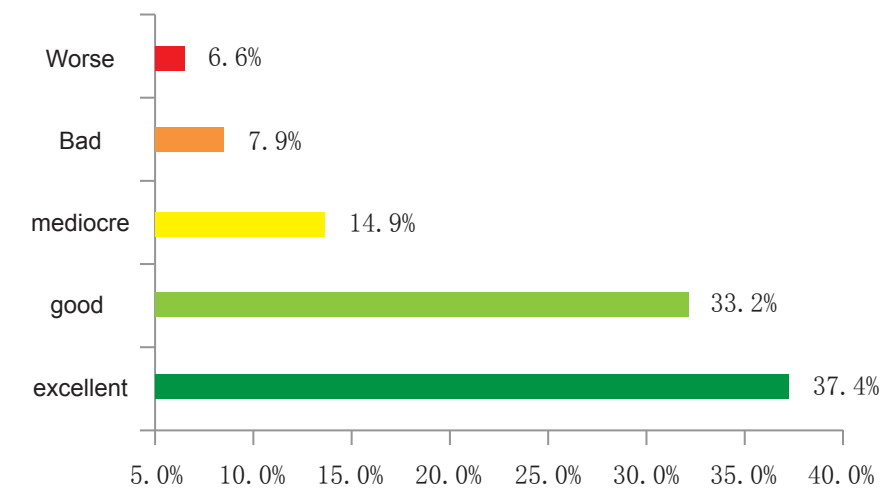
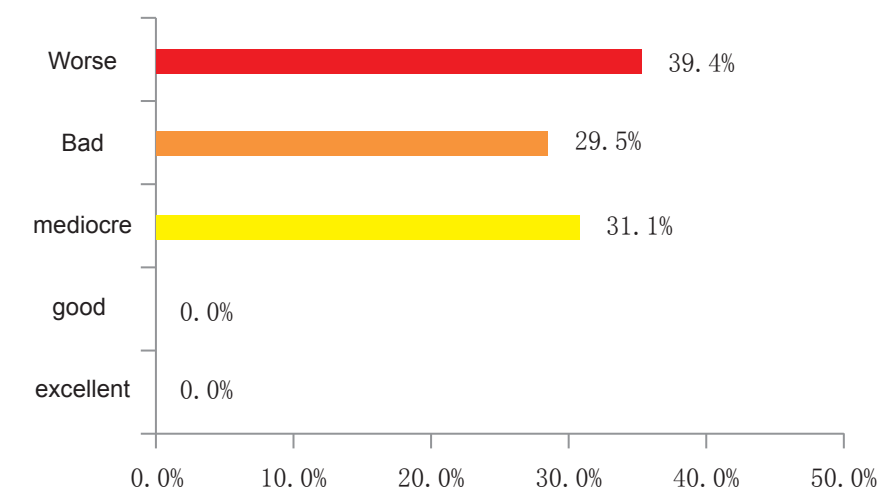
The percentage of regional ambient noise intensities
in Shanghai at daytime in 2017The percentage of regional ambient noise intensities
in Shanghai at night in 2017

The data monitored in the past five years showed that the intensity of regional ambient noise in Shanghai remained around 55-56dB (A) at daytime and 48-49dB (A) at night, keeping stable on the whole.

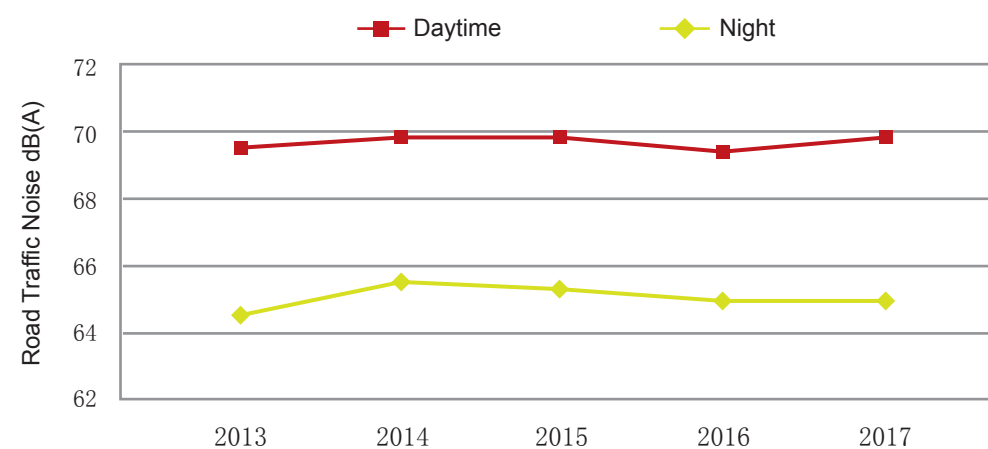
Variations of regional ambient noise intensity
in Shanghai from 2013 to 2017

Road Traffic Noise

In 2017 the average equivalent sound intensity of road traffic noise at daytime in Shanghai was 69.8dB (A), 0.3dB(A) higher than that in 2016; at night it was 65.0dB (A), remaining the same as that in 2016. The data monitored at daytime in 85.5% of the total length of monitored road were excellent, good or mediocre, while at night the data monitored in 31.1% of the total length of monitored road were so.

The percentage of road length in Shanghai
Corresponding to different intensities of road traffic noise at daytime in 2017The percentage of road length in Shanghai
Corresponding to different intensities of road traffic noise at night in 2017

The data monitored in the past five years showed that the intensity of road traffic noise in Shanghai remained stable between 69 and 70dB(A) at daytime and around 65dB (A) at night.



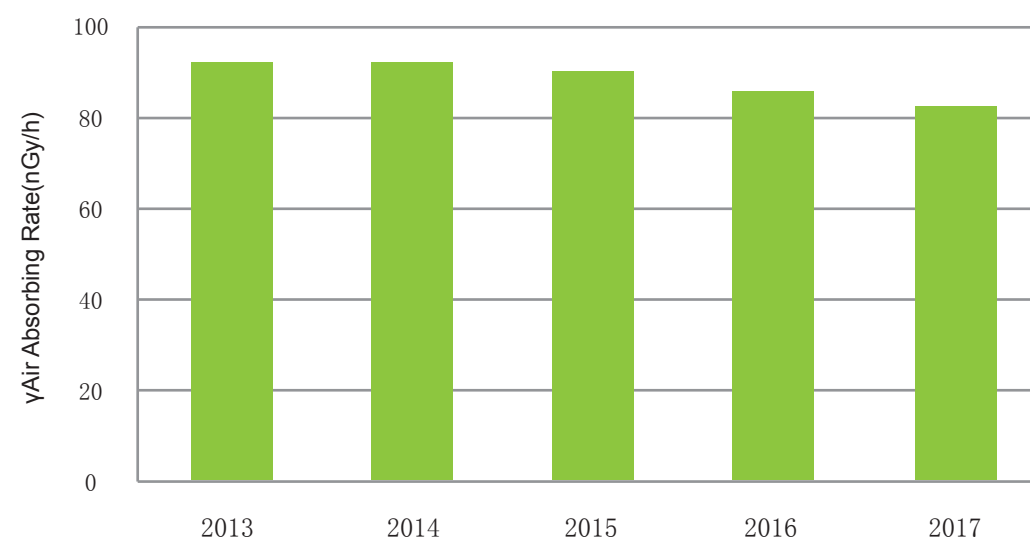
Variation of road traffic noise in Shanghai from 2013 to 2017

☉ Quality of Radiation Environment

On the whole, the quality of radiation environment in Shanghai was good in 2017.

Ionization Radiation

In view of ambient radiation conditions, the monitored data of absorbing rate of γ ray in the air and accumulated radiation amount of γ ray, as well as the sample analysis of aerosol, rainfall, precipitate, vapor, surface water, groundwater, seawater, soil and biologics have shown that the concentration of both natural and artificial radioactive nuclein in air, water bodies and soil in Shanghai were at a normal level; the absorbing rate of γ ray in air monitored in different places in the city remained the same as those monitored in previous years.

The annual absorbing rate of γ ray in air from 2013 to 2017

Viewing the sites where nuclear technology was applied, the data of ambient radiation level monitored around radioactive sources (Category 1-5) and facilities of radioactive rays (Category 1-3) in Shanghai showed that the annually-accumulated radiation amount of γ ray in neighboring zones around these sites complied with the limits of exposure defined for the public and the professionals in “*Basic Standards for the Protection against Ionization Radiation and for the Safety of Radiation Sources*” (GB 18871-2002).

Electromagnetic Radiation

In respect of electromagnetic radiation environment, the data monitored in the twelve places----Shanghai Zoo, Gongqing Forest Park, Longhua Martyrs' Cemetery, the Century Park, Shanghai Seaside Forest Park, the People' s Park, Fengxian Guhua Garden, Jiading Confucius Temple, business area (People' s Square), industrial area (Qingpu Industrial Zone), residential area (Zhongyuan Liangwan City), and main public transit line (No. 3 Line of Subway)----showed that the industrial-frequency electric field intensity varied from 0.152 v/m to 1.859 v/m; the industrial-frequency magnetic induction intensity varied from 0.0126 μ t to 0.0669 μ t; and the composite electric field intensity, from 0.09 v/m to 1.44 v/m. Compared with the data monitored in previous years, environmental background levels of electromagnetic radiation in Shanghai had no marked change.

In regard to electromagnetic radiation sources, results of electromagnetic radiation levels monitored at Oriental Pearl TV Tower, Nanqiao 500kV Transformer Substation and other three transformer substations, 500 kV power transmission lines in Qiaohang and other three high-voltage power lines, the satellite earth station, the radar station in Pudong Airport, the mobile communication substations, the maglev train and both sides along the electric railway showed that the industrial-frequency electric field intensity, the industrial-frequency magnetic induction intensity and composite electric field intensity in the surrounding environment with electromagnetic field and electromagnetic radiation (excludes ionization) were all within the limits recommended in “*Limited Values Controlled for Electromagnetic Environment*” (GB8702-2014).

Main Tasks Fulfilled

◎ The Three-Year Action Plan of Environmental Protection

The sixth Three-Year Action Plan of Environmental Protection was completed in 2017. In the same year, the seventh Three-Year Action Plan of Environmental Protection was prepared.

In 2017, according to the real situation of the country and Shanghai City and higher requirements, and based on the principle of “More work and higher standard”, the Municipal Environmental Protection and Environmental Construction Coordination and Promotion Committee Office (hereinafter referred to the Municipal Promotion Office) has supplemented and optimized the projects in the sixth Three-Year Action Plan (including 29 additional projects and 28 projects for optimization). After the revision, the sixth action plan comprised 259 projects.

With the efforts of the whole society, the targets set in the sixth action plan have been successfully fulfilled which indicates huge progress achieved regarding environmental protection and environment construction.

Special Projects of Water

“Same importance of the two rivers, with supplement to each other and integrated water accessing with one centralized manipulation network” as the fundamental mapping of the raw-water supply has established. 37 sewage treatment plants, and the capability of processing 2.69 million cubic meters sewage per day met the Class A (and above) emission standard; elimination of ‘Black’ and ‘foul’ phenomenon in the small and medium-sized river courses in town and city has basically achieved. Pilot projects of sponge city have been developed at 64 sites.

Special Projects of Air

Individual coal burning has been eliminated ahead of the national schedule. The coal-burning power plants were upgraded to ultra low emission plants based on the strictest international standards. The VOCs management in key industrial sectors was fully promoted. Green buildings and assembling



Main Tasks
Fulfilled ➔

buildings promotion is playing a leading role nationwide. New energy vehicles achieved 130,000. Green port construction has gained positive progress.

Special Projects of Solid Waste

Classified collection and reduction, comprehensive reuse and recycle of domestic waste have been promoted. 5 million households participated in domestic waste sorting. The capacity relating to sanitary treatment of domestic waste amounted to 24, 650 tons/day.

Special Projects of Industry

The industrial structure adjustment and transform were promoted further. Heavily polluting industries as ferroalloys and sheet glass were 100% off the market. The industrial transform in Wusong, Wujing and alike industries were accelerated.

Special Projects of Agriculture

The combination of planting and breeding industries with ecocycle idea accelerated the transformation of agricultural production mode. The rate of comprehensive utilization of crop wastes was 94%.

Special Projects of Ecology

The planting for parklands and forests was continuously enhanced. The area of green per person was 8 m²; the forest coverage rate in Shanghai has reached 16.2%; and the wetland area accounts for 48.5% of the city.

The Municipal Promotion Office has released "The Seventh Three-Year Action Plan of Environmental Protection Compiling Work Plan" which officially initiated the compiling of the plan featuring with



environmental quality improvement and green development. The seventh action plan and key projects list were identified within this year.

◎ Emission license and reduction

2017, following the Classified Catalogue of Pollutant Emission Permit Management on Fixed Pollution Sources (2017), the review and issuance of license for pollutant emission from for thermal power, paper-making, iron and steel, petrochemical and other key industries, fifteen in total, were pushed forward at both municipal and district environmental authorities with clear assignment of responsibility. 250 pollutant emission licenses were issued all together. *"Implementing Rules of Pollutant Emission License Management in Shanghai"* was released with detailed requirements of management on administration process by different levels for licenses and permissions. Water, ambience air, noise and solid waste are sepciified in the management of license for pollutant emission, together with facilities management rules. *"General Calculation Methodology of VOCs Emission from Industries in Shanghai (Trail)"* was published. Emission reduction from key enterprise monitored with heavy air pollution emission was further promoted. *"Technical Requirements for Informationization of Signage of Fixed Pollutant Discharge Outlet (Trial)"* was published. QR Code is required on the outlet signboard. Refined management relating to license release has been facilitated. The management of enterprises which have obtained emission license is enhanced by "Notice of Specialized Inspection on License of Pollutant Emission for Thermal Power and Paper-making Industries" which aims to fight against the emissions without licenses or not proceeding as per request.

In the beginning of 2017, the Municipal Government held a working conference on energy conservation and emission reduction, deploying some key actions and tasks on energy conservation and climate change mitigation. The Municipal Government authorities involving environmental protection, development and reform, economy and information technology, agriculture, finance, water management, statistics, and energy supervision worked together to promote firmly on various projects construction of pollution management and emission reduction. High efficiency and smooth operation of emission reduction facilities were assured. As verified by the Ministry of Environmental Protection, in 2017 the emission amount of chemical demand of oxygen and ammonia nitrogen, sulphur dioxide and nitrogen oxides were respectively 13.36%, 8.75%, 26.2% and 8.2% lower than those in 2015, fulfilling the tasks ahead of the assignment.

◎ Prevention and Control of Air Pollution

103 projects of rectification of air pollution in the fields of energy, industries, communications, construction, agriculture and living were fully implemented in 2017. Key tasks scheduled by the "Shanghai Action Plan of Clean Air (2013-2017)" were achieved ahead of the assignment.

Energy

- 9 generating sets with 2,840 MW in public coal-firing power plants were upgraded with super low emission technology; the task of upgrading 24 sets was completed with gypsum rain treatment devices installed.
- cleaner energy replacement or shut-down of coal-firing boilers with centralized heating and/or CHP were completed.
- Apart from public coal-firing power plants and iron and steel furnaces, there is no coal-firing facilities citywide.

Industry

- 1,336 sources of pollutant were rectified;
- 3,889 projects of industrial structural adjustment were completed;
- Key industries as iron and steel, petrochemical, chemical, shipyard and print remain as the focus;
- 514 enterprises were installed with VOCs treatment devices.

Transportation

- 17,700 out-of-date motor vehicles have been eliminated while 30,000 new energy vehicles were promoted;
- Newly produced vehicles were checked on environmental consistency in vehicles manufactures;
- 5 shore power projects were constructed at Ports including Wusong Cruise Port;
- 60 inner river ships were applied LNG transform while around 900 LNG container trucks were popularized at the port area;
- 26,800 vehicle checks were found with various environmental problems. 4 vehicle exam stations were verified as illegal.

- 1st January 2017, heavy diesel passenger buses were required to meet National V emission standards;

- 1st July 2017, heavy diesel trucks were required to meet National V emission standards.

Construction

- Rectification was facilitated in dry bulk, inland terminal depot easy to raise dust, stock dumps with flying dust ;
- Control and management of the process of construction, demolition and waste residue transportation were further enhanced;
- Online monitoring system was fully applied for law enforcement and supervision of flying dust;
- Refined management level was strengthened.

Agriculture

- Following the government guidance and the market rules, enterprises were instructed to get involved in the comprehensive utilization of crop wastes.
- Corporations, farmers and specialized cooperation organizations were encouraged to collect, store and transport crop wastes with the comprehensive utilization rate increased. (except the part of returning processed crop wastes to farmland)
- The rate of comprehensive utilization of crop wastes in 2017 reached 94%.

Living

- 4,916 enterprises were rectified in the motor service industry.



◎ Improvement and Protection of Water Environment

Conservation of Drinking Water Sources

2017, with the construction and operation of Jinze Reservoir, the drinking water source quality was improved further and so was the layout of water supply in Shanghai. Specialized project was initiated for drinking water source conservation. The sewage discharge outlets in the second conservation area of drinking water resource were all turned off. More eco-compensation tools were developed with regard to drinking water sources. CNY 975 million was paid by municipal financial allocations as compensation for ecological conservation in the areas of drinking water sources.



Prevention and Control of Water Pollution

According to the projects list of the Action Plan of Prevention and Control of Water Pollution in Shanghai, by 2020, 87 construction projects and 101 management projects shall be completed. By the end of 2017, among the 87 construction projects, 58 projects were completely with the completion rate of 67%, including Minhang and Fengxian Pipeline, Songjiang raw-water pipeline, renovation with higher standards of Xinbang sewage plant, Shanghai Petrochemical Co.sewage plant, Jinshan Xingta sewage plant, Langxia sewage plant, and Pudong Lingang, Songjiang, Jiading, Fengxian, Chongming Chenjiazhen sludge processing projects. Among the 101 management projects, 40 projects were completely with the completion rate of 40%, including pump station online

monitoring pilot project, the fulfillment of meeting the required water quality for sections of Taipu River and Jinhuigang River, and the elimination of 'ten types of small size' polluting factories. The total completion rate was 52% as a whole.

Comprehensive Rehabilitation in Medium and Small Sized River Courses

A responsible system called Head of River is established at municipal, district and town levels of the city. There are 7,781 officials acting as head of rivers with all watercourses covered in Shanghai one year ahead of schedule. 1,864 stinky black rivers in the city were included in the scope of comprehensive improvement work. Based on the principle of 'Source control, and water bank inter-connection', 3,135 industrial factories on the water bank were improved by categories, 105 live-stock and poultry farms were retired, 1,756 km hydraulic engineering works were constructed, 3.51 million sqm illegal buildings were demolished, domestic sewage of 50,000 homes was treated, and over 1,200 pipelines for collecting and conveying polluted water have been built. With a special focus on the target set for water quality and based on the responsible system, realized managing the polluted rivers by three steps in succession of improvement, supervision and review. Ultimately achieved the goal of improving all sections of 1,864 stinky and black rivers.



Curbs on Soil Pollution

2017, detailed examination on soil pollution was initiated with releasing planning rehabilitation and improvement on soil pollution in Shanghai and a primary soil pollution improvement and rehabilitation projects library was established. List of soil pollution prevention and supervision on key enterprises in Shanghai (first group) was released. The municipal environmental protection department has requested strictly following the documents issued by the Environmental Protection Ministry on investigation and assessment and rehabilitation supervision of potential polluted sites and polluted sites. Examination on practicing enterprises of site investigation and assessment and remediation were carried out and published a list of qualified enterprises. Nanda area in Baoshan, and Taopu area in Putuo have steadily proceeded the sites improvement and remediation works.

To evaluate the pollution risks of industrial sites reclaimed for agricultural use efficiently, the Municipal Environmental Protection Bureau and the municipal land planning and resource bureau have jointly compiled “Shanghai Low-efficiency Industrial Lands Reclamation Environmental Protection Technical Guidelines (Trial)” for the environmental pollution risk assessment and control for reclaimed lands and ensure the regional eco environment and reclaimed land-use safety on the products quality from the additional agricultural lands.



Management of Solid Waste

In 2017, there were 30 units in Shanghai licensed to deal with comprehensive disposal of hazardous waste, which was divided into five categories: landfill, incineration (including medical waste), physical-chemical treatment, comprehensive utilization and used-barrel washing. Annually, 823,400 tons of hazardous waste was disposed and 1,433,000 used barrels were washed out. There were three landfill works with a total capacity of hazardous waste land-filling 126,200 tons

annually and 9 incineration works with a total capacity of incinerating 218,600 tons of hazardous waste with medical waste excluded.

In 2017,

- 502,000 tons of hazardous waste (not including medical waste) were transported and disposed within the range of the city;
- 960,000 used barrels were washed out;
- 188,000 tons of hazardous waste and 433,000 used barrels were transported to other provinces for disposal;
- 49,600 tons of medical waste was incinerated and the rate of centralized and harmless disposal was 100%.

There were five companies in Shanghai qualified to deal with discarded home appliances and electronic products, whose capacity of dismantling TV sets, refrigerators, washing machines, air conditioners and computers was 3,771,700 items. Totally in 2017, 1,451,000 items of abandoned home appliances and electronic products were collected, and 1,454,000 items (weighing 41,000 tons) have been dismantled, including 920,000 TV sets, 29,000 refrigerators, 97,000 washing machines, 92,000 air conditioners and 158,000 computer consoles and 158,000 monitors.

Supervision over Radiation Security

The license of radiation security was renewed or newly-issued for 1,327 unit-times in 2017. Sanction of radioactive isotope transfer was given for 222 batches while radioactive isotope and radioactive rays equipment were exempted for 36 times. All sorts of filing for 564 unit-times. The departments of environmental protection at municipal and district levels have made supervising inspection for enforcement of environmental law on nuclear technology organizations for 3,786 unit-times.

Special inspection of radioactive source was completed. Missing parts were followed up to find out the number of radioactive sources and supplement for the docking of national radioactive source informa-



tion database and Shanghai radiation safety and management database. Different classified ways of applied nuclear technology organizations were checked daily by different frequency. Punishment on illegal behaviors and post-check on organizations required to rectify were further strengthened. On-the-spot and random check-up and on key radioactive source supervision organizations including flaw detector was the focus. Safety examination on flaw detector machine proceeded.

Combining the rectification works based on the principle of 'demolishing illegal land use, buildings, business, emission and residence and rectification on safety problems, unlicensed buildings, disorderliness and illegal operations', environmental impact assessment on production, sales, and use of radioactive isotope and radioactive rays equipment within the jurisdiction was enhanced. The process of check and acceptance and screening and rectification on operation without license were enhanced. Specialized check on business license and license information compliance was initiated to urge the organization to keep the information up-to-date.

Following the requirements from "Emergency Plan on Nuclear Disposal and Radiation Accident in Shanghai", two comprehensive rehearsal and one drill on nuclear disposal and radiation accident were conducted by the municipal emergency office and relevant emergency organizations.

Comprehensive Improvement in Key Areas

Comprehensive Environmental Improvement in Jinshan

2017 was the last year of the comprehensive environmental improvement in Jinshan. There were 910 projects fulfilled in the past three years. The environmental improvement has achieved periodical success. Stinky pollution has improved noticeably. Stinky and black river problems were resolved. Petition on environment problems were dramatically decreased. The public



was experiencing the changes evidently. Public opinions remained steady as a whole. The first batch of projects for pollution improvement and industrial upgrade including enterprises as Shanghai Petrochemical Co, for clean energy replacement projects including enterprises as Chuhua Thermoelectric, Shenergy Xinghuo and regional environmental infrastructure and construction projects including sewage plant reformation in industry zones. Protection forest and green land construction have reached 20,000 acres. Automatic monitoring and supervision system on featured pollution was primarily built.

Comprehensive Improvement of Regional Eco-environment

2017, there were 22 eco-environment comprehensive improvement sites at municipal level which have eliminated 8231.1 acre of illegal land use, improved 1,336 pollution sources and shut down 3,889 companies without a license. From 2015, the works of comprehensive improving eco-environment have achieved remarkable success in the past three years. There were 50 key areas at municipal level that have eliminated 21,045 acres illegal land use, improved 3,395 pollution sources and shut down 9,922 companies without a license. Comprehensive improvement at district and street and town level was driven to reduce the pollution emission within the region. The whole image of the environment has been changed and some key issues concerned by the public were resolved. Citizens have highly recognized the progress.



◎ Institutional Reform for Ecological Civilization

2017, Shanghai has implemented the top level design of Eco-civilization construction and the deployment of the Deepening Reform Group of Shanghai Municipal Party Committee, and made efforts on Eco-environment with proceeding 34 reform tasks, some key tasks of which include full establishment of centralized environmental protection supervision and rectification mechanism and announced the environmental protection supervision methodology and initiated supervision pilot. Environmental protection responsibility regulation was released and the vertical management system reform of environmental protection has started. “The 13th Five-Year Plan of Chongming World-Class Eco Island Development” and “Determination on Promoting and Supporting the Construction of World Class Eco Island Chongming” were published and implemented. “Shanghai Urban Development Master Plan (2017 – 2035)” has been approved by the State Council. The redline of eco protection was identified strictly to optimize the adjustment of water source conservation area at the upper stream of the Huangpu River. The supporting mechanism of comprehensive improvement for Medium-to-small-sized rivers was carried out by strengthening supervision, evaluation and examination. Empowerment, supervision and service are the three pillars of the governance which are of the same importance. The reform of review and file system of environment impact assessment was promoted. The eco environment around the Yangtze River economic belt were actively protected by all relevant areas. Evident success of the stage one of the ship emission control field at the Yangtze River Delta was achieved.

◎ Collaboration in the Yangtze River Delta Region

2017, with the joint efforts from the ambience and water protection collaboration teams in the Yangtze River Delta Region, the prevention of air pollution has achieved the goals set in the ‘Ten Requirements for Air Protection’ ahead of time. Water pollution prevention has met the annual target. Regionally, all the examination goals were fulfilled by provinces. The focus of the key areas for air pollution was further developed. From 2014, coal-firing generating sets were transformed to super low emission. Over 90,000 boilers were upgraded with clean energy or being shut off. Rectification of pollution caused by volatile organic chemicals was carried out in 13,000 enterprises.

3.22 million yellow-labeled and out-of-date vehicles were eliminated. Additional 700 set wharf power facilities of with high and low voltage standards were put in use. Water pollution improvement focused on interconnection between water and land to revolve the deep-rooted problems. From 2016, the three provinces and one city within the region have applied responsible system for rivers, and elimination of ‘ten types of small size polluting factories’ was fulfilled and additional 48,000 km sewage collection pipes network was built. 127 sewage plants at cities and towns level were upgraded to Level A standard. 110,000 livestock and poultry farms were shut off or being rectified. The thorough check-up on the water source at the Yangtze River Economic Belt area was completed. The Regional information share platform for automobiles was put in trial operation. Some key labs for regional air quality forecast system and compound pollution causes and prevention of urban ambience were primarily built which provided technical support to the regional joint prevention and control system.



◎ Supervision and Administration of Natural Reserves

2017, the Municipal Environmental Protection Bureau issued “Green Shield 2017” jointly with the Municipal Greenery and Sanitation Bureau, the Municipal Agricultural Commission and the Municipal Oceanic Bureau, which is a special action plan on the natural reserve inspection. On-the-spot inspection and crosscheck among municipal level departments were organized. The suspected

points of human activities spotted by the Satellite Environment Application Center of the Environmental Protection Ministry was repeatedly checked. Rectification of all sorts of historical problems within the reserves was carried out. In corporation with the MEP and other six ministries and commissions, the field evaluation on Chongming Dongtan National Natural Birds Reserves and Jiuduansha National Wetland Reserves were completed. Functional adjustment relating to Chongming Dongtan National Natural Birds Reserves was initiated. The identification of function zones for Jinshan Sandao Oceanic Ecological Natural Reserves was completed. The election of the 5th Review Committee on Natural Reserves in Shanghai was completed. The Committee has organized a provincial level review on upgrading the Yangtze River estuary natural reserves of Chinese sturgeon to the national natural reserves.

◎ Supervision over Environmental Protection

2017, the Municipal Party Committee and the Municipal Government have developed and implemented “The Rectification Program for Implementing the Feedback of the Central Environmental Supervision in Shanghai”. Implementation of the central environmental supervision and rectification was considered as one of the most important political tasks and civil projects in Shanghai. The allocation of responsibilities, deadlines and the concrete actions were identified. By the collaborative efforts from all people in Shanghai, the annual rectification tasks were fulfilled – 36 projects out of 46 in total were completed and the rest of the tasks have fulfilled the intermediate objectives for 2017. A complete long-term mechanism was built based on the good examples which have greatly promoted the eco-environmental protection and green development transformation. Some public-concerned environment problems have been resolved quickly.

Reference to the central environmental protection supervision mode, “Shanghai Environmental Protection Supervision Implementation Scheme (Trial)” was released. Qingpu and Changning were selected as the two pilot districts for environmental supervision. Supervision on key targets and implementation of the environmental protection decisions and deployment at national level and in Shanghai enabled implementation of environmental protection responsibility, achievement of the goals, collaboration between working crews, individual review covering Standing Committee, government, NPC and CPPCC at provincial level, research covering all environmental elements, and

supervision working mode covering all streets and towns, all of which have laid a good foundation for the municipal environmental protection supervision.

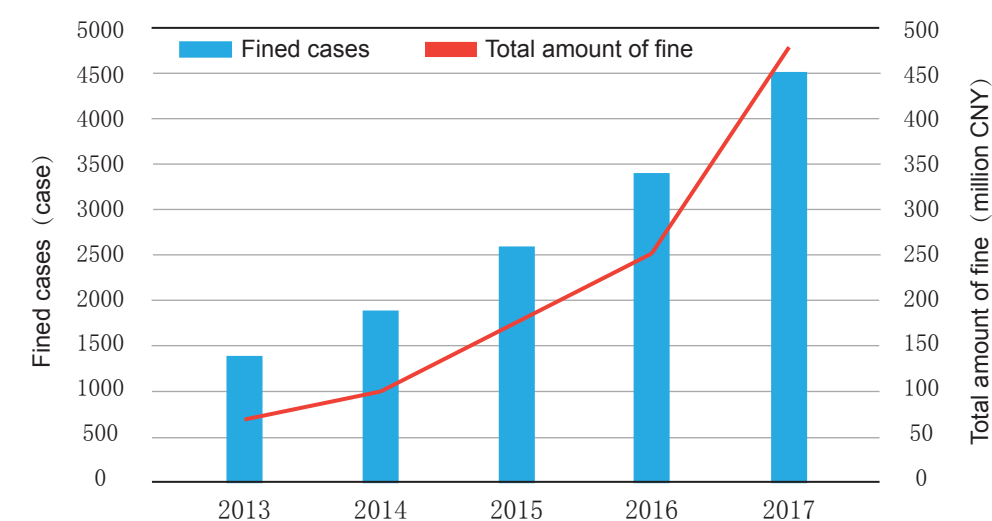


Supporting Measures

Environment-concerned Legislation

"Regulations for Environmental Protection in Shanghai" was deeply implemented and some supporting documents as "Rules on Responsibilities for Eco-Environmental Protection in Shanghai (Trial)" were initiated based on the principles. The provisions of environmental protection were adopted as legal weapons to proceed Eco- construction and pollution rectification to guarantee the evident improvement on air and water environment in Shanghai.

September 2017, the Municipal Environmental Protection Bureau and the Municipal Economic and Information Commission jointly published "Notice on Applying Power Supply Suspension Measures and Ensuring Environmental Protection Administration Enforcement Decision Implementation", which guided the environmental protection departments at all levels, and enabled the public security departments to work with the procuratorate closer. The law and regulations are applicable for all. Working mechanism including complete clue reporting system, cases transferring, resources sharing and information publication were set up. Professionals of review group for judicial appraisal institution registration on environmental damage were selected publicly with 66 professionals on record.



Variations of administrative punishment on environmental protection in Shanghai from 2013 to 2017

As laws and regulations were improved, enforcement of environmental law was intensified. 4,477 cases of violations of environmental law, 34.97% increased year on year, were investigated and totally, CNY 476 million, 90.23% increased year on year, was fined, fined cases on daily basis were 61 with total amount of fine of CNY 95.523 million. 179 cases were sealed up and distrained. Over 30 cases were limited for production or stop production for rectification. Persons who were legally liable in 18 cases of the same kind were punished with administrative detention. 68 cases of violations of environmental law were transferred to the judicial department.

Environmental Policies

Since January 1st, 2017, the pilot project of charging for emission of VOCs have entered the third stage. The pilot industries including 12 categories and 71 small and medium industries basically covered the key VOCs emission industries and key enterprises. The charging rate has been raised up to CNY 20 per kilogram.

On December 25th, 2016, the National People's Congress approved the "People's Republic of China Environmental Protection Taxation Law" and which has enforced since January 1st, 2018. To prepare for the environmental taxation collection, a tax standard applicable for taxable air and water pollutants was put in place. An environmental protection taxation collection synergy mechanism was built to ensure the environment tax to be collected smoothly and in time.

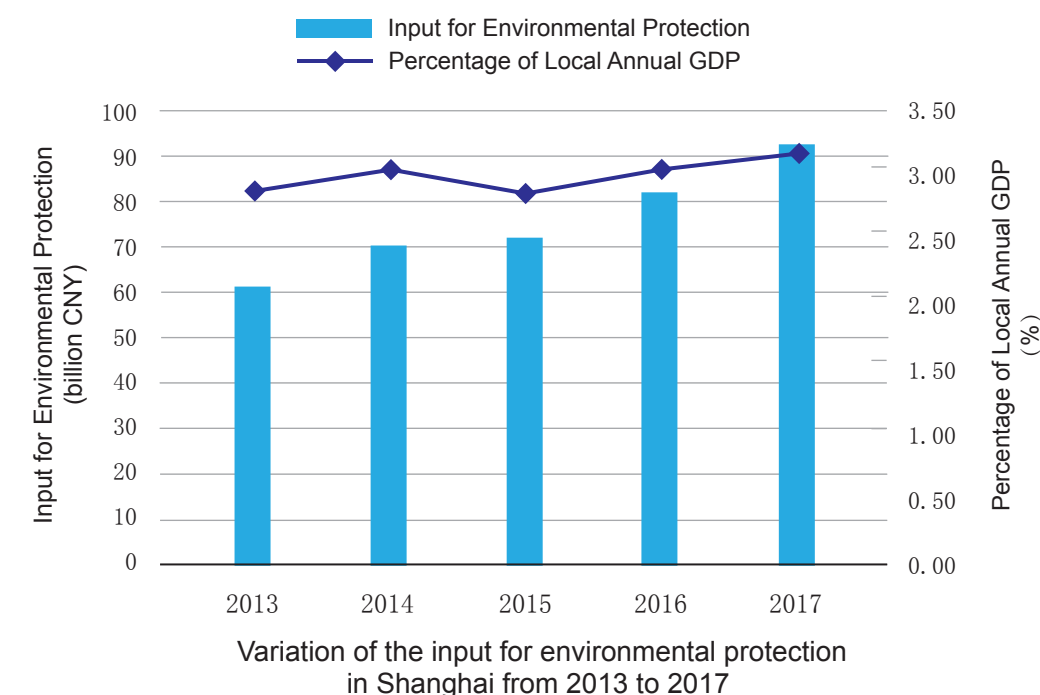
Input in Environmental Protection

In 2017 the annual input for environmental protection in Shanghai amounted to CNY 92.353 billion, equaling to 3.1% of local GDP in the same year.

Amount of Each Expenditure Item and Its Percentage in
Total Annual Input for Environmental Protection

Expenditure Item	Amount (CNY)	Percentage
Construction of Urban Environmental Infrastructure	36.714 billion	39.80%
Renovation at Pollution Sources	27.340 billion	29.60%

Expenditure Item	Amount (CNY)	Percentage
Environmental Protection In Rural Area	14.227 billion	15.40%
Operation of Facilities for Environmental Protection	12.022 billion	13.00%
Ecological Protection and Construction	871 million	0.90%
Environmental Capacity Building	762 million	0.80%
Input for Circular Economy and others	417 million	0.50%



Administration of Environmental Assessment

2017, strategic environmental assessment (SEA) was intensified in Shanghai including the completion of environmental impact assessment (EIA) for urban master planning and SEA for the Yangtze River Delta area. EIA for key special plans in the 13th five-year plan in Shanghai was initiated. The EIA for industrial parks has achieved periodic success. Empowerment and service optimization as the working requirements needs to be carried out to further develop the systematic reform on EIA. Since January 1st, 2017, the administration of register form record for EIA relating to projects during

construction was fully operated. Since October 1st, 2017, the administrative approval for the environmental acceptance for constructed projects when completed was eliminated. The construction developer shall conduct its own EIA acceptance of projects.

In 2017, the departments of environmental protection at both municipal and district levels have examined and approved 7,142 EIA documents of projects, among which, there were 258 reports on environmental impact, 6,884 EIA statements.



Environmental Monitoring

2017, Shanghai has established a joint conference mechanism to facilitate eco-environment monitoring network development with annual work plan issued to all departments and districts to promote all sorts of tasks.

- Further promote the stage II platform establishment for air quality forecast and prediction in the Yangtze River Delta area.
- The Municipal Environmental Protection Bureau and the Municipal Meteorological Bureau have jointly rolled out a 72-hour forecast service on air quality by certain period of time.
- Completion of national soil environment quality supervision network construction.
- Primarily built up the surface water environment alert supervision and evaluation system.
- Automatic monitoring and supervision system on featured pollution was primarily built.
- Initiated the establishment of Eco-environment supervision and evaluation alert system for Chongming World Class Eco-Island.
- The Municipal Environmental Protection Bureau, the Municipal Housing and Cities and Towns Construction Administration Commission and the Municipal Transportation Commission have jointly issued "Applied Regulations of Online Monitoring Data Enforcement for Flying Dust (Trial)", which have fully enhanced the management of the online monitoring facilities operation and data enforcement application for flying dust.

- "Regulations on the Development, Network, Maintenance and Management of Automatic Monitoring Facilities relating to Stationary Pollution Sources in Shanghai" was published. Relevant requirements of automatic monitoring on stationary pollution sources were further identified.

- Socialized pilot projects of environment monitoring service of the Environmental Protection Ministry and the socialized supervision platform development on environmental monitoring in Shanghai were completed with 118 institutions on record. The Municipal Quality Technology Monitoring Bureau and the Municipal Environmental Protection Bureau have jointly selected 20 of them for supervision and check-up randomly.

Environmental Science, Technology and Standards

2017, with a special focus on key environmental protection works, Shanghai has started major specialized researches on:

- "Researches for identifying features, sources and prevention solutions of ambient air active organic compounds in Shanghai"
- "Researches for the sources layout, transferring mechanism and emission potentiality and solutions of ammonia in the ambient air in Shanghai"
- "Researches on the water environment safety and prevention and solutions for the pollution in the Taihu River"
- "Researches on impact for integrated sewage processing facilities from the Class I water pollutants emission and the solutions in Shanghai"
- "Researches on the technical methodology of classifying the environmental quality for agricultural land soil in Shanghai"
- "Researches on classified administration and control of potentially polluted sites and polluted sites and industry soil pollution prevention and management system in Shanghai"

Shanghai Academy of Environmental Sciences (SAES) took the lead in "Researches on clean air action policies and methodologies and deepened regional interaction mechanism" and "Researches on the framework project of clean air action plan in Shanghai", which were winners of the first prize and the second prize in the 11th Appraisal of Decision-making and Consultation Research

Shanghai. “Independent research & development and application of Nested Air Quality Prediction Model System (NAQPMS)” , a project conducted by Shanghai Environmental Monitoring Center, won the second prize of 2017 National Award of Science and Technology (progress).

2017, controlling VOCs and extreme stinky matters emissions were further intensified with release of “*Standards for Stinky (Odour) Pollutants Emission*” (DB31/1025-2016) and “*Standards for Air-Polluting Emission in Furniture Manufacturing Industries*” (DB31/1059-2017). Relevant training was developed accordingly and the implementation of the standards was effectively promoted.

International Cooperation

- The demonstration projects of green supply chain were facilitated further. In February, “Green Supply Chain – 2017 Shanghai Summit and Forum” rolled out a “2017 Green Supply Chain Share Plan” ; In June, the Environmental Protection Ministry established a cooperation platform on “the Belt and Road” Green Supply Chain in Beijing. Shanghai Municipal Environmental Protection Bureau became a member.

- The demonstration projects of sustainable consumption policies organized by The China Council for International Cooperation on Environment and Development (CCICED) were conducted.

- The Shanghai – Kitakyushu Ambient air Environment Cooperation project was implemented.

- Sino-France Technology Innovation and Investment in Environment and Chemical Industry Fields Seminar was held, where Deputy Mayor Mr. Shi Guanghui met with the government delegation from Région Auvergne-Rhône-Alpes.

Inter-regional exchange of environmental protection was also actively conducted between Shanghai, Hong Kong and Taiwan:

- A SEPB delegation participated in 2017 Macau International Environmental Protection Cooperation and Development Forum and Exhibition;

- Exchanges with Hong Kong SAR Environmental Protection Department, Hong Kong Observatory and Macao Meteorological and Geophysical Bureau were conducted.



- Environmental exchange progress between Shanghai and Hongkong were displayed in “Shanghai – Hong Kong Cooperation Outcomes Exhibition” with pictures and texts.

- A SEPB delegation participated in “2017 International Environmental Protection Environment” in Hong Kong and delivered keynote speech;

- A parallel session of environmental forum between Shanghai and Taipei was conducted in “Shanghai-Taipei – Two Cities Summit”

170 people of 23 foreign environmental delegations were received in Shanghai in 2017. Foreign experts were introduced to Shanghai as planned. Shanghai Academy of Environmental Science and Shanghai Environmental Monitoring Center applied for key projects, such as *The Formation and Prevention for the Secondary Pollution in Ambient Air Compound Pollution*, to Shanghai Municipal Administration of Foreign Experts Affairs (SHAFA).

Team Building and Performance Improvement

Following the requirement of the Central Government and the Municipal Party Committee, the Municipal Environmental Protection Bureau has acted under the essentials of 19th National Congress of the Communist Party of China, guided by the General Secretary Xi Jinping’ s notion of socialism with Chinese characters in the new era. Practicing activities based on “keep faith, remember tasks, implement the essentials of 19th National Congress of the Communist Party of China and fight for the pollution prevention” with a special focus on laying the foundation and firm belief. Through “two studies and one action” based on system and normalization to hold training session for party members and carry out “striving for the best” to strengthen the ideological and political construction and organization construction for the bureau system. Attracting more talents to the system including one person was admitted by the Shanghai Leading Talents Development Plan; one person was shortlisted in Shanghai Talent Development Funding Plan. 12 talents and 17 outstanding talents have been selected as leading talents in bureau system. Education for leaders were also a focus. Over 140 training sessions have been held to urge the leaders to be more aware of the new environmental protection trends, new tasks and new requirements in the new era.



Involvement and Supervision of the Public

◎ Accepting Suggestions and Handling Proposals

96 written proposals and motions from the deputies of the Municipal People's Congress (MPC) and the Municipal Party Committee members of CPPCC were received by Shanghai Municipal Bureau of Environmental Protection in 2017, among which there were 50 suggestions from the MPC (10 for the Bureau to process, 1 for joint processing and 39 for supporting processing) and 46 proposals from the CPPCC (12 for the Bureau to process, and 34 for supporting processing). All of them were satisfactorily handled in time; both the rate of process and the rate of satisfaction were 100%. Some key environmental protection issues that the deputies from MPC and CPPCC were keen including: improve the investigation and rehabilitation supervision system on polluted sites; Intensify the on ground environmental protection enforcement in the vertical reform of environmental protection, refine improvement plan for air pollution; improve the environmental air quality; enhance the propaganda of new environmental protection law, strengthen the law enforcement and raise the legal consciousness of the public for Eco-environmental protection; enhance directing the questions; make up to the Eco-construction where is currently short of; and promote the major air pollutants emission trade in the Yangtze River Delta area.

◎ Hearing Complaints and Coping with Emergency

2017, environmental hotline 12369 was combined with the citizen hotline 12345. 33,277 cases of environmental complains were received via hotlines. The categories of the reported cases remain the same as last year which include:

- 20,654 cases of air pollution, 62.1% of the total with focus fields of industrial waste gas, catering waste gas and undefined odor;
- 4,775 cases of noise pollution, 14.3% of the total with focus fields of industrial noise and catering noise;



Involvement and Supervision of the Public ➤

- 2,449 cases of water pollution, 7.4% of the total;

Also, there were 1,948 cases of automobile related consultancy, which comprises 5.9% of the total; 1,407 cases of construction projects, 4.2% of the total; and other complaints and consultancy includes solid waste, electromagnetic radiation, air quality, and government and industries ethos, which comprised 6.1% of the total.

2017, 8,464 pollution cases were received via letters, calls and visits, 10.3% drop year on year. Among them, there were 4,407 cases of air pollution problems, 52.1% of the total with a focus on catering waste gas, industrial waste gas and undefined odor; 1,856 cases of noise pollution, 21.9% of the total including industrial and traffic noises; 945 cases of water pollution, 11.2% of the total which mostly were industrial waste water; 1,256 cases of other complaints, that comprised 14.8% of the total.



157 cases of environmental emergency were occurred in 2017, 34% fewer than that in 2016. Among them, 150 cases were investigated and handled on the spot, 27% fewer than that in 2016. Most of the cases were fire, car accident and other safety issues. The environmental protection departments at both municipal and district levels have handled the cases on the spot properly and effectively based on the on-site processing standards which barely had any impact to the surround areas. According to the standard of classifications of “National Environmental Emergency Plan”, no critical environmental accident occurred than ordinary accidents.

Model Units of Environmental Protection

2017, Shanghai Jinqiao Economy and Technology Development Zone and Shanghai Xinzhuang Industry Zone have passed the review and evaluation by the Environmental Protection Ministry for National Demonstration Eco-industry Parks. The application of Sheshan National Tourism Resort and Dongping National Forest Park for 2017 National Ecotourism demonstration projects were completed. 17 villages including Xinghuo village at Zhuqiao Town, Pudong New District were

entitled as “Beautiful Demonstration Villages in Shanghai”. 9 residential communities including Huaisheng Yiting in Qingpu District were awarded as “Tranquil Living Residential in Shanghai”.

12 middle school, primary schools and kindergartens including Tongchuan Middle School were awarded with the seventh-batches of Green Flag of the International Eco-school. Shanghai Liuhe Activities Camp for Teenage and Children was shortlisted as the second-batches of the National Pilot Natural School.

Publicity for Environmental Protection

2017, when embracing and implementing the essentials of 19th National Congress of the Communist Party of China and focusing on the propaganda and report of environmental protection supervision and rectification, media was introduced and incorporated to hold some key feature report including “environmental protection supervision”, “hotline of the head of environmental protection bureau”, “going back to the streams around us”, “pollutant emission license system reform” with mainstream media. Every week, a report on environmental protection supervision and rectification progress with mainstream media in Shanghai was organized. Throughout the whole year, mainstream media has reported over 8,700 relevant news reports on environmental protection in Shanghai at municipal level; over 2,000 news reports on environmental protection at district level; 987 Wechat posts and 11,552 Weibo posts were published via official accounts.

During the Environment Day of 5th June, “Green Moves Shanghai” event was carried out to distribute environmental protection knowledge; “Green Hope – 2017 Shanghai Middle School Students Environmental Knowledge Invitational Competition” was hosted; “People and Environment” – the 7th Photography Exhibition was organized; propaganda poster, boards and flyers of “Citizen’s Green Life Action Guide” was drafted and printed; and environmental protection related public service advertising videos were created includes “5th June 2017 – Environment Day – Green Water and Mountains are Gold and Silver” and “Protect the Waters, Enjoy the Beauty in Shanghai”. Jointly worked with East China Normal University, online courses



– “Environment Issues Observation” was open to public on MOOC. Environmental Education Sites in Shanghai have started the activity of “Take you to the Environmental Education Sites” that encourages the public to join. China Environmental Protection Foundation has called for photography and drawing works from middle school and primary school students, named as “Flow Shanghai – the most beautiful rivers in my heart” .

Environmental protection facilities and urban sewage and garbage processing facilities were open to the public. 2017, joint with the relevant departments, Shanghai Environmental Monitoring center, Tianshan Sewage Treatment Plant and Shanghai Tianma Renewable Energy Limited Company were open to the public which was able to promote the environmental protection education for all and raise the awareness of our environment.

The website of Shanghai Environment (www.sepb.gov.cn) opened a column as “Central Environmental Supervision” , and extended to 72-hours air quality forecast service. Environment supervision information on pollution sources is available to the public with a public information platform of enterprises and public institutions. Online service functions were optimized with improvement of one-stop public service portal, seven online environmental protection related procedures which does not require coming in person, and “one visit” equals the settlement of four procedures. Five issues of online interview, four round of public opinion collection and five online surveys were completed by www.sepb.gov.cn which was assessed "Good" in 2017 by both the Ministry of Environmental Protection and the Shanghai Municipal Government; The website of Shanghai Environment Online (www.envir.gov.cn) released 1,858 news and 628 online public survey on EIA and public participation notice of EIA. The traffic for www.sepb.gov.cn and www.envir.gov.cn was 125,010,696.