2015

Report on the State of the Environment in China

Ministry of Environmental Protection
The People's Republic of China

The *2015 Report on the State of the Environment in China* is hereby announced in accordance with the *Environmental Protection Law of the People's Republic of China.*

Minister of Ministry of Environmental Protection,
the People's Republic of China

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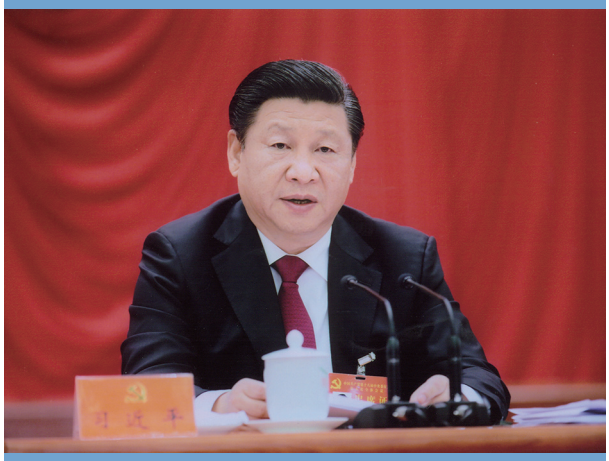


The Fifth Plenary Session of the 18th National Congress of Communist Party of China was held in Beijing during October 26-29, 2015. Xi Jinping, CPC General Secretary gave an important speech. The meeting requires that China should adhere to green development, the basic national policy of resource conservation and environmental protection and sustainable development; firmly follow the development path with high productivity, affluent life and good ecology; accelerate the development of resource saving and environment-friendly society; develop new pattern of modernization with harmony between man and nature; promote the building of Beautiful China and make new contributions to global ecological security.

Bulletin of the Fifth Plenary Session of the 18th National Congress of Communist Party of China.

Photo by Xinhua News Agency

The Third Plenary Session of the 12th National People's Congress was opened in the Great Hall of the People in Beijing on March 5, 2015. Li Keqiang, Premier of the State Council presented the Report on the Work of the Government. The Report requires that we should successfully save energy, reduce emissions and improve the environment. Environmental pollution is a strong public concern and we should adress it with strong measures.

2015 Report on the Work of the Government

Photo by Xinhua News Agency

Summary of Environmental Protection

2015 is the final year of the "12th Five-Year Plan" period and key year for comprehensively deepening reform. The Fifth Session of the 18th National Congress of Communist Party of China puts forward the innovative, coordinated, green, open and sharing development concept. CCCPC and the State Council have made a series of key decisions and arrangements on the development of ecological progress and environmental protection. Focusing on improvement of environment quality, all regions and departments have firmly implemented these ideas, addressed prominent environmental problems and made active progress.

1. Sparing no efforts in successful improvement of the environment. China has carried out the Action Plan for Prevention and Control of Air Pollution. In 2015, urban air quality across the country was improving. The average $PM_{2.5}$ concentration of 74 cities as the first group of cities implementing newly revised Ambient Air Quality Standard went down by 14.1% compared with that of 2014. The central government has arranged 10.6 billion yuan special fund for prevention and control of air pollution to support the prevention and control of air pollution of key regions such as Beijing-Tianjin-Hebei and their surrounding areas, the Yangtze River delta and Pearl River delta. MEP has deepened regional coordination and included Henan Province and Ministry of Transport into the mechanism for joint prevention and control of pollution in Beijing-Tianjin-Hebei and their surrounding areas. MEP has successfully finished the task on ensuring good air quality during the Commemoration of the 70th Anniversary of the Victory of the Chinese People's War of Resistance Against Japanese Aggression and The World Anti-Fascist War. A total of 1.26 million yellow-label vehicles registered before the end of 2005 have been phased out. MEP has actively extended new energy vehicles with annual output of 379,000, 4 times more than that of 2014. Grade IV vehicle diesel has been supplied across the country. Regions such as Beijing, Tianjin and Shanghai are the first to supply Grade V vehicle diesel. The control areas for ship pollution discharge have been identified in waters of the Pearl River delta, Yangtze River delta and Bohai Rim (Beijing-Tianjin-Hebei). MEP has started comprehensive control of VOCs in petrochemical industry. MEP has enhanced supervision on the dust of construction sites and dregs transport and carried out projects such as comprehensive use of straws. In addition, MEP has strengthened consultation and early warning of heavy polluting weather.

MEP has released and implemented the Action Plan for Prevention and Control of Water Pollution. It has developed target responsibility letters to divide the tasks down to 1,940 water sections in relevant provinces (autonomous regions or municipalities). MEP has established the national mechanism and mechanism of key regions for coordination on prevention and control of water pollution. Each province (autonomous region or municipality) has developed the program

on prevention and control of water pollution. Relevant departments of the State Council have released their implementation programs. MEP has actively promoted function zoning management of aquatic ecological environment of river basins and identified water quality target of control units. The government has developed the platform for the control and supervision on urban black waters. Nearly 2,000 urban black and smell waters have been identified after investigation in all regions. MEP has carried out national project on monitoring of groundwater. Centering on strict control of total water consumption in agriculture; gradual reduction of total consumption of fertilizer and pesticide; achievement of comprehensive utilization of livestock manure, straw and agriculture films; the government has enhanced the prevention and control of agricultural non-point source pollution. The government has accelerated the campaign of zero growth of fertilizers and pesticide. A total of 1.5 billion mu (15 mu = 1 ha) land has applied formula fertilization by soil testing. The government has set up the compensation fund for ship oil pollution damages to promote the improvement of pollution damage liability insurance system for inland river ships.

MEP has steadily promoted prevention and control of soil pollution. MEP has accelerated the preparation of the Action Plan for Prevention and Control of Soil Pollution. It has started the demonstration project on treatment of soil pollution and remedy of contaminated land in 10 provinces. MEP has supported the demonstration work on comprehensive prevention and control of pollution in 38 major regions on prevention and control of heavy pollution. MEP has kept on national survey on heavy metal pollution of farmland involving 1.623 billion mu arable land. It has carried out trial on remedy of arable land with heavy metal pollution and adjusted crop planting mix in Changsha, Zhuzhou and Xiangtan region, involving 1.7 million mu. The demonstration project on recycling and reuse of mulch film has been conducted in 6 provinces (autonomous region) such as Xinjiang and Gansu as well as Xinjiang Production and Construction Corps with total area of about 12 million mu.

MEP has promoted reduction of major pollutants. There were 10.96 million t increase of daily urban sewage treatment capacity (including towns, industrial parks). The daily use capacity of reclaimed water was 3.38 million t. Urban sewage treatment rate of the country was 91.97%. More than 20,000 scaled livestock and poultry farms have improved waste treatment and recycling facilities. Nearly 100 million kW capacity of existing coal fueled generating units have finished reform of desulphurization facilities. There were 140 million kW increase of the generating units with denitrification facilities. Coal fueled power plants with total installed capacity of 160 million kW have finished technical reform for very low emissions. There was 3.1% reduction of COD, 5.8% reduction of SO_2, 3.6% reduction of ammonia nitrogen and 10.9% reduction of NO_x across the

country compared with that of 2014.

2. Strict supervision on environmental law enforcement. The government has conducted the activities of the Year of Implementation of Environmental Protection Law and facilitate the fulfillment of environmental protection responsibility by local governments according to law. MEP has conducted comprehensive supervision on 33 cities (urban districts). MEP has officially given warnings to the head of 15 city government. The provincial governments have conducted comprehensive supervision on 163 cities; gave warning to 31 cities; rejected the approval of EIA of any new construction project in 20 cities (counties), put 176 violations on supervision list and facilitated addressing of a group of prominent environmental problems. The corporate main body responsibility for environmental protection has been fulfilled. Focusing on environmental infringements such as secret emission or discharge of pollutants as well as resorting falsification such as falsifying or forging monitoring data, the government has cracked down environmental infringements according to law. There were more than 8,000 cases across the country subject to consecutive daily fines, sealing up or distrain or limit or cease of production. There were nearly 3,800 cases transferred for administrative detention or suspected cases of environmental pollution crime. The environmental protection department of each region has made more than 97,000 decisions on administrative penalty with total fine of 4.25 billion yuan, up by 34% compared with that of 2014. MEP has conducted large scale inspection on environmental protection, conducted 1.77 million enterprise-times of inspection, investigated and punished 191,000 enterprises with various kinds of infringements, ordered to shut down of 20,000 enterprises, cease of production of 34,000 enterprises and 89,000 enterprises to make corrections within a given period of time. MEP has enhanced supervision on nuclear and radiation safety. A total of 28 in-service nuclear power generating units and 19 civil research reactors have maintained good safe operation record. The quality of 26 nuclear power generating units under construction has been under good control. MEP has properly handled sudden environmental pollution accidents and responded to the environmental impacts of "August 12" extraordinarily big explosion and fire accident in Tianjin Port in a scientific way.

3. Deepen the reform in the field of eco environment protection. The Suggestions of CCCPC on the Development of the 13th Five-Year Plan for National Economic and Social Development requires the implementation of the strictest environmental protection system. CCCPC and the State Council have printed out and distributed the Suggestions on Accelerating the Development of Ecological Progress and Integrated Reform Plan for Promoting Ecological Progress; which forms the strategic arrangements and institutional framework for the reform of ecological progress system. The authority has released the supporting documents including that on investigating and affixing

the responsibility of CPC and government leaders for the damage of eco environment to strive for success of the development of ecological progress and institutional reform. MEP has carried trial supervision on environmental protection in Hebei Province. MEP has promoted the development of eco environment monitoring network and will complete the construction of national air, water and soil quality monitoring sites and taking back the authority in three steps. MEP has started the reform of eco environment damage compensation system and trials on development of balance sheet of natural resources and off-office auditing on natural resource assets. MEP has facilitated the reform of pollution discharge permit management system and conducted the trial on compensated use and trade of emission rights with accumulated trade value of over 7 billion yuan. It has carried out the trial on national park system in areas such as Sanjiangyuan (the sources of three big rivers). In addition, MEP has actively facilitated the shift of environmental fee to environmental tax. Ten provinces (municipalities) such as Beijing and Jiangsu Province have greatly carried out the third party control of environmental pollution.

4. Adhere to the policy of prevention first and promote the change of development mode and adjustment of economic structure. The government has actively addressed excess production capacity and phased out over 90 million t outdated production capacity in iron & steel, over 1 million t outdated capacity in electrolytic aluminum, 230 million t outdated capacity in cement, over 76 million weight case of outdated capacity in flat glass over the past 3 years. The government has actively facilitated clean and high-efficiency use of coal. Key regions such as Beijing-Tianjin-Hebei have achieved negative growth of coal consumption. The government has printed out and distributed the Guidance on Adjustment of Key Industrial Layout and Industrial Transfer to guide the concentration of relevant industries in the areas suitable for development. The government has accelerated the implementation of the plan for main function areas; printed out and distributed the Marine Main Function Zoning, Plan of Beijing-Tianjin-Hebei for Coordinated Development and Eco Environment Protection and revised and released the National Ecological Function Zoning. In addition, it has accelerated the identification of ecological red lines. Six provinces (municipalities) such as Jiangsu Province and Tianjin have basically finished the identification work. MEP has established the consultation mechanism for EIA of plans and strengthened the interaction between planning EIA and EIA of construction projects. It has started strategic environmental assessment of Beijing-Tianjin-Hebei, the Yangtze River delta and Pearl River delta. MEP has reviewed EIS of 49 plans including petrochemical industry and coal-fueled power bases and put forward recommendations on improvement. MEP has accelerated the review and approval of EIA of infrastructure projects such as water and railway, welfare projects and key projects. At national

level, it has given written reply to EIA documents of 159 construction projects, involving total investment of more than 1.5 trillion yuan. It has rejected the approval of 21 projects, involving total investment of 117 billion yuan. When delegating its authority for review and approval of EIS, MEP has adopted approaches such as "double random" inspection, warning talk, rejecting approval of EIS of new construction projects in regions with excessive pollution load or withdrawing the authority of examination and approval to make strict supervision on delegated matters when they are being handled and after they have been handled. MEP has made strict environmental access and released 83 national environmental standards.

5. Continuously strengthen protection of ecology and rural environment. MEP has strengthened conservation of biodiversity, finished the verification of the boundary of priority areas for biodiversity conservation and released the China Biodiversity Red List—Vertebrates. MEP has finished the preparation of the Investigation and Assessment of a Decade Change of National Eco Environment (2000-2010). There are 2,740 nature reserves of various kinds at different administrative levels across the country, accounting for about 14.8% of total land area. MEP has carried out law enforcement inspection in 12 national nature reserves with intensive development activities and presented requirement for corrections. MEP has improved horizontal eco-compensation mechanism of upper and lower reaches of river basins and identified the policy on continuous trial in the Xin'an River. Trial has been conducted in water conservation areas of Beijing-Tianjin-Hebei, the Jiuzhou River in Guangxi and Guangdong as well as the Tingjiang River—Hanjiang River in Fujian and Guangdong. The central budget has allocated 6 billion yuan to support comprehensive improvement of rural environment of each province (autonomous region or municipality).

6. Enhance environmental publicity and education. MEP has conducted publicity campaign with "Live a green life" as the theme to promote green life style. MEP has actively made public in time of environmental information on air and water environment quality closely related to public life and released the name list of major enterprises discharging pollutants and enterprises with illegal discharge of pollutants. MEP has released the Program on EIA Information Disclosure Mechanism for Construction Projects and Measures on Public Participation in Environmental Protection. MEP has created the WeChat platform for environmental complaints. Environmental protection departments across the country have received over 13,000 environmental complaints.

Summary of Environment Status

In 2015, 73 cities of 338 cities at or above prefecture level (APL cities) across the country met national ambient air quality standard, taking up 21.6%; 265 cities failed to meet national ambient air quality standard, taking up 78.4%. On average, 76.7% of total amount of days of the year of the 338 APL cities across the country met national air quality standard; while the rest 23.3% exceeded air quality standard, 15.9% of which were under slight pollution, 4.2% under intermediate pollution, 2.5% under heavy pollution and 0.7% under very serious pollution. A total of 480 cities (urban districts or counties) have conducted monitoring of precipitation, 22.5% of which had acid rain with the average frequency of acid rain at 14.0%. In general, acid rain still was sulphuric acid type and acid rain pollution mainly occurred in the regions south to the Yangtze River and east to Yunnan-Guizhou Plateau.

Water quality was monitored in 967 surface water sections (sites) across the country under national monitoring program. The percent of Grade Ⅰ ~ Ⅲ, Grade Ⅳ ~ Ⅴ and that failing to meet Grade Ⅴ was 64.5%, 26.7% and 8.8% respectively. In 5,118 groundwater monitoring sites, 9.1% met Grade Ⅰ or Ⅱ quality standard, 25.0% met Grade Ⅲ standard, 4.6% met Grade Ⅳ standard, 42.5% met Grade Ⅴ standard and 18.8% exceeded Grade Ⅴ standard. A total of 338 cities at or above prefecture level have monitored the water quality of collective drinking water source areas. The total water withdrawal was 35.543 billion t, 34.506 billion t of which met water quality standard, accounting for 97.1%.

The percent of marine areas failing to meet Grade Ⅳ national marine water quality standard accounted for 2.2% in the winter, 1.7% in the spring, 1.3% in summer and 2.1% in the autumn of the total marine areas under jurisdiction of China. Marine areas subject to pollution were mainly in Liaodong Bay, Bohai Bay, Laizhou Bay, coastal marine waters along Jiangsu Province, estuary of the Yangtze River, Hangzhou Bay, coastal marine waters along Zhejiang Province and estuary of the Pearl River.

The average environmental noise of 321 APL cities with daytime regional acoustic environment monitoring was 54.1 dB (A). The average value of urban traffic noise of 324 APL cities under daytime traffic noise monitoring was 67.0 dB (A). The average attainment rate was 92.4% for daytime noise and 74.3% for night-time noise of functional areas of 308 cities.

National environmental ionizing radiation level was within the fluctuation range of background value. The environmental electromagnetic radiation level met relevant national limit.

A total of 2,740 nature reserves of various kinds at different levels have been established across the country. Their total area took up about 14.8% of total land area of China; 428 of which were national nature reserves, accounting for about 10.0% of total land area. There were 208 million ha forests with the coverage at 21.63%. The total stumpage was 16.433 billion m^3. The total grassland area was nearly 400 million ha, taking up about 41.7% of total land area.

Achievements of environmental protection of the "12th Five–Year Plan" period

CCCPC and the State Council have put the development of ecological progress and environmental protection on more important strategic position and made a series of key decisions and arrangements since the beginning of the "12th Five-Year Plan" period. Focusing on the control of air, water and soil pollution, China has firmly declared a war against pollution and made active progress in environmental protection.

Firmly declare a war against pollution. China has carried out the Action Plan for Prevention and Control of Air Pollution. Regional joint coordination mechanism for prevention and control of pollution has been established and improved in key regions such as Beijing-Tianjin-Hebei, the Yangtze River delta and Pearl River delta. China has developed the biggest ambient air quality monitoring network in developing countries. All 338 APL cities across the country have the capacity in monitoring 6 pollution indicators including $PM_{2.5}$. China has carried out the Plan for Prevention and Control of Water Pollution of Key River Basins and strengthened eco environment protection of drinking water source areas and lakes with relatively good water quality. The percent of surface water sections under national monitoring program failing to meet Grade Ⅴ standard went down by 6.8 percentage points with steady improvement of the water quality of the mainstream of big rivers. The government has finished the first national investigation on soil pollution.

Promote emission reduction. The daily urban sewage treatment capacity has increased from 125 million t in 2010 to 182 million t. The total capacity of coal-fueled power generating units with desulphurization facilities has gone up from 580 million kW to 890 million kW with the installation rate from 83% to over 99%. The total capacity of coal-fueled power generating units with denitrification facilities has gone up from 80 million kW to 830 million kW with installation rate from 12% to 92%. The total area of iron & steel sintering machine with desulphurization facilities has gone up from 29,000 m^2 to 138,000 m^2 with installation rate from 19% to 88%. The capacity of new dry process cement production lines installing denitrification facilities has been increased from 0 to 1.6 billion t. There was 12.9% reduction of COD, 18.0% reduction of SO_2, 13.0% reduction of ammonia nitrogen and 18.6% reduction of NO_x across the country compared with that of 2010.

Optimize economic development by environmental protection. MEP has conducted trial on identification of ecological red lines in 4 provinces (autonomous regions). Six provinces (autonomous regions) are the first group in the country releasing provincial environmental functional zoning. MEP has finished the SEA of the Development Strategy of West China and Development Strategy of Central China. The environmental protection departments at all levels have finished review of over 4,000 EIS. MEP has finished review of over 300 EIS. MEP has reviewed 1,164 EIA documents of construction projects and rejected 153 projects failing to meet the requirements, involving total investment of 760 billion yuan. MEP has enhanced guidance by standards and released 493 national environmental protection standards. The government has implemented stricter special emission limits for pollutants of key regions and key industries.

Carry out ecological development and comprehensive improvement of rural environment. The government has set up China National Committee for Biodiversity Conservation and released the China National Biodiversity Conservation Strategy and Action Plan (2011-2030). The central government has arranged 27.5 billion yuan special fund to support the completion of comprehensive environmental control of 72,000 villages, directly benefiting over 120 million rural population.

Strengthen prevention and control of pollution risks in key areas. The central government has arranged 17.2 billion yuan special fund to support the control of heavy metal pollution. Heavy pollution accidents have gone down from over 10 cases each year during 2010-2011 to less than 3 cases each year on the average during 2012-2015. The disposal of 6.70 million t chromium slag across the country, which have been stored from past production for several decades, has been completed. Environmental protection departments at all levels have properly handled nearly 2,600 various kinds of environmental incidences.

Enhance supervision on law enforcement. The newly amended Environmental Protection Law marks significant progress in environmental legislation and law enforcement. During 2011-2014, MEP in cooperation with several departments has carried out special environmental protection campaigns and mobilized 9.24 million person-times of law enforcement workers across the country. They have conducted over 3.62 million enterprise-times of inspection and investigated and punished 37,000 environmental infringements. The mechanism of cooperation and collaboration has been set up between administrative law enforcement and criminal enforcement with great progress in environmental justice.

China Council for International Cooperation on Environment and Development 2015 Annual General Meeting

China Council for International Cooperation on Environment and Development (CCICED) 2015 Annual General Meeting was held in Beijing during November 9-11. The theme of the meeting was "National Governance Capacity for Green Transformation". The meeting listened to the briefings on the findings of 6 policy study projects such as "National Governance Capacity in Green Transformation", "Green Financial Reform and Green Transformation", "Rule of Law and Development of Ecological Progress", "Management of Ecological Environment Risks", "Soil Pollution Management" and "Coordinated Actions for Addressing Climate Change and Air Pollution". Meanwhile, three sub-forums such as "Green 'One Belt and One Road'", "Think Tank and Green Transformation", "Green Finance and G20" were held. They have discussed and developed the Policy Recommendations to the Chinese Government. Vice Premier Zhang Gaoli from the State Council attended the opening ceremony of the AGM and gave an important speech. He said, the concept of green development has been deeply rooted in the mind of current China. The understanding, policy and practice on protection of eco environment have been continuously improved with remarkable achievements. The "13th Five-Year Plan" is the key period for China to build a well-off society in an all round way. China will provide people with more excellent ecological products and promote green development mode and life style. China should optimize land and space development pattern; appropriately and orderly utilize nature; comprehensive conserve and employ resources with high efficiency; and facilitate green, low carbon and circular development. China will make more efforts in environmental governance and achieve overall improvement of environment quality. In addition, China will carry out the projects on ecological conservation of mountains, waters, forests, cropland and lakes as well as remedy projects on contaminated sites; create sound ecological security barrier; improve laws and regulations on ecological progress and actively promote international exchanges and cooperation.

Atmospheric Environment

General Situation

Air quality

Cities at or above prefecture level In 2015, all 338 APL cities level* across the country conducted environmental monitoring based on the newly amended Ambient Air Quality Standard. The monitoring results show that 73 cities met national air quality standard**, accounting for 21.6%; 265 cities failed to meet national air quality standard, taking up 78.4%.

The analysis results show that the percent of attainment days on air quality of the 338 cities*** was 19.2%～100% with the average at 76.7%. The average amount of days failing to meet air quality standard**** took up 23.3%. Among them, 15.9% of the days were under slight pollution, 4.2% under intermediate pollution, 2.5% under heavy pollution and 0.7% under very heavy pollution. The attainment rate was 100% for 6 cities such as Ma'erkang, Lijiang, Shangrila, Tacheng, Ngari and Nyingchi. The attainment rate was 80%～100% for 150 cities; 50%～80% for 152 cities and <50% for another 30 cities. In the non-attainment days, those with $PM_{2.5}$, O_3 and PM_{10} as the primary pollutants***** were in dominance, accounting for 66.8%, 16.9% and 15.0% of total non-attainment days respectively; while the percent of non-attainment days with NO_2, SO_2 and CO as primary pollutants was 0.5%, 0.5% and 0.3% respectively.

The indicator analysis results show that the range of annual average $PM_{2.5}$ concentration was 11～125 μg/m^3 with the average at 50 μg/m^3 (0.43 times exceeding Grade Ⅱ national air quality standard). The amount of days with daily average exceeding the standard took up 17.5% of the total; 22.5% cities met the national standard. The range of annual average PM_{10} concentration was 24～357 μg/m^3 with the average at 87 μg/m^3 (0.24 times exceeding Grade Ⅱ national air quality standard), down by 7.4% compared with that of 2014. The amount of days with daily average failing to meet the standard took up 12.1% of the total. 34.6% of the cities met the national standard. The range of annual average SO_2 concentration was 3～87 μg/m^3 with the average at 25 μg/m^3 (meeting Grade II national air quality standard), down by 16.1% compared with that of 2014. The amount of days with daily average failing to meet the standard took up 0.7% of the total. 96.7% of the cities met the national standard. The range of annual average NO_2 concentration was 8～63 μg/m^3 with the average at 30 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 6.3% compared with that of 2014. The amount of days with daily average failing to meet the standard took up 1.6% of the total. 81.7% of the cities met the national standard. The range of 90th percentile concentration of O_3 daily maximum 8-hour average****** was 62～203 μg/m^3 with the average at 134 μg/m^3. The amount of days with daily average failing to meet the standard took up 4.6% of the total. 84.0% of the cities met the national standard. The range of the 95th percentile concentration of daily CO average was 0.4～6.6 mg/m^3 with the average at 2.1 mg/m^3. The amount of days with daily average failing to meet the standard took up 0.5% of the total; 96.7% of cities met the standard.

Cities under Stage I monitoring based on the newly amended ambient air quality standard In 2015, the

*Cities at or above prefecture level (APL cities): including municipality, cities or regions at prefecture level, autonomous prefectures and league.

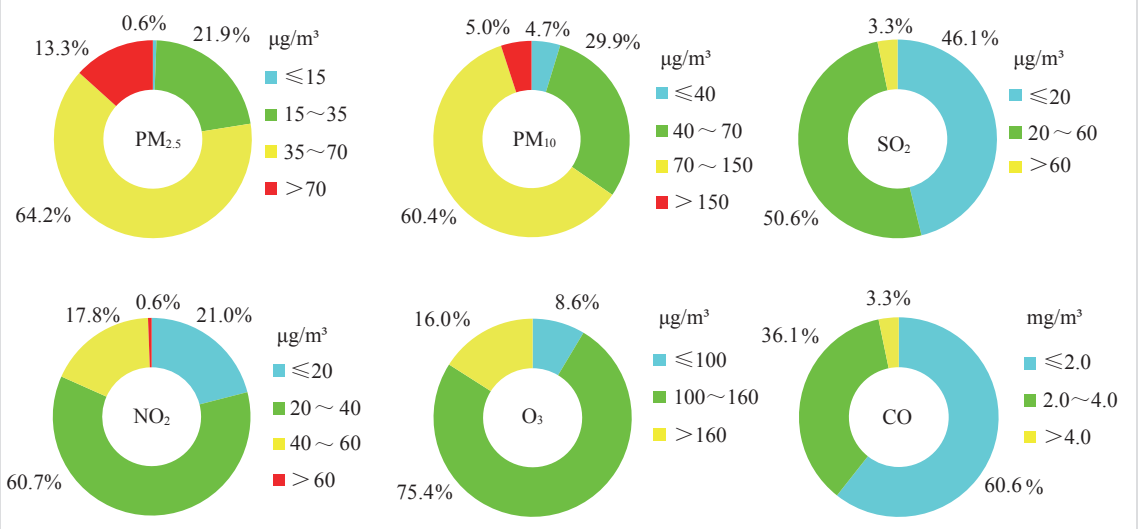
**Air quality meeting the standard: the ambient air quality meets the standard when the concentrations of all pollutants under assessment meet the standard.

***The amount of attainment days: It refers to the amount of days with AQI at 0～100.

****The amount of non-attainment days: the amount of days with AQI >100. Among them, AQI = 101～150 indicates slight pollution, 151～200 indicates intermediate pollution, 201～300 indicates heavy pollution and >300 very serious pollution.

*****Primary pollutant: When AQI >50, the pollutant with the biggest individual AQI is the primary pollutant.

******Percentile concentration: Based on the Technical Regulation for Ambient Air Quality Assessment (Trial) (HJ 663-2013), effective daily maximum 8-hour average of O_3 concentrations in the calendar year are ranked from small to big, compare the percentile value at 90% with the daily maximum 8-hour average of O_3 concentration of national standard date to judge if O_3 concentration meets the standard. The assessment of CO follows the same principle.



Percent of 338 cities at or above prefecture level with different concentrations of major pollutants in 2015

monitoring results of 74 cities under Stage I monitoring based on the newly amended ambient air quality standard (including cities at or above prefecture in key regions such as Beijing-Tianjin-Hebei, the Yangtze River delta and Pearl River delta, municipalities, provincial capital cities and cities under separate plan of the State Council) (the 74 cities) show that the urban air quality of 11 cities such as Zhoushan, Fuzhou, Xiamen, Shenzhen, Zhuhai, Jiangmen, Huizhou, Zhongshan, Haikou, Kunming and Lhasa met national air quality standard, 3 more than that of 2014, they were Xiamen, Jiangmen and Zhongshan. The ambient air of 63 cities failed to meet national air quality standard.

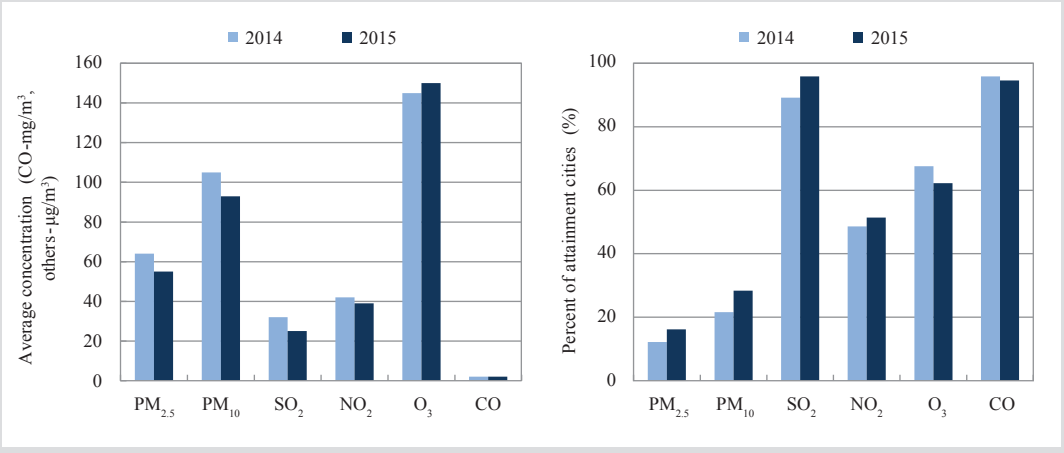
The analysis results show that the percent of days of the 74 cities meeting air quality standard was 32.9%～99.2% with the average at 71.2%, up by 5.2 percentage points compared with that of 2014 and up by 10.7 percentage points compared with that of 2013. The average amount of days failing to meet the standard took up 28.8%; 19.5% of which were under slight pollution, 5.2% under intermediate pollution, 3.2% under heavy pollution and 0.9% under very heavy pollution. The attainment rate was 80%～100% for 26 cities, 50%～80% for 40 cities. The non-attainment percent of 8 cities (Hengshui, Jinan, Baoding, Zhengzhou, Xingtai, Handan, Tangshan and Shijiazhuang) was less than 50%.

The analysis results of air quality comprehensive index* show that the top 10 cities with relatively good urban air quality (from No.1 to No.10) in the 74 cities were Haikou, Xiamen, Huizhou, Zhoushan, Lhasa, Fuzhou, Shenzhen, Kunming, Zhuhai and Lishui. The top 10 cities with poor air quality (from No.74 to No.65) were Baoding, Xingtai, Hengshui, Tangshan, Zhengzhou, Jinan, Handan, Shijiazhuang, Langfang and Shenyang.

The analysis results show that the annual average $PM_{2.5}$ concentration was 22～107 μg/m^3 with the average at 55 μg/m^3, down by 14.1% compared with that of 2014; 16.2% of the cities met National Ambient Air Quality Standard, up by 4.0 percentage points compared with that of 2014. The range of annual average PM_{10} concentration was 40～174 μg/m^3 with the average at 93 μg/m^3, down by 11.4% compared with that of 2014; 28.4% of the cities met the national air quality standard, up by 6.8 percentage points compared with that of 2014. The range of the annual average SO_2 concentration was 5～71 μg/m^3 with the average at 25 μg/m^3, down by 21.9% compared with that of 2014; 95.9% of the cities met the national air quality standard, up by 6.7 percentage points compared with that of 2014. The range of annual average NO_2

*Air quality comprehensive index: The sum of the quotients of concentration of the 6 air pollutants against corresponding Grade Ⅱ limit of assessment period is the air quality comprehensive index of the current city in that period, which is employed for ranking of urban air quality.

concentration was 14～61 μg/m^3 with the average at 39 μg/m^3, down by 7.1% compared with that of 2014; 51.4% of the cities met national air quality standard, up by 2.8 percentage points compared with that of 2014. The 90th percentile concentration of O_3 daily maximum 8-hour average was 95～203 μg/m^3 with the average at 150 μg/m^3, up by 3.4% compared with that of 2014; 62.2% of the cities met the national air quality standard, down by 5.4 percentage points compared with that of 2014. The 95th percentile concentration of daily average CO was 0.9～5.8 mg/m^3 with the average at 2.1 mg/m^3, same as that of 2014; 94.6% of the cities met the national air quality standard, down by 1.3 percentage points compared with that of 2014.



Annual comparison of six pollutants of the 74 cities under Stage I monitoring program in 2015

Beijing-Tianjin-Hebei region In 2015, the percent of days of the whole year of 13 APL cities in Beijing-Tianjin-Hebei meeting air quality standard was 32.9%～82.3% with the average at 52.4%, up by 9.6 percentage points compared with that of 2014 and up by 14.9 percentage points compared with that of 2013. The average percent of no attainment days was 47.6%; among them, 27.1%, 10.5%, 6.8% and 3.2% of which was under slight pollution, intermediate pollution, heavy pollution and very heavy pollution respectively. In the 13 cities, the percent of days meeting air quality standard was 82.3% for Zhangjiakou City; 50%～80% for 6 cities and less than 50% for the rest 6 cities. Among the non-attainment days, the amount of days with $PM_{2.5}$ as the primary pollutant was the most, taking up 68.4% of non-attainment days; followed by O_3 and PM_{10}, taking up 17.2% and 14.0% respectively.

The average $PM_{2.5}$ concentration was 77 μg/m^3 (1.20 times exceeding Grade Ⅱ national air quality standard), down by 17.2% compared with that of 2014. A total of 12 cities failed to meet national air quality standard. The average PM_{10} concentration was 132 μg/m^3 (0.89 times exceeding Grade Ⅱ national air quality standard), down by 16.5% compared with that of 2014; all the 13 cities failed to meet national standard. The average SO_2 concentration was 38 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 26.9% compared with that of 2014. All the 13 cities met the national standard. The average NO_2 concentration was 46 μg/m^3 (0.15 times exceeding Grade Ⅱ national air quality standard), down by 6.1% compared with that of 2014. 11 cities failed to meet the national standard. The 90th percentile concentration of O_3 daily maximum 8-hour average was 162 μg/m^3, same as that of 2014; 7 cities failed to meet the national standard. The 95th percentile concentration of daily average of CO was 3.7 mg/m^3, up by 5.7% compared with that of 2014. Four cities failed to meet the national air quality standard.

Beijing-Tianjin-Hebei and their surrounding areas (including Shanxi Province, Shandong Province, Inner Mongolia and Henan Province) was the region with high incidence of heavy air pollution in China. In 2015, there were a total of 1,710 day-times heavy pollution or above in 70 APL cities in the region, taking up 44.1% of the total in 2015. In different seasons, January-March and October-December were the seasons with high incidence of heavy pollution. In particular, there were several large scale heavy air pollution processes at regional level in December, 36.8% of the amount

Air quality comprehensive index and annual average of $PM_{2.5}$ concentration of 74 cities in 2015

City	Air quality comprehensive index	$PM_{2.5}$ ($\mu g/m^3$)	City	Air quality comprehensive index	$PM_{2.5}$ ($\mu g/m^3$)
Haikou	2.49	22	Qingdao	5.62	52
Xiamen	3.28	29	Yangzhou	5.64	55
Huizhou	3.31	27	Nantong	5.73	58
Zhoushan	3.35	29	Hangzhou	5.77	57
Lhasa	3.44	26	Taizhou	5.82	61
Fuzhou	3.54	29	Xining	5.87	49
Shenzhen	3.63	30	Zhenjiang	5.91	59
Kunming	3.73	30	Suqian	5.92	61
Zhuhai	3.78	31	Suzhou	5.93	58
Lishui	3.86	38	Hohhot	5.96	43
Zhongshan	3.92	33	Wuxi	6.02	61
Guiyang	3.99	39	Nanjing	6.08	57
Jiangmen	4.02*	34	Qinhuangdao	6.10	48
Taizhou	4.02	41	Changzhou	6.25	59
Dongguan	4.22	36	Lanzhou	6.50	52
Nanning	4.29	41	Yinchuan	6.51	51
Zhaoqing	4.32	39	Changchun	6.53	66
Foshan	4.47	39	Harbin	6.53	70
Nanchang	4.57	43	Chengdu	6.56	64
Guangzhou	4.61	39	Wuhan	6.60	70
Zhangjiakou	4.64	34	Xi'an	6.72	58
Quzhou	4.68	43	Xuzhou	6.75	65
Yancheng	4.89	49	Tianjin	6.87	70
Ningbo	4.91	45	Urumqi	7.00	66
Wenzhou	4.93	44	Taiyuan	7.13	62
Dalian	5.21	48	Cangzhou	7.28	70
Shanghai	5.32	53	Beijing	7.42	81
Jinhua	5.35	54	Shenyang	7.52	72
Huai'an	5.37	58	Langfang	7.89	85
Changsha	5.38	61	Shijiazhuang	8.70	89
Hefei	5.42	66	Handan	8.73	91
Chongqing	5.43	57	Jinan	8.78	90
Lianyungang	5.46	55	Zhengzhou	8.80	96
Chengde	5.48	43	Tangshan	8.97	85
Jiaxing	5.49	53	Hengshui	9.08	99
Huzhou	5.50	54	Xingtai	10.01	101
Shaoxing	5.61	55	Baoding	10.41	107

*The cities with the same air quality comprehensive index will have the same rank based on the Technical Regulations on Ranking of Urban Air Quality.

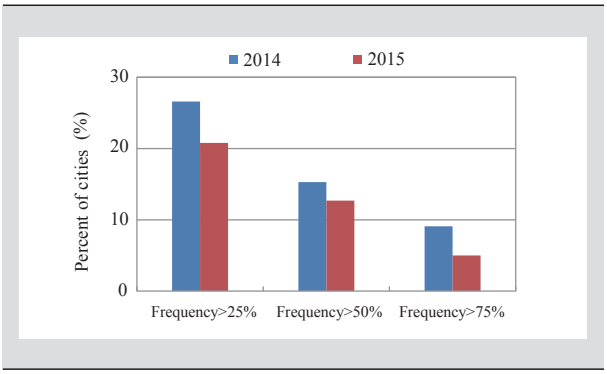
of days had heavy air pollution or above, significantly higher than that of other months.

The Yangtze River delta In 2015, 61.5%～90.8% of the total days of 25 APL cities in the Yangtze River delta met national air quality standard with the average at 72.1%, up by 2.6 percentage points compared with that of 2014 and 7.9 percentage points compared with that of 2013. The average amount of days failing to meet air quality standard took up 27.9%; the percent of days with slight pollution, intermediate pollution, heavy pollution and very heavy pollution was 20.9%, 4.6%, 2.3% and 0.1% respectively. In the 25 cities, the attainment rate was 80%～100% for 6 cities and 50%～80% for the rest 19 cities. In all the days failing to meet national air quality standard, the amount of days with $PM_{2.5}$ as the primary pollutant was the most, taking up 57.5% of the total; followed by O_3 and PM_{10}, accounting for 37.2% and 3.6% respectively.

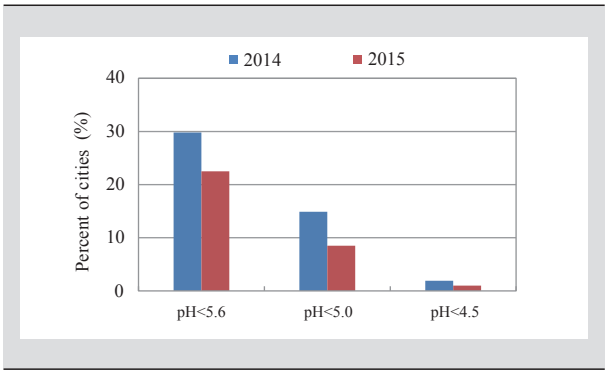
The average $PM_{2.5}$ concentration was 53 μg/m^3 (0.51 times exceeding Grade Ⅱ National Ambient Air Quality Standard), down by 11.7% compared with that of 2014. A total of 24 cities exceeded the national limit. The average PM_{10} concentration was 83 μg/m^3 (0.19 times exceeding Grade Ⅱ national air quality standard), down by 9.8% compared with that of 2014; 19 cities exceeded the national air quality standard. The average SO_2 concentration was 21 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 16.0% compared with that of 2014; all 25 cities met the national limit. The average NO_2 concentration was 37 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 5.1% compared with that of 2014. A total of 12 cities failed to meet the national air quality standard. The 90th percentile concentration of O_3 daily maximum 8-hour average was 163 μg/m^3, up by 5.8% compared with that of 2014. A total of 16 cities failed to meet the national standard. The 95th percentile concentration of daily average of CO was 1.5 mg/m^3, same as that of 2014, all 25 cities met the national air quality standard.

The Pearl River delta In 2015, the percent of days of 9 APL cities in the Pearl River delta meeting air quality standard was 84.6%～97.5% with the average at 89.2%, up by 7.6 percentage points compared with that of 2014 and 12.9 percentage points compared with that of 2013. The average percent of non-attainment days was 10.8%; 9.6% of which were under slight pollution and 1.2% under intermediate pollution. There was not any heavy pollution and very serious pollution. In non-attainment days, the amount of days with O_3 as the primary pollutant was the most, taking up 56.5% of the total; followed by $PM_{2.5}$ and NO_2, taking up 39.0% and 4.5% respectively.

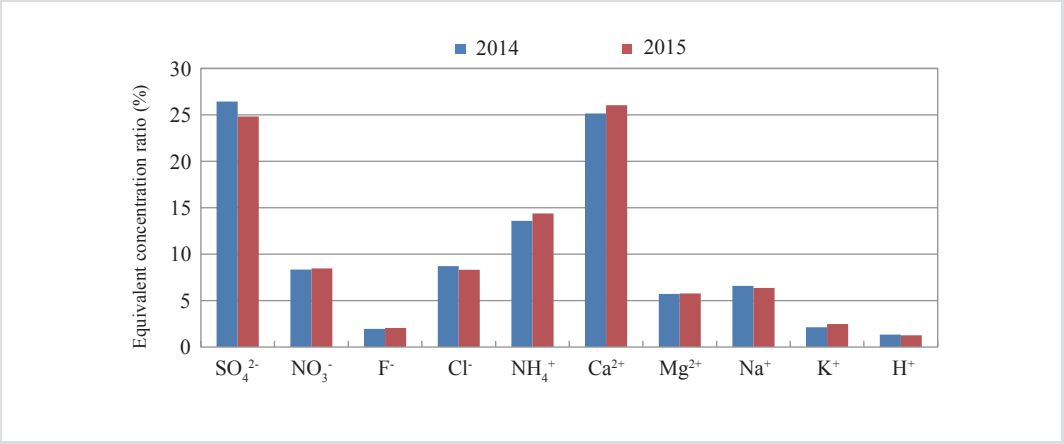
The average $PM_{2.5}$ concentration was 34 μg/m^3 (meeting Grade Ⅱ National Ambient Air Quality Standard), down by 19.0% compared with that of 2014; 4 cities failed to meet the national limit. The average PM_{10} concentration was 53 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 13.1% compared with that of 2014. All the 9 cities met the standard. The average SO_2 concentration was 13 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 27.8% compared with that of 2014. All the 9 cities met the standard. The average NO_2 concentration was 33 μg/m^3 (meeting Grade Ⅱ national air quality standard), down by 10.8% compared with that of 2014; 2 cities exceeded the standard. The 90th percentile concentration of O_3 daily maximum 8-hour average was 145 μg/m^3, down by 7.1% compared with that of 2014; one city exceeded the standard. The 95th percentile concentration of daily average of CO was 1.4 mg/m^3, down by 6.7% compared with that of 2014. All the 9 cities met the national air quality standard.



Annual comparison of the percent of cities with different acid rain frequency in 2015



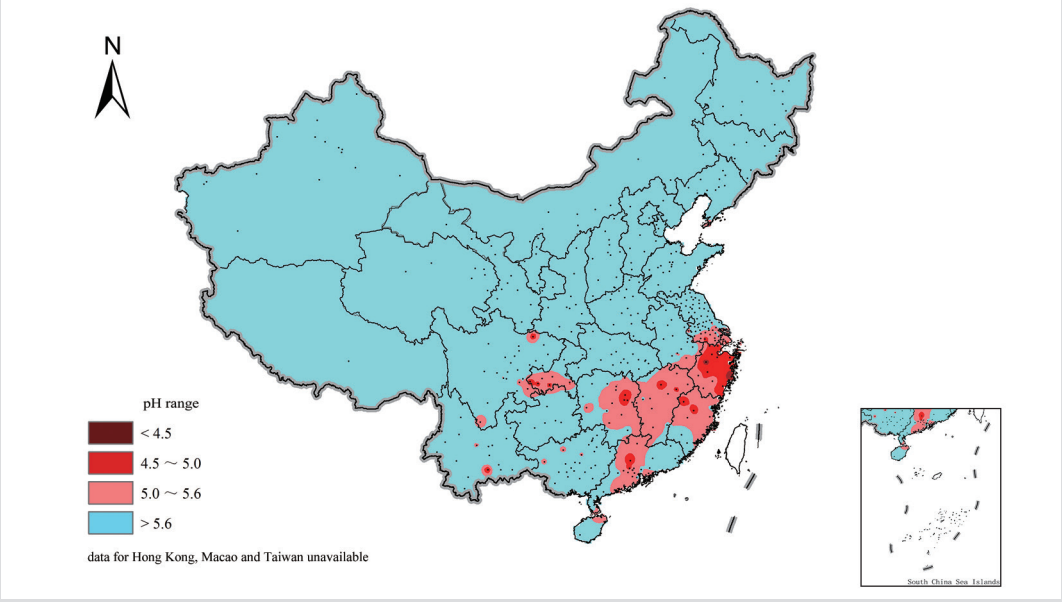
Annual comparison of the percent of cities with different annual pH of precipitation in 2015



Annual comparison of main ion equivalent concentration ratio of precipitation in 2015

Acid rain

Acid rain frequency In 2015, the average acid rain frequency of 480 cities (districts or counties) under precipitation monitoring was 14.0%. The percent of cities with acid rain was 40.4%. Among them, 20.8% of the cities had acid rain frequency over 25%, 12.7% cities had acid rain frequency over 50% and 5.0% cities had cities had acid rain frequency over 75%. The percent of cities with acid rain went down by 10.0 percentage points compared with that of 2010.



The isoline of annual pH of precipitation in China in 2015

Precipitation acidity In 2015, the annual average pH of precipitation across the country was 4.2 (Taizhou in Zhejiang Province)~8.2 (Korla in Xinjiang). Among them, the percent of cities with acid rain (annual average pH of precipitation < 5.6), relatively serious acid rain (annual average pH of precipitation < 5.0) and serious acid rain (annual average pH of precipitation < 4.5) was 22.5%, 8.5% and 1.0% respectively; down by 7.3, 6.4 and 0.9 percentage points respectively compared with that of 2014 and down by 13.1, 13.1 and 7.5 percentage points respectively compared with that of 2010.

Chemical composition In 2015, the main cations in precipitation were calcium and ammonium, taking up 25.9% and 14.5% respectively of total ion equivalent, up by 1.0 percentage point respectively compared with that of 2010. The key anion was sulfate radical, taking up 24.7% of the total ion equivalent, down by 3.8 percentage points compared with that of 2010; nitrate radical taking up 8.5% of the total ion equivalent, up by 1.1 percentage points compared with that of 2010. In general, the type of acid rain still was sulphuric acid.

Acid rain distribution In 2015, the total area of acid rain region was about 729,000 km^2, taking up 7.6% of total land area, down by 5.1 percentage points compared with that of 2010. Among them, the percent of land area with relatively serious acid rain or serious acid rain was 1.2% and 0.1% respectively of the total. The acid rain mainly was distributed in the region south to the Yangtze River and east to Yunnan-Guizhou Plateau. This region mainly includes Zhejiang, Shanghai, Jiangxi and most of Fujian, central and eastern part of Hunan, southern part of Chongqing, southern part of Jiangsu and central part of Guangdong.

Measures and Actions

【Implementation of the Action Plan for Prevention and Control of Air Pollution】 MEP has examined the implementation of the Action Plan of each province (autonomous region or municipality) in 2014 and urged the provinces with degradation of ambient air quality to take correction measures to improve their ambient air quality in accordance with the examination requirements of the Action Plan for Prevention and Control of Air Pollution. China has released the newly amended Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution. This law makes clear the responsibility of local governments; greatly increases punishment; strengthens the prevention and control of pollution of coal, vehicle emissions and VOCs; enhances regional coordination to respond to weathers with heavy air pollution. All the 22 supporting policies for the Action Plan for Prevention and Control of Air Pollution have been carried out and the emission standards of 25 major industries required by the Action Plan for Prevention and Control of Air Pollution have been released. MEP has printed out and distributed the National Key Tasks on Prevention and Control of Air Pollution in 2015 based on the requirements of the Circular of the General Office of the State Council on Printing out and Distribution of the Program on Work Division of Major Departments on Action Plan for Prevention and Control of Air Pollution. MEP has established early warning system for ambient air quality and inform the government of each province (autonomous region or municipality) of the improvement of air quality each quarter. MEP has commended the provinces and cities with significant improvement of air quality and supervised the provinces and cities with slow progress and poor work. It has supervised major cities on environmental protection and mainly checked various kinds of industrial parks and industrial zones; key industries such as thermal power, iron & steel and cement; as well as small workshops and units with coal fueled boilers not complying with national policy. In addition, it has conducted law enforcement inspection in key regions such as Handan, Qinghuangdao, Yuncheng and Tangshan with the help of unmanned aerial vehicle.

The overall urban ambient air quality has been improved across the country with gradual reduction of annual average $PM_{2.5}$, PM_{10}, NO_2, SO_2 and CO concentration year by year as well as reduction of amount of days with heavy air pollution in most cities since the implementation of the Action Plan for Prevention and Control of Air Pollution. However, air quality is still facing grave situation. Cities and regions in eastern part of China have high pollution load of $PM_{2.5}$ and PM_{10}. In northern part of China, heavy air pollution is prominent in the winter. In addition, ozone pollution in key regions emerges.

【Promotion of pollution control of key industries】 The government has carried out comprehensive control of VOCs of major industries. It has printed out and distributed the Guide of Petrochemical Industry for Investigation on VOCs Pollution Sources and Guide of Petrochemical Industry for Detection and Repair of Leakage. They have improved the fine management for prevention and control of VOCs pollution and workability of management measures of petrochemical industry. The government has conducted the demonstration project on heat supply by biomass-fired boilers and development of demonstration sites on biogas in Inner Mongolia to facilitate the development of green energy. The authority has released the Circular on the Trial of Off-

Peak Production of Cement in Heating Areas in Northern Part of China to promote energy saving and emission reduction, address the problem of excessive capacity of cement industry and improve air quality.

【Prevention and control of vehicle emissions】 The government has facilitated the phasing out of yellow-label vehicles and successfully met the target of phasing out 1.26 million yellow-label vehicles identified in the Report on the Work of the Government. The government has strengthened supervision on environmental attainment of new vehicles. In the production process, it has randomly detected the emissions of 12 engine manufacturing enterprises, 9 light or heavy diesel vehicle manufacturers as well as new vehicles. The government has actively extended new energy vehicles, with annual production of 379,000 such vehicles, 4 times more than that of 2014. The government has actively promoted improvement of oil quality and Grade Ⅳ vehicle petrol and diesel has been supplied across the country. Regions like Beijing, Tianjin and Shanghai are the first to supply Grade Ⅴ vehicle petrol and diesel.

【Response to heavy pollution weather】 In 2015, 280 APL cities in 24 provinces (autonomous regions or municipalities) across the country have developed emergency plans for heavy air pollution. Beijing-Tianjin-Hebei region have issued 154 early warnings on heavy pollution weather. The authority has conducted special supervision on emergency response to heavy pollution weather in key regions, focusing on elevated sources, control of bulk coal, emissions from cluster of small enterprises, construction sites and VOCs emission in the period of continuous heavy air pollution of Beijing-Tianjin-Hebei region.

Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution

The amended Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution was adopted at the 16th Meeting of the Standing Committee of the 12th National People's Congress on August 29, 2015. President Xi Jinping signed No.31 Order of the President to officially promulgate the Law on the same day, which shall go into effect as of January 1, 2016.

The newly amended Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution stipulates basic principle, basic system and measures in the field of prevention and control of air pollution. The Law has the following several distinctive characteristics: 1) Clearer main line. The Law clearly states that prevention and control of air pollution should aim at improving ambient air quality. The responsibility of local governments as well as examination and supervision shall be strengthened. 2) More prominent highlights. The Law highlights local governments and enterprises as the two key main bodies. It includes promoting local governments to fulfill their main body responsibility for improving ambient air quality of their region. It specifies a series of institutional measures such as local government responsible for ambient air quality within its jurisdiction, MEP examination on the performances of provincial governments, development of attainment plan within a given period of time by the cities failing to meet the standard, warning of environmental protection department at higher level to the head of subordinate government failing to meet the target and rejecting EIS of new construction project in regions with excessive pollution load. In addition, it promotes all enterprises to meet pollution emission standard. 3) More complete contents. First, adhering to source control. The Law clearly requires transforming economic development mode, optimizing industrial structure and layout and adjusting energy mix. It requires that atmospheric environment protection requirements should be made clear when establishing quality standards of products containing VOCs such as coal, petroleum, coke, biomass fuel and paint as well as fireworks and boilers. The Law makes clear that fuel quality standard should meet the national requirement for the control of air pollution. Second, adhering to comprehensive prevention and control. In view of current status of air pollution of coexistence of several kinds of pollutants and superimposition of many pollution sources in China, the Law requires that more efforts shall be made in comprehensive prevention and control of the pollution from coal combustion, industry, vehicles & ships, dust and agriculture; synergy control of air pollutants such as particulate, SO_2, NO_x, VOCs and ammonia as well as GHG so as to prevention and control air pollution. Third, adhering to problem-oriented approach. In view of current high frequency of heavy pollution weather, the Law sets a special chapter for joint prevention and control of air pollution in key regions and response to heavy pollution weather. 4) Stricter supervision. The Law consolidates the long-term measures of the Action Plan for Prevention and Control of Air Pollution. It specifies a series of institutional measures such as meeting the standard in a given period of time, graded examination, administrative warning, rejecting approval of EIS of new construction projects in regions with excessive pollution load, source control, control of vehicle emissions, reduction of coal consumption, combined measures for control of both point and non-point sources, regional prevention and control of pollution. As a result, it develops stricter supervision system. 5) Severer punishment. Based on the newly amended Environmental Protection Law, the current Law presents stronger punishment to environmental infringements causing air pollution. First, where there is environmental infringement, there is punishment apart from advocated rules. There are 30 articles in the Legal Liability section, taking up over 20% of total amount of articles, involving over 90 kinds of infringements. Second, it raises the upper limit of fines. Third, it makes detailed provisions and adds daily fines based on the newly amended Environmental Protection Law. Fourth, increase of the types of punishment. For example, administrative punishments include ordering stop of operations, shut down, cease of production for corrections, cease of operation for corrections, confiscation, cancel of qualification, public security penalty and so on. In addition, it also specifies civil compensation responsibility and criminal responsibility.

The promulgation of the newly amended Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution reflects new requirements of CCCPC and the State Council for the development of ecological progress, meets new public expectations on improving ambient air quality, and identifies the focus of prevention and control of air pollution in the new era. With strong relevance and workability for addressing prominent problems in the field of prevention and control of air pollution, the newly amended Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution provides a sound legal guarantee for the shift of the focus of preventing and controlling air pollution to improvement of ambient quality.

Ensure good air quality during the commemoration of the 70th Anniversary of the Victory of the Chinese People's War of Resistance Against Japanese Aggression and The World Anti–Fascist War

To ensure smooth progress of the commemoration of the 70th Anniversary of the Victory of the Chinese People's War of Resistance Against Japanese Aggression and The World Anti-Fascist War during August 20-September 3 of 2015, MEP and the mechanism for joint prevention and control of air pollution of Beijing-Tianjin-Hebei and their surrounding areas as well as governments of Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, Shandong and Henan have closely cooperated, spared no efforts, controlled air pollution by joint prevention and control, made strict law enforcement, enhanced supervision, actively taken measures such as monitoring and prediction of air quality and successfully finished the task of ensuring good air quality during the commemoration period.

The ambient air quality of Beijing was excellent during the military parade at 9:00-12:00 of September 3. The air quality of Beijing-Tianjin-Hebei and their surrounding areas met Grade I or II national air quality standard.

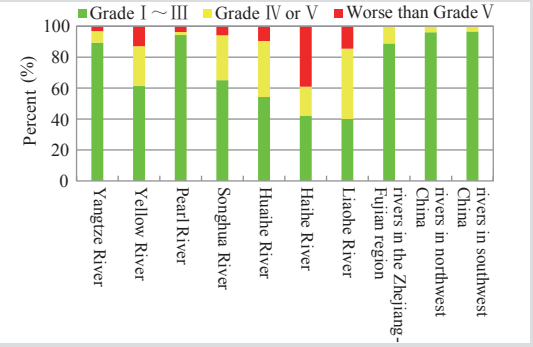
The overall air quality of Beijing was good and the average $PM_{2.5}$ concentration was 18 μg/m^3 during August 20-September 3, down by 73.1% compared with that of the same period of 2014. The daily average $PM_{2.5}$ concentration met Grade I standard for 15 consecutive days, the best record since the beginning of $PM_{2.5}$ monitoring. The overall ambient air quality of 70 cities in Beijing-Tianjin-Hebei and their surrounding areas was good. The average $PM_{2.5}$ concentration was 35 μg/m^3. The average $PM_{2.5}$ concentration of 52 cities went down by 34.0% compared with that of the same period of 2014.

Freshwater Environment

General Situation

Surface waters

In 2015, there were 972 surface water sections (sites) under national monitoring program covering 423 rivers from 7 big river basins, rivers in Zhejiang Province and Fujian Province, rivers in northwestern part, rivers in southwestern part and rivers adjacent to the Taihu Lake, Dianchi Lake and Chaohu Lake as well as 62 major lakes (reservoirs) such as the Taihu Lake, Dianchi Lake and Chaohu Lake. Five sections of them had no data and were not included in the statistics. The monitoring results show 2.8% of water sections (sites) meeting Grade Ⅰ water quality standard, down by 0.6 percentage point; 31.4% meeting Grade Ⅱ water quality standard, up by 1.0 percentage point; 30.3% meeting Grade Ⅲ standard, up by 1.0 percentage point; 21.1% meeting Grade Ⅳ standard, up by 0.2 percentage point; 5.6% meeting Grade Ⅴ standard, down by 1.2 percentage points; 8.8% failing to meet Grade Ⅴ standard, down by 0.4 percentage point compared with that of 2014.*



Water quality of 7 big river basins, rivers in Zhejiang and Fujian, rivers in northwestern part and southwestern part in 2015

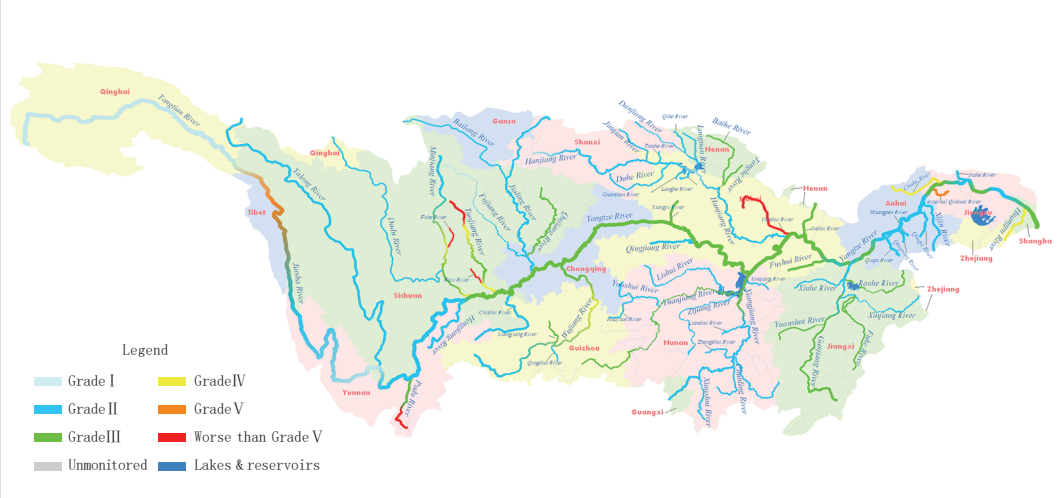
River basins

In 2015, in 700 water sections under national monitoring program in 7 big river basins such as the Yangtze River, Yellow River, Pearl River, Songhua River, Huaihe River, Haihe River and Liaohe River as well as rivers in Zhejiang and Fujian, rivers in northwestern and southwestern parts of China, 2.7% met Grdae Ⅰ standard, down by 0.1 percentage point compared with that of 2014; 38.1% met Grade Ⅱ standard, up by 1.2 percentage points; 31.3% met Grade Ⅲ standard, down by 0.2 percentage point; 14.3% met Grade Ⅳ standard, down by 0.7 percentage point; 4.7% met Grade Ⅴ standard, down by 0.1 percentage point; 8.9% failed to meet Grade Ⅴ standard, they mainly were concentrated in the Haihe River, Huaihe River, Liaohe River and Yellow River basins, down by 0.1 percentage point compared with that of 2014. The main pollutants were** COD, BOD_5 and TP.

The Yangtze River basin In all 160 water sections under national monitoring program, 3.8% meeting Grade Ⅰ standard, down by 0.6 percentage point; 55.0% meeting Grade Ⅱ standard, up by 4.1 percentage points; 30.6% meeting Grade Ⅲ standard, down by 2.1 percentage points; 6.2% meeting

*Twenty one indicators of Table 1 of Environmental Quality Standard for Surface Water (GB 3838-2002) except water temperature, TN and E-coli are employed to assess the water grade based on each individual limit and take the highest grade from the single factor approach as the type of water quality of the section. Grade Ⅰ or Ⅱ water refers to the water in Grade I protected areas of drinking water sources, habitats of rare aquatic species, fish and shrimp spawning grounds and feeding grounds of fry and young fish. Grade Ⅲ water could be employed for Grade II drinking water source protected areas, fish and shrimp wintering grounds, migration channels, aquaculture areas and swimming sites. Grade Ⅳ water could be employed for general industrial water use and recreation without any direct contact with people. Grade Ⅴ water could be employed for agriculture and landscape. Water failing to meet Grade Ⅴ standard hardly has any function except adjustment of local climate.

**Major pollution indicators: The indicators going beyond Grade Ⅲ water quality are ranked based on non-attainment rate of sections; take the top three as major pollution indicators. Non-attainment rate of sections refers to percent of amount of sections exceeding Grade Grade Ⅲ standard against the total.



Water quality map of the Yangtze River basin in 2015

Grade Ⅳ standard, down by 0.7 percentage point; 1.2% meeting Grade Ⅴ standard, down by 0.7 percentage point compared with that of 2014; 3.1% failing to meet Grade Ⅴ standard, same as that of 2014.

In 42 water sections of the mainstream of the Yangtze River under national monitoring program, 7.1% met Grade Ⅰ standard, down by 0.2 percentage point; 38.1% met Grade Ⅱ standard, down by 3.4 percentage points; 52.4% met Grade Ⅲ standard, up by 1.2 percentage points; 2.4% met Grade Ⅴ standard, up by 2.4 percentage points compared with that of 2014. There was no water sections meeting Grade Ⅳ or failing to meet Grade Ⅴ national water quality standard, same as that of 2014.

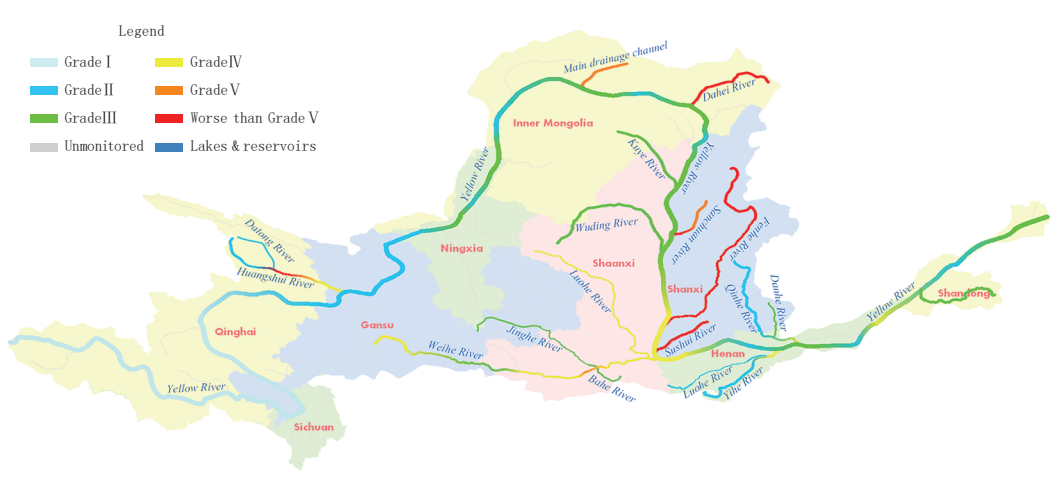
In 118 water sections of major tributaries of the Yangtze River under national monitoring program, 2.5% met Grade Ⅰ standard, down by 0.9 percentage point; 61.0% met Grade Ⅱ standard, up by 6.8 percentage points; 22.9% met Grade Ⅲ standard, down by 3.4 percentage points; 8.5% met Grade Ⅳ standard, down by 0.8 percentage point; 0.8% met Grade Ⅴ standard, down by 1.7 percentage points compared with that of 2014; 4.2% failing to meet Grade Ⅴ standard, same as that of 2014.

The Yellow River basin In 62 water sections under national monitoring program, 1.6% met Grade Ⅰ water quality standard, same as that of 2014; 30.6% met Grade Ⅱ standard, down by 3.3 percentage points; 29.0% met Grade Ⅲ standard, up by 4.8 percentage points; 21.0% met Grade Ⅳ standard, up by 1.6 percentage points; 4.8% met Grade Ⅴ standard, down by 3.3 percentage points as compared with that of 2014; 12.9% failed to meet Grade Ⅴ standard, same as that of 2014. The main pollution indicators were TP, ammonia nitrogen and BOD_5.

In 26 water sections of the mainstream of the Yellow River under national monitoring program, 3.8% met Grade Ⅰ standard, same as that of 2014; 46.2% met Grade Ⅱ standard, down by 7.6 percentage points compared with that of 2014; 38.5% met Grade Ⅲ standard, up by 3.9 percentage points compared with that of 2014; 11.5% met Grade Ⅳ standard, up by 3.8 percentage points compared with that of 2014; no water sections meeting Grade Ⅴ or failing to meet Grade Ⅴ standard, same as that of 2014.

In the 36 water sections of major tributaries of the Yellow River under national monitoring program, 0% met Grade Ⅰ standard; 19.4% met Grade Ⅱ standard, same as that of 2014; 22.2% met Grade Ⅲ standard, up by 5.5 percentage points; 27.8% met Grade Ⅳ standard, same as that of 2014; 8.3% met Grade Ⅴ standard, down by 5.6 percentage points compared with that of 2014; 22.2% failed to meet Grade Ⅴ standard, same as that of 2014. The main pollution indicators are TP, ammonia nitrogen and petroleum.

The Pearl River basin Among 54 water sections under national monitoring program, 3.7% met Grade Ⅰ standard, down by 1.9 percentage points compared with that of 2014; 74.1% met Grade Ⅱ standard, same as that of 2014; 16.7% met Grade Ⅲ standard, up by 1.9 percentage points compared with that of 2014; 1.8% met Grade Ⅳ standard, 0% met Grade Ⅴ standard, 3.7% failed to meet Grade Ⅴ standard, same as that of 2014.



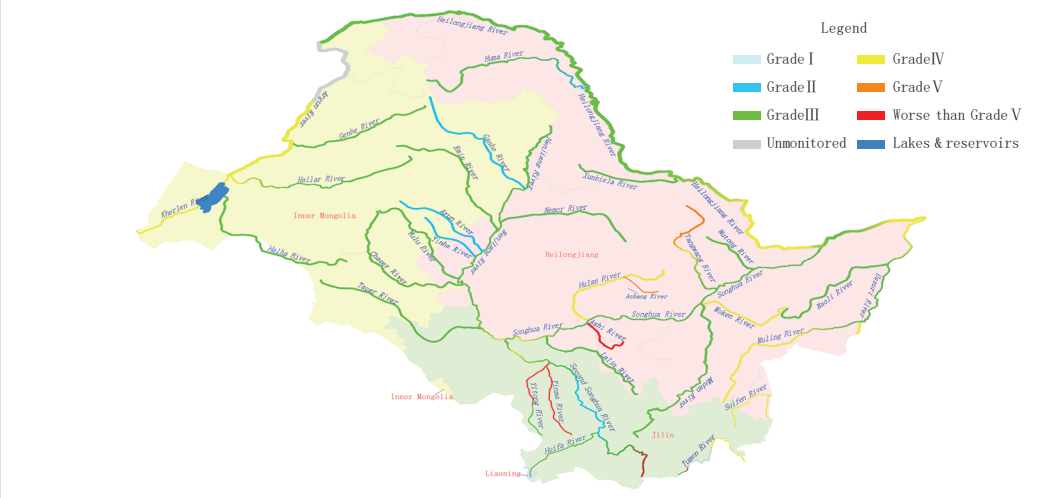
Water quality map of the Yellow River basin in 2015

In the 18 water sections of the mainstream of the Pearl River, the percent of Grade Ⅰ, Ⅱ, Ⅲ and Ⅳ was 5.6%, 77.8%, 11.1% and 5.6% respectively, 0% met Grade Ⅴ or inferior to Grade Ⅴ standard, same as that of 2014.

In the 26 water sections of the major tributaries of the Pearl River under national monitoring program, 3.8% met Grade Ⅰ standard, down by 3.9 percentage points compared with that of 2014; 73.1% met Grade Ⅱ standard, same as that of 2014; 15.4% met Grade Ⅲ standard, up by 3.9 percentage points compared with that of 2014; 0% met Grade Ⅳ or Grade Ⅴ standard, 7.7% failed to meet Grade Ⅴ standard, same as that of 2014.

In the 10 water sections of Hainan Island under national monitoring program, 0% met Grade Ⅰ, Ⅳ, Ⅴ or inferior to Grade Ⅴ standard; 70.0% met Grade Ⅱ standard, 30.0% met Grade Ⅲ standard, both same as that of 2014.

Water quality map of the Pearl River basin in 2015



Water quality map of the Songhua River basin in 2015

The Songhua River basin In all 86 water sections under national monitoring program, 0% met Grade Ⅰ standard, same as that of 2014; 8.1% met Grade Ⅱ standard, up by 1.2 percentage points compared with that of 2014; 57.0% met Grade Ⅲ standard, up by 1.8 percentage points; 26.7% met Grade Ⅳ standard, down by 2.0 percentage points; 2.3% met Grade Ⅴ standard, down by 2.3 percentage points compared with that of 2014; 5.8% failed to meet Grade Ⅴ standard, up by 1.2 percentage points compared with that of 2014. The main pollution indicators were permanganate index, COD and TP.

In 16 water sections of the mainstream of Songhua River, no section met Grade Ⅰ or Grade Ⅴ national water quality standard, same as that of 2014; 18.8% met Grade Ⅱ standard, up by 12.6 percentage points compared with that of 2014; 62.5% met Grade Ⅲ standard, down by 18.7 percentage points compared with that of 2014; 12.5% met Grade Ⅳ standard, up by 6.3 percentage points compared with that of 2014; 6.2% failed to meet Grade Ⅴ standard, same as that of 2014.

In the 34 water section of the mainstream of the Songhua River under the national monitoring program, 0% met Grade Ⅰ standard, same as that of 2014; 8.8% met Grade Ⅱ standard, down by 3.0 percentage points; 64.7% met Grade Ⅲ standard, up by 11.8 percentage points; 11.8% met Grade Ⅳ standard, down by 8.8 percentage points compared with that of 2014; 5.9% met Grade Ⅴ standard, 8.8% failed to meet Grade Ⅴ standard, both same as that of 2014. The main pollution indicators were permanganate index, COD and BOD_5.

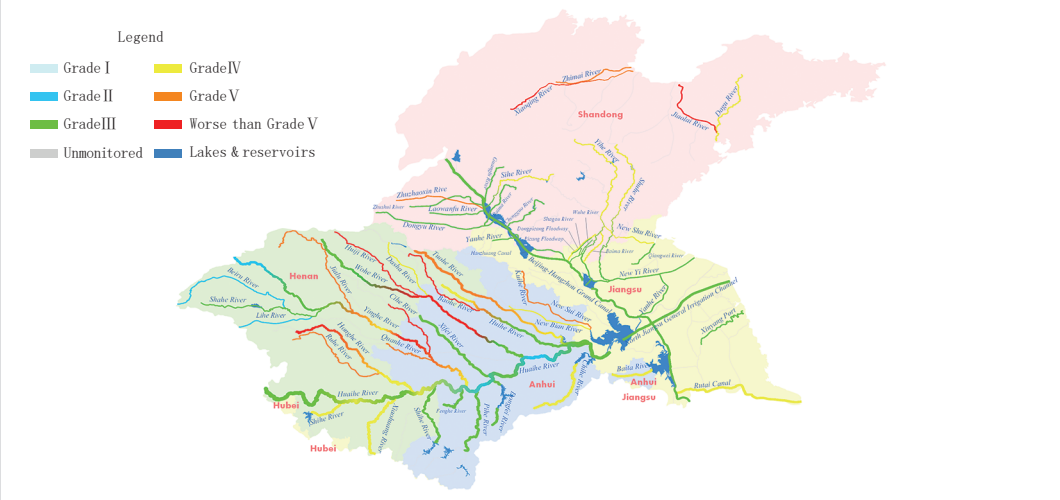
In 21 water sections of the waters of the Heilong River under national monitoring program, 0% met Grade Ⅰ or inferior to Grade Ⅴ standard, same as that of 2014; 4.8% met Grade Ⅱ standard, up by 0.3 percentage point; 52.4% met Grade Ⅲ standard, up by 6.9 percentage points; 42.9% met Grade Ⅳ standard, down by 2.6 percentage points; 0% inferior to Grade Ⅴ, down by 4.5 percentage points compared with that of 2014. The main pollution indicators were COD, permanganate index and fluoride.

In 9 water sections of the waters of the Wusuli River under national monitoring program, 0% met Grade Ⅰ, Ⅱ, Ⅴ or inferior to Grade Ⅴ standard, same as that of 2014; 55.6% met Grade Ⅲ standard, up by 11.2 percentage points; 44.4% met Grade Ⅳ standard, down by 11.2 percentage points compared with that of 2014. The main pollution indicators were permanganate index and COD.

In 5 water sections of the waters of the Tumen River under national monitoring program, 0% met Grade Ⅰ or Ⅱ standard, both same as that of 2014; 20.0% met Grade Ⅲ standard, down by 20.0 percentage points; 60.0% met Grade Ⅳ standard, up by 20.0 percentage points; 0% met Grade Ⅴ standard, down by 20.0 percentage points; 20.0% failed to meet GradeⅤ standard, up by 20.0 percentage points compared with that of 2014. The main pollution indicators were TP, permanganate index and COD.

The waters of the Suifen River were under slight pollution and the main pollution indicator was COD.

The Huaihe River In 94 water sections under national monitoring program, 0% met Grade Ⅰ standard, same as that



Water quality map of the Huaihe River basin in 2015

of 2014; 6.4% met Grade Ⅱ standard, down by 1.0 percentage point compared with that of 2014; 47.9% met Grade Ⅲ standard, down by 1.0 percentage point compared with that of 2014; 22.3% met Grade Ⅳ standard, up by 1.0 percentage point compared with that of 2014; 13.8% met Grade Ⅴ standard, up by 6.4 percentage points; 9.6% failed to meet Grade Ⅴ standard, down by 5.3 percentage points compared with that of 2014. The main pollution indicators were COD, BOD_5 and TP.

In 10 water sections of the mainstream of the Huaihe River under national monitoring program, 0% met Grade Ⅰ, Ⅴ or inferior to Grade Ⅴ standard; 30.0% met Grade Ⅱ standard, 50.0% met Grade Ⅲ standard, 20.0% met Grade Ⅳ standard, same as that of 2014.

In the 42 water sections of major tributaries of the Huaihe River, 0% met Grade Ⅰ standard, same as that of 2014; 7.1% met Grade Ⅱ standard, up by 2.3 percentage points compared with that of 2014; 28.6% met Grade Ⅲ standard, same as that of 2014; 26.2% met Grade Ⅳ standard, down by 4.8 percentage points compared with that of 2014; 21.4% met Grade Ⅴ standard, up by 9.5 percentage points compared with that of 2014; 16.7% failed to meet Grade Ⅴ standard 16.7%, down by 7.1 percentage points compared with that of 2014. The main pollution indicators were COD, BOD_5 and TP.

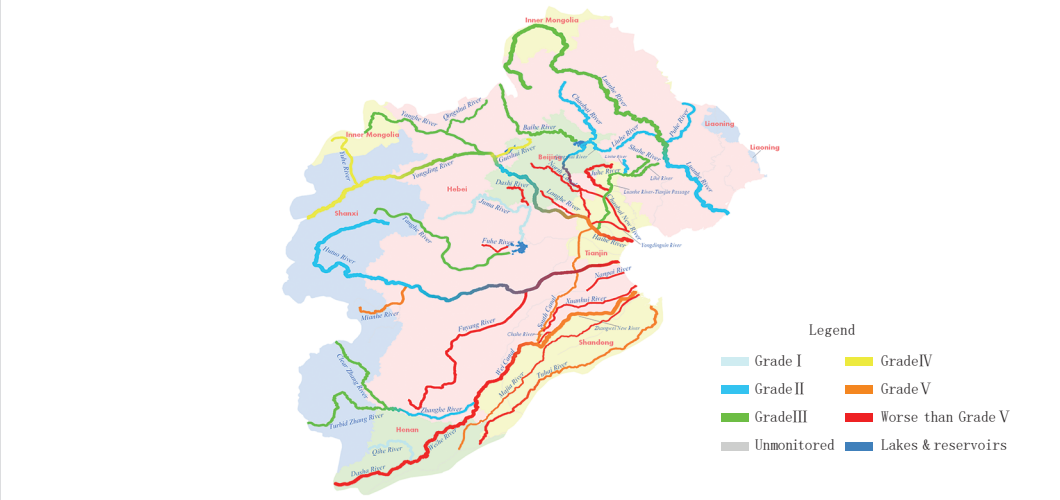
In 11 water sections of the Yishu-Si River System under national monitoring program, 0% met Grade Ⅰ, Ⅴ or inferior to Grade Ⅴ standard, same as that of 2014; 0% met Grade Ⅱ standard, down by 9.1 percentage points compared with that of 2014; 54.5% met grade Ⅲ standard, down by 18.2 percentage points compared with that of 2014; 45.5% met Grade Ⅳ standard, up by 27.3 percentage points compared with that of 2014. The main pollution indicators were COD, BOD_5 and permanganate index.

In 31 water sections of other waters of the Huaihe River basin under national monitoring program, 0% met Grade Ⅰ standard, same as that of 2014; 0% met Grade Ⅱ standard, down by 3.2 percentage points; 71.0% met Grade Ⅲ standard, up by 3.3 percentage points compared with that of 2014; 9.7% met Grade Ⅳ standard, same as that of 2014; 12.9% met Grade Ⅴ standard, up by 6.4 percentage points; 6.5% failed to meet Grade Ⅴ standard, down by 6.4 percentage points compared with that of 2014. The main pollution indicators were COD, BOD_5 and petroleum.

The Haihe River basin In 64 water sections under national monitoring program, 4.7% met Grade Ⅰ standard, same as that of 2014; 15.6% met Grade Ⅱ standard, up by 1.5 percentage points; 21.9% met Grade Ⅲ standard, up by 1.6 percentage points; 6.2% met Grade Ⅳ standard, down by 7.9 percentage points; 12.5% met Grade Ⅴ standard, up by 3.1 percentage points; 39.1% failed to meet Grade Ⅴ standard, up by 1.6 percentage points compared with that of 2014. The major pollution indicators were COD, ammonia nitrogen and TP.

In the 2 water sections of the mainstream of Haihe River under national monitoring program, one met Grade Ⅴ standard and another failed to meet Grade Ⅴ standard. The main pollution indicators were COD, permanganate index and TP.

In the 50 water sections of major tributaries of the

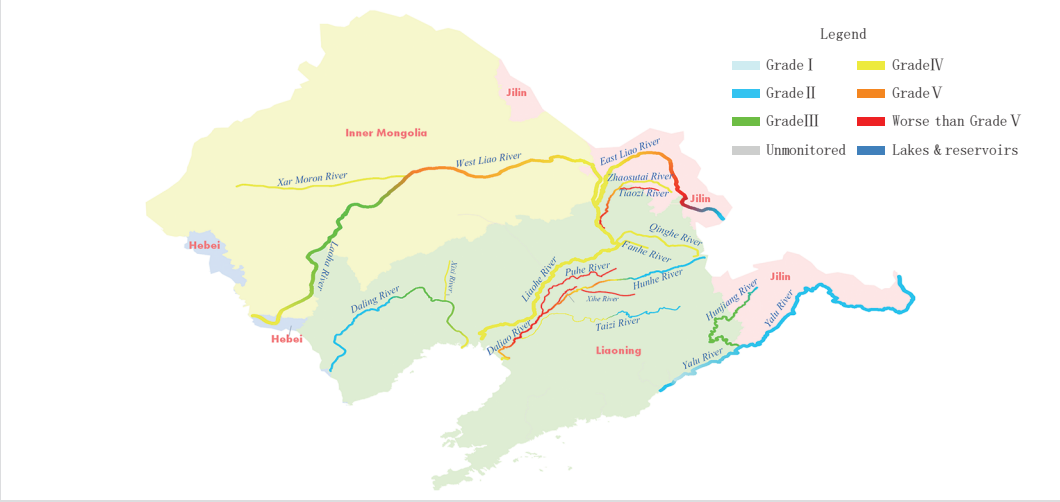


Water quality map of the Haihe River basin in 2015

Haihe River under national monitoring program, 6.0% met Grade Ⅰ standard, same as that of 2014; 14.0% met Grade Ⅱ standard, up by 2.0 percentage points; 22.0% met Grade Ⅲ standard, up by 2.0 percentage points; 8.0% met Grade Ⅳ standard, down by 4.0 percentage points compared with that of 2014; 6.0% met Grade Ⅴ standard and 44.0% failed to meet Grade Ⅴ standard, both same as that of 2014. The main pollution indicators were COD, ammonia nitrogen and permanganate index.

In the 6 water sections of the Luanhe River waters under national monitoring program, 0% met Grade Ⅰ, Ⅳ, Ⅴ or inferior to Grade Ⅴ standard; 50.0% met Grade Ⅱ standard and Grade Ⅲ standard respectively, both same as that of 2014.

In 6 water sections of the waters of Tuhai River-Majia River under national monitoring program, 0% met Grade Ⅰ, Ⅱ or Ⅲ standard, same as that of 2014; 0% met Grade Ⅳ



Water quality map of the Liaohe River basin in 2015

standard, down by 33.3 percentage points compared with that of 2014; 66.7% met Grade Ⅴ standard, up by 16.7 percentage points compared with that of 2014; 33.3% failed to meet Grade Ⅴ standard, up by 16.6 percentage points compared with that of 2014. The main pollution indicators were COD, ammonia nitrogen and BOD_5.

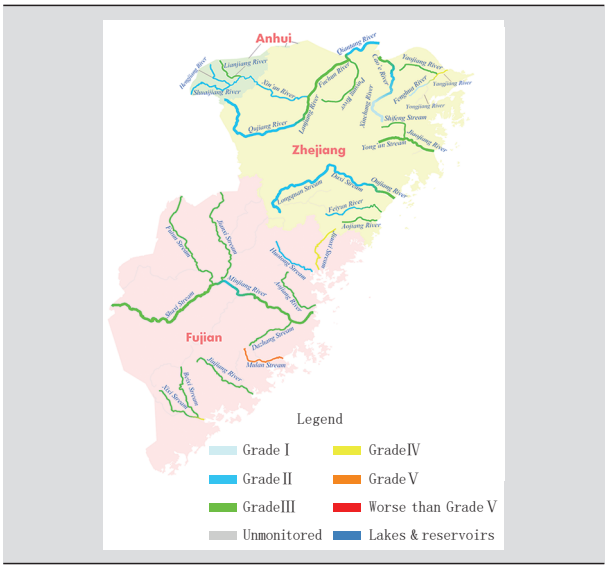
The Liaohe River basin In 55 water sections under national monitoring program, 1.8% met Grade Ⅰ standard, same as that of 2014; 30.9% met Grade Ⅱ standard, down by 3.6 percentage points compared with that of 2014; 7.3% met Grade Ⅲ standard, up by 1.8 percentage points compared with that of 2014; 40.0% met Grade Ⅳ standard, same as that of 2014; 5.5% met Grade Ⅴ standard, down by 5.4 percentage points compared with that of 2014; 14.5% failed to meet Grade Ⅴ standard, up by 7.2 percentage points compared with that of 2014. Major pollution indicators were BOD_5, COD and ammonia nitrogen.

In the 14 water sections under national monitoring program in the mainstream of the Liaohe River, 0% met Grade Ⅰ standard, same as that of 2014; 7.1% met Grade Ⅱ standard, down by 7.2 percentage points; 7.1% met Grade Ⅲ standard, same as that of 2014; 64.3% met Grade Ⅳ standard, up by 7.2 percentage points; 14.3% met Grade Ⅴ standard, down by 7.1 percentage points; 7.1% failed to meet Grade Ⅴ standard, up by 7.1 percentage points compared with that of 2014. The main pollution indicators were BOD_5, COD and permanganate index.

In the 6 water sections under national monitoring program in major tributaries of the Liaohe River, 0% met Grade Ⅰ, Ⅱ or Ⅲ standards, same as that of 2014; 66.7% met Grade Ⅳ standard, up by 16.7 percentage points; 0% met Grade Ⅴ standard, down by 33.3 percentage points; 33.3% failed to meet Grade Ⅴ standard, up by 16.6 percentage points compared with that of 2014. The main pollution indicators were BOD_5, petroleum and COD.

In the 16 water sections under national monitoring program in waters of the Liaohe River, 0% met Grade Ⅰ or Ⅲ standard, 18.8% met Grade Ⅱ standard, same as that of 2014; 43.8% met Grade Ⅳ standard, down by 12.4 percentage points compared with that of 2014; 6.2% met Grade Ⅴ standard, same as that of 2014; 31.2% failed to meet Grade Ⅴ standard, up by 12.4 percentage points compared with that of 2014. The main pollution indicators were ammonia nitrogen, BOD_5 and TP.

In the 5 water sections under national monitoring program in waters of the Daling River, 0% met Grade Ⅰ, Ⅴ or inferior to Grade Ⅴ standard; 20.0% met Grade Ⅱ standard, same as that of 2014; 20.0% met Grade Ⅲ standard, down by 20.0 percentage points compared with that of 2014; 60.0% met Grade Ⅳ standard, up by 20.0 percentage points compared with that of 2014. The main pollution indicators were BOD_5, COD and permanganate index.

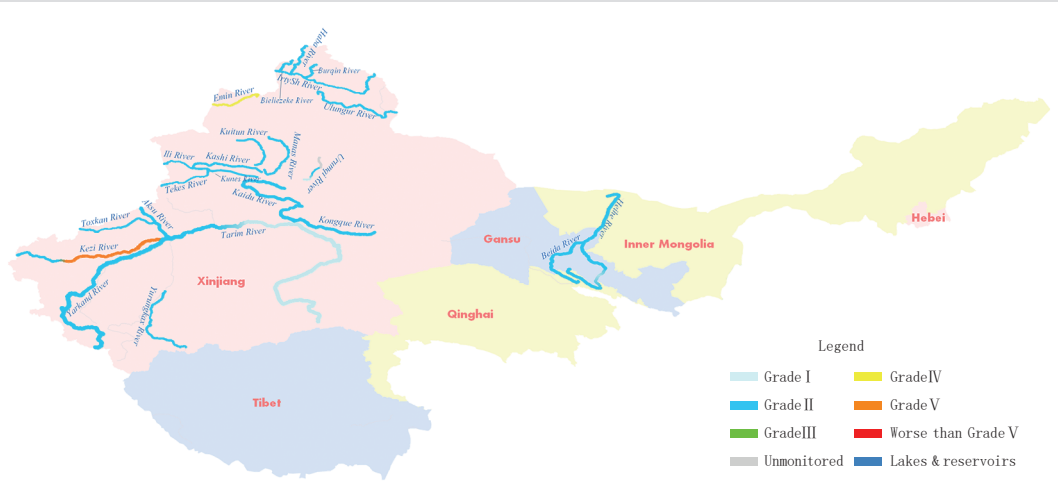


Water quality map of rivers in Zhejiang Province and Fujian Province in 2015

In the 14 water sections under national monitoring program in waters of the Yalu River, 7.1% met Grade Ⅰ standard, same as that of 2014; 85.7% met Grade Ⅱ standard, down by 7.2 percentage points; 7.1% met Grade Ⅲ standard, up by 7.1 percentage points compared with that of 2014; no section met Grade Ⅳ, Ⅴ or inferior to Grade Ⅴ standard, same as that of 2014.

Rivers in Zhejiang Province and Fujian Province In 45 water sections under national monitoring program, 4.4% met Grade Ⅰ standard, down by 2.3 percentage points; 31.1% met Grade Ⅱ standard, up by 4.4 percentage points; 53.3% met Grade Ⅲ standard, up by 2.2 percentage points; 8.9% met Grade Ⅳ standard, down by 2.2 percentage points; 2.2% met Grade Ⅴ standard, down by 2.2 percentage points compared with that of 2014; 0% failed to meet Grade Ⅴ standard, same as that of 2014.

Rivers in northwestern part of China In 51 water sections under national monitoring program, 7.8% met Grade Ⅰ standard, up by 3.9 percentage points compared with that of 2014; 88.2% met Grade Ⅱ standard, up by 3.9 percentage points compared with that of 2014; 0% met Grade Ⅲ standard, down by 9.8 percentage points compared with that of 2014; 2.0% met Grade Ⅳ standard, up by 2.0 percentage points compared with that of 2014; 2.0% met Grade Ⅴ standard, up by 2.0 percentage points compared with that of 2014; 0% failed to meet Grade Ⅴ standard, down by 2.0 percentage points compared with that of 2014.

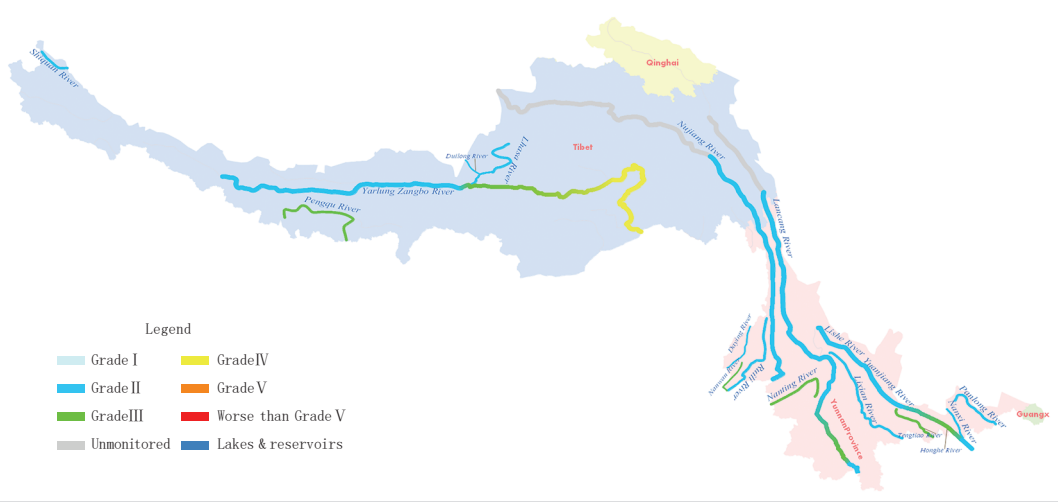


Water quality map of the rivers in northwestern part of China in 2015

Rivers in Southwestern part of China In 29 water sections under national monitoring program, 0% met Grade Ⅰ standard, same as that of 2014; 72.4% met Grade Ⅱ standard, up by 4.7 percentage points compared with that of 2014; 24.1% met Grade Ⅲ standard, down by 1.7 percentage points compared with that of 2014; 3.4% met Grade Ⅳ standard, up by 3.4 percentage points compared with that of 2014; 0% met or inferior to Grade Ⅴ standard, both down by 3.2 percentage points compared with that of 2014.

Lakes (reservoirs)

In 2015, among 62 major lakes (reservoirs) across the country, 5 lakes (reservoirs) met Grade Ⅰ standard, down by 2 compared with that of 2014; 13 met Grade Ⅱ standard, up by 2 compared with that of 2014; 25 met Grade Ⅲ standard, up by 5 compared with that of 2014; 10 met Grade Ⅳ standard, down by 5 compared with that of 2014; 4 met Grade Ⅴ standard, 5 failed to meet Grade Ⅴ standard, both same as



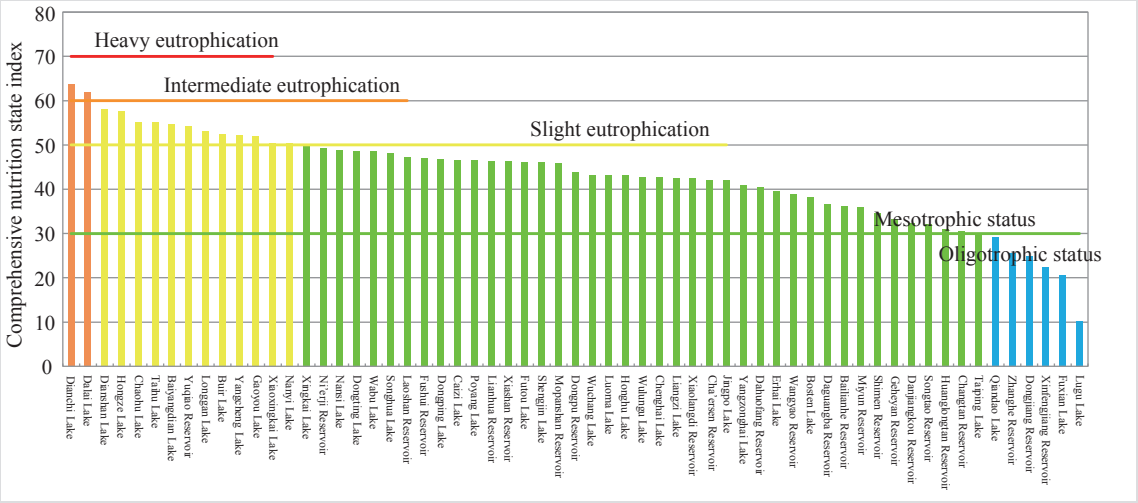
Water quality map of the rivers in southwestern part of China in 2015

that of 2014. The main pollution indicators were TP, COD and permanganate index.

In 2015, in the 61 lakes (reservoirs) under the monitoring of nutritional status, 6 were under oligotrophic status, down by 4 compared with that of 2014; 41 were under mesotrophic status, up by 5 compared with that of 2014; 12 were under slight eutrophication, down by 1 compared with that of 2014; 2 were under intermediate eutrophication, same as that of 2014.

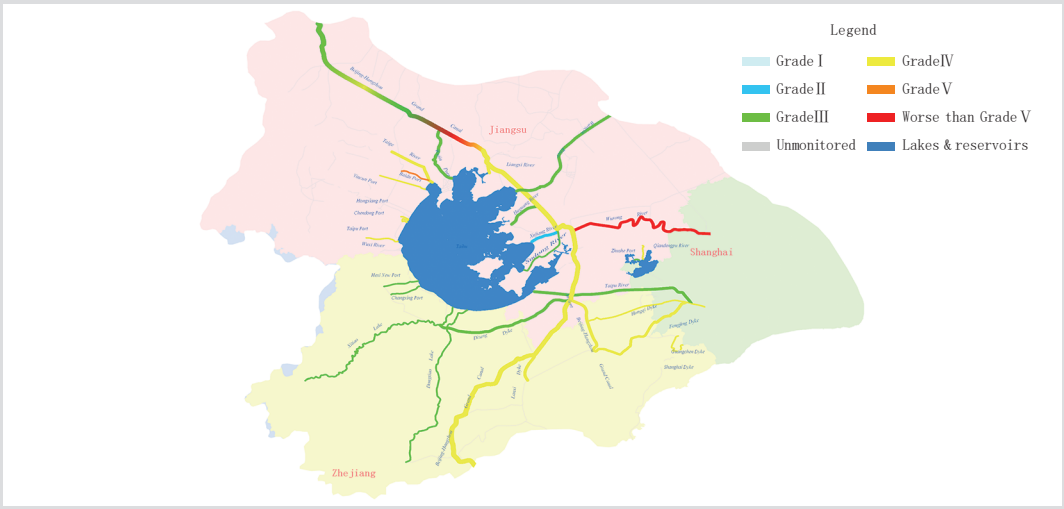
Water quality of major lakes (reservoirs) in 2015

Water quality*	The three lakes	Important lakes	Important reservoirs
Excellent	——	Erhai Lake, Fuxian Lake, Lugu Lake and Pangong Tso	Laoshan Reservoir, Dahuofang Reservoir, Miyun Reservoir, Shimen Reservoir, Geheyan Reservoir, Danjiangkou Reservoir, Songtao Reservoir, Huanglongtan Reservoir, Changtan Reservoir, Taiping Lake, Qiandao Lake, Zhanghe Reservoir, Dongjiang Reservoir and Xinfengjiang Reservoir
Good	——	Gaoyou Lake, Yangcheng Lake, Nanyi Lake, Nansi Lake, Wabu Lake, Dongping Lake, Caizi Lake, Futou Lake, Shengjin Lake, Luoma Lake, Wuchang Lake, Honghu Lake, Liangzi Lake and Jingpo Lake	Songhua Lake, Fushui Reservoir, Lianhua Reservoir, Xiashan Reservoir, Mopanshan Reservoir, Dongpu Reservoir, Xiaolangdi Reservoir, Cha'ersen Reservoir, Wangyao Reservoir, Daguangba Reservoir and Bailianhe Reservoir
Slight	Taihu Lake	The Hongze Lake, Longgan Lake, Xiaoxingkai Lake, Xingkai Lake, Poyang Lake, Yangzonghai Lake and Bosten Lake	Yuqiao Reservoir, Ni'erji Reservoir
Intermediate pollution	Chaohu Lake	Dianshan Lake, Buir Lake, Dongting Lake	——
Heavy pollution	Dianchi Lake	Dalai Lake, Baiyangdian Lake, Wulungu Lake and Chenghai Lake (due to relatively high natural background value)	——



Trophic Level Index of major lakes (reservoirs) in 2015

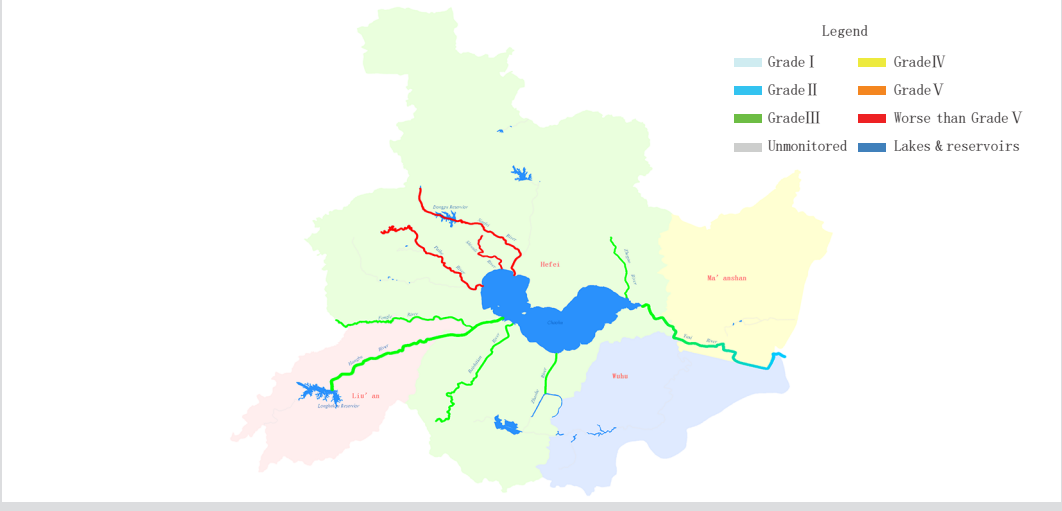
*Water quality: Excellent refers to Grade Ⅰ or Ⅱ quality; good refers to Grade Ⅲ quality. Slight pollution refers to Grade Ⅳ quality. Intermediate pollution refers to Grade Ⅴ quality. Heavy pollution refers to water quality inferior to Grade Ⅴ.



The water quality map of major rivers surrounding the Taihu Lake in 2015

The Taihu Lake On average, the water quality of the Taihu Lake met Grade Ⅳ water quality standard in 2015. Among the 20 water sections under national monitoring program, 20.0% met Grade Ⅲ standard, 75.0% met Grade Ⅳ standard and 5.0% met Grade Ⅴ standard. The main pollution indicators were COD and TP. On the average, the Taihu Lake was under slight eutrophication. Among them, the central and western part of the lake near the bank was under intermediate eutrophication; waters near north bank, central part of the lake and waters near the south bank were under slight eutrophication; and waters near the east bank were under intermediate eutrophication.

In 34 water sections of the rivers adjacent to the Taihu Lake under national monitoring program, 0% met Grade Ⅰ standard, same as that of 2014; 2.9% met Grade Ⅱ standard, down by 3.0 percentage points compared with that of 2014; 38.2% met Grade Ⅲ standard, same as that of 2014; 50,0% met Grade Ⅳ standard, up by 17.6 percentage



Water quality map of major rivers surrounding the Chaohu Lake in 2015

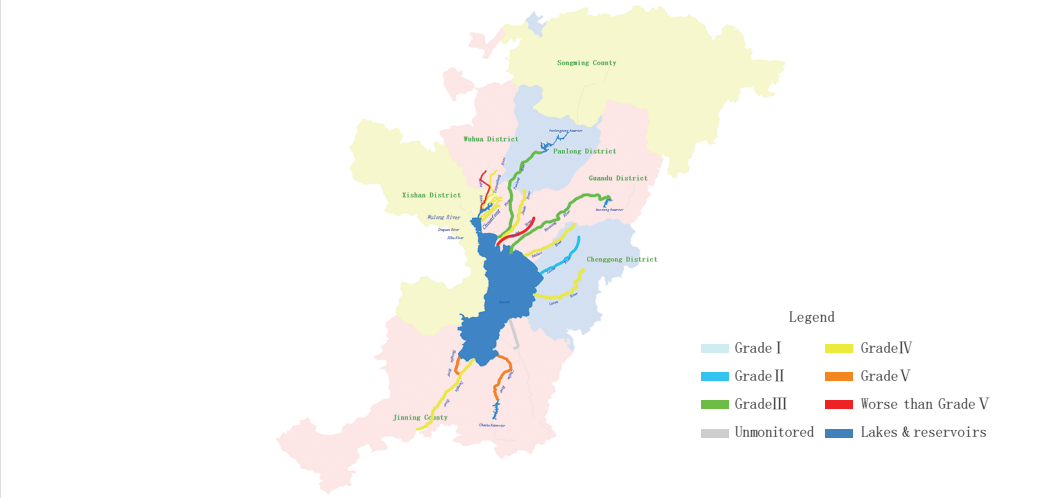
points; 2.9% met Grade Ⅴ standard, down by 11.8 percentage points; 5.9% failed to meet Grade Ⅴ standard, down by 2.9 percentage points compared with that of 2014.

The Chaohu Lake In 2015, on average the Chaohu Lake met Grade Ⅴ standard. In the 8 water sections under national monitoring program, 50.0% met Grade Ⅳ standard and 50.0% met Grade Ⅴ standard. The main pollution indicator was TP. The Chaohu Lake was under slight eutrophication on average. Both the western part and eastern part of the lake were under slight eutrophication.

In 11 water sections of the rivers surrounding the lake under national monitoring program, no section met Grade Ⅰ, Ⅳ or Ⅴ water quality standard; 9.1% met Grade Ⅱ standard, 63.6% met Grade Ⅲ standard and 27.3% failed to meet Grade Ⅴ, same as that of 2014.

The Dianchi Lake In 2015, the water of the Dianchi Lake on average failed to meet Grade Ⅴ standard. In the 10 sites under national monitoring program, 10.0% met Grade Ⅴ standard and the rest 90.0% failed to meet Grade Ⅴ standard. The main pollution indicators were COD, TP and permanganate index. The lake was under intermediate eutrophication on average. Both the Caohai Lake and Waihai Lake were under intermediate eutrophication.

In 16 water sections of the rivers surrounding the Dianchi Lake under national monitoring program, there was no section meeting Grade Ⅰ standard. 6.2% met Grade Ⅱ standard, same as that of 2014; 12.5% met Grade Ⅲ standard, up by 6.3 percentage points compared with that of 2014; 56.2% met Grade Ⅳ standard, up by 37.4 percentage points compared with that of 2014; 12.5% met Grade Ⅴ standard, down by 37.5 percentage points compared with that of 2014; 12.5% failed to meet Grade Ⅴ standard, down by 6.3 percentage points compared with that of 2014.



Water quality map of major rivers surrounding the Dianchi Lake in 2015

Groundwater

In 2015, national land and resource department had monitored water quality of groundwater of 5,118 monitoring wells (sites) (1,000 of them were national monitoring sites) of 202 administrative regions at prefecture level in 31 provinces (autonomous regions or municipalities) with groundwater aquifer system as a unit and shallow groundwater with phreatic water in dominance and middle deep groundwater with confined water in dominance as the targets. The assessment results show 9.1%, 25.0%, 4.6%, 42.5% and 18.8% percent of them has excellent, good, relatively good, poor and very poor water quality respectively. Among them, the percent of excellent, good, relatively good, poor and very poor groundwater quality in 3,322 shallow groundwater monitoring wells (sites) dominated by phreatic water was 5.6%, 23.1%, 5.1%, 43.2% and 23.0% respectively. The percent of excellent, good, relatively good, poor and very poor water quality of 1,796 middle deep groundwater monitoring wells (sites) with confined water in dominance (including

some karst water and spring) was 15.6%, 28.4%, 3.7%, 41.1% and 11.2% respectively. The main non-attainment pollution indicators includes total hardness, total dissolved solids, pH, COD, "three kinds of nitrogen" (nitrite nitrogen, nitrate nitrogen and ammonia nitrogen), chlorine ion, sulfate, fluoride, manganese, arsenic, iron and so on. There were the phenomena of non-attainment of heavy metals such as Pb, hexavalent chromium and cadmium in individual monitoring sites.

In 2015, the water department monitored the groundwater quality of key regions in 17 provinces (autonomous regions and municipalities) of plain areas of North China with river basin as a unit. The monitoring wells were mainly distributed in regions with intensive development of groundwater and relatively heavy pollution. The monitoring target is dominated by shallow groundwater subject to the infiltration of contaminated surface or soil water, the overall quality of the groundwater was relatively poor. The assessment results of the data of 2,103 monitoring sites show the percent of monitoring sites with excellent, good, poor and very poor water quality was 0.6%, 19.8%, 48.4% and 31.2% respectively; there was no site with relatively good water quality. The "three kinds of nitrogen" pollution was relatively heavy and there was certain pollution of heavy metals and toxic organic pollutants in some regions.

Centralized drinking water source areas of APL cities

In 2015, the total water withdrawal of the centralized drinking water source areas of 338 APL cities across the country was 35.543 billion t, serving 332 million people. Among them, 34.506 billion t met water quality standard, taking up 97.1% of the total. Among them, 557 were surface drinking water source areas, 92.6% of which met water quality standard. Major pollution indicators going beyond standard were TP, dissolved oxygen and BOD_5. There were 358 groundwater drinking water source areas, 86.6% of which met water quality standard. Major pollutants going beyond standard were Mn, Fe and ammonia nitrogen.

Key water conservancy projects

Three Gorges Project Area The comprehensive trophic state index of main tributaries of the Yangtze River was 25.9～81.2. The water sections with eutrophication took up 30.5% of the total sections. 35.6% of backwater areas were under eutrophic state, 10.6 percentage points higher than that of non-backwater areas.

South-North Water Diversion Project (East Line) The Sanjiangying Section of the Jiajiang River, an intake of the East Line of South-North Water Diversion Project, met Grade Ⅱ water quality standard. The Liyun Section, Baoying Section, Suqian Section, Lunan Section, Hanzhuang Section and Liangji Section of Beijing-Hangzhou Canal as the Middle Route met Grade Ⅲ standard. All the 6 monitoring sites of the Hongze Lake met Grade Ⅳ standard and was under light eutrophication. Two monitoring sites of Luoma Lake, 5 monitoring sites of Nansi Lake and 2 monitoring sites of Dongping Lake met Grade Ⅲ water quality standard and under mesotrophic status.

South-North Water Diversion Project (Central Line) The Taocha Section, as the water intake of the Central Line of South-North Water Diversion Project, met Grdae Ⅱ standard. All the 5 sites in Danjiangkou Reservoir met Grade Ⅱ standard and was under mesotrophic status. Among the 18 water sections of 9 tributaries flowing into the Danjiangkou Reservoir, 2 sections of the Hanjiang River met Grade Ⅰ water quality standard and the rest 5 sections met Grade Ⅱ standard. 11 sections of the Tianhe River, Jinqian River, Langhe River, Duhe River, Laoguan River, Qihe River, Guanshan River and Danjiang River met Grade Ⅱ standard.

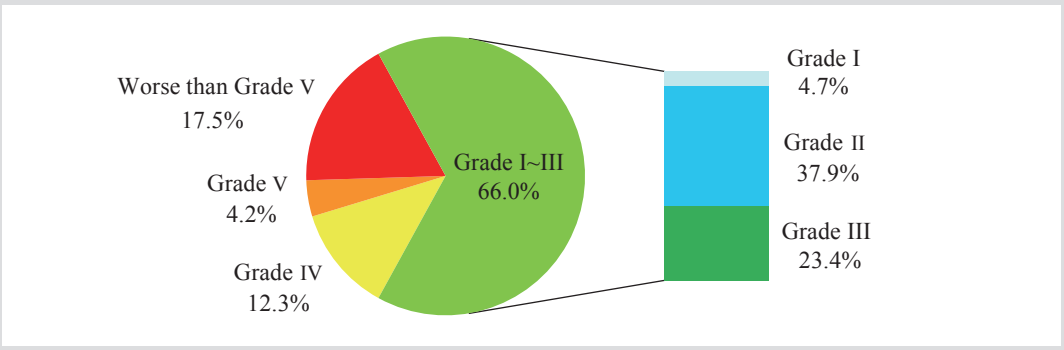
Trans–province boundary waters

In 2015, the monitoring results of 530 important trans-province boundary waters across the country show that 66.0%, 16.5% and 17.5% met Grade Ⅰ～Ⅲ, Grade Ⅳ～Ⅴ or failed to meet Grade Ⅴ standard respectively. Major pollution indicators were ammonia nitrogen, TP and COD. There was no change of the percent of sections meeting Grade Ⅰ～Ⅲ standard but 1.1 percentage points reduction of the sections failing to meet Grade Ⅴ standard compared with that of 2014 (517 comparable trans-province boundary sections).

Inland fishery waters

In 2015, National Fishery Ecological Environment Monitoring Network monitored 18 indicators such as water quality and biology of over 1,000 monitoring sites of 119 important fishery waters of the Heilong River basin, Yellow River basin, Yangtze River basin, Pearl River basin and other key regions with total monitoring area at 5.655 million ha. The findings show that the overall ecological environment of important fishery waters of rivers, lakes, and reservoirs as well as national aquatic germplasm conservation areas remains good except serious no attainment of nitrogen and phosphorus in some waters.

Major pollution indicators of important fishery waters of rivers were TN, TP and permanganate index. TN concentration



Percent of different water quality of waters across provincial boundaries in 2015 Inland fishery waters

of some fishery waters of the Heilong River basin and Yellow River basin had relatively big non-attainment range. TP concentration of some fishery waters of the Yellow River basin and Yangtze River basin had relatively big non-attainment range. The permanganate index of some fishery waters of the Heilong River basin had relatively big non-attainment range. There was some increase of non-attainment range of TN and nonionic ammonia with evident rise of nonionic ammonia content; while the non-attainment range of TP, permanganate index, petroleum, volatile phenol, copper and cadmium had reduction at different degrees compared with that of 2014.

Major pollution indicators of important fishery waters of lakes and reservoirs were TN, TP, permanganate index, petroleum and copper. Among them, TP, TN and permanganate index had relatively big exceeding range. The non-attainment range of major pollution indicators went down at different degree compared with that of 2014 with relatively big reduction of copper concentration.

Major pollution indicators of part regions of national aquatic germplasm conservation areas (inland) were TN, TP and nonionic ammonia.

Measures and Actions

【Action Plan for Prevention and Control of Water Pollution】 The State Council printed out and distributed the Action Plan for Prevention and Control of Water Pollution in April of 2015. Relevant departments have released a series of supporting policy measures one after another. MEP has printed out and distributed the Technical Guide for Preparation of the Program on Prevention and Control of Water Pollution. MEP has held the national meeting of heads of environmental protection departments (bureaus) to guide each region developing the program on prevention and control of water pollution; dividing the targets and tasks and signing the target responsibility letter. It has prepared and set up the national coordination mechanism for joint prevention and control of water pollution as well as the joint prevention and control of water pollution mechanism of key regions such as Beijing-Tianjin-Hebei and their surrounding areas, the Yangtze River delta and Pearl River delta. It has established information reporting mechanism and prepared the Bulletin on Prevention and Control of Water Pollution. Ministry of Finance and Ministry of Environmental Protection have continuously made more financial support and released the Measures on Management of Special Fund for Prevention and Control of Water Pollution to actively promote the cooperation mode of public and private funds. Ministry of Housing and Urban-Rural Development has accelerated the treatment of urban black and odorous waters. Ministry of Housing and Urban-Rural Development in cooperation with MEP has printed out and distributed guidance to develop the information management platform. The Ministry of Agriculture has released the Suggestions on Successful Prevention and Control of Agricultural Non-point Pollution, has promoted the prevention and control of non-point source pollution in agriculture by means of enhancement of monitoring and early warning capacity and the campaign of zero growth of fertilizers and pesticides. NDRC has actively facilitated the implementation of multi-tier water price system and released relevant policy on raising the sewage treatment charge. Ministry of Science and Technology has

organized the extension of advanced applicable technologies that save water, reduce pollution and restore water ecology to strengthen the scientific supporting capacity in ensuring water security. The Ministry of Water Resources has carried out the strictest examination on water resource system and arranged special norm management of water consumption. The Ministry of Industry and Information Technology has organized the development of the Catalogue on Phasing out of the Processes, Technologies and Equipment with High Consumption of Water and urged meeting the annual target on phasing out outdated or excessive production capacity. The Ministry of Transport has comprehensively facilitated the prevention and control of pollution of ships and in ports and printed out and distributed the Program on the Implementation of the Special Project. Each region has seriously prepared the program on prevention and control of water pollution based on local conditions, identified the key tasks and annual target of each river basin, region and industry year on year, laying a sound foundation for successful prevention and control of water pollution.

【Environmental protection of key river basins and lakes with relatively good water quality】 In 2015, MEP examined the performances of government of 25 provinces (autonomous regions or municipalities) of key river basins such as the Songhua River, Huaihe River (including the East Line of South-North Water Diversion Project), Haihe River, Liaohe River, mid and upper reaches of the Yellow River, Chaohu Lake, Dianchi Lake, the Three Gorges Reservoir and its upper reaches, middle and lower reaches of the Yangtze River in terms of implementation of the Plan for Prevention and Control of Water Pollution of Key River Basins (2011-2015) and Plan of the Middle and Lower Reaches of the Yangtze River for Prevention and Control of Water Pollution (2011-2015) in 2014. It has established the three-level management system of water ecological environment functions composed of river basin—water ecology control areas—water environment control units. About 1800 control units have been primarily identified with identification of water quality and ecology targets of each water ecology control unit. MEP has made preparation of the "13th Five-Year Plan for Prevention and Control of water Pollution of Key River Basins" and trial on comprehensive improvement of land and rivers. Up to the end of 2015, the central government had invested a total of 15.8 billion yuan to support the protection of eco environment of 77 lakes in 29 provinces (autonomous regions, municipalities) and primarily developed the long-term mechanism for the protection of eco environment of lakes with relatively good water quality.

【Environmental protection of drinking water sources】 In 2015, MEP improved the management system of drinking water source standards and released 3 industrial standards such as Coding Standard for Centralized Drinking Water Sources, Technical Requirements for Environmental Protection of Standard Development of Centralized Drinking Water Source Areas and Technical Guide for Assessment of Environmental Protection Status of Centralized Drinking Water Source Areas to urge and guide steady and standardized development of drinking water sources in each region. MEP has printed out and distributed the Guidelines on Strengthening the Protection of Rural Drinking Water Sources to further strengthen the work on ensuring rural drinking water safety. A total of 66,074 water samples from urban water supply, water from self-constructed water supply facilities or secondary water supply across the country have been taken. A total of 139,321 water samples from rural drinking water safety projects have been taken. The monitoring of the quality of drinking water has covered all cities at or above prefecture level, county cities as well as 70% towns and townships.

【Management of water resources】 In 2015, China had established the most stringent "Administrative Chief Responsibility System" for water resource management system at province, city and county levels where the main chief of the government would assume the overall responsibility. It has divided the control indicators of the "three red lines" identified by the State Council down to province, city and county levels. The system has achieved 100% coverage of province and city level administrative regions and over 90% coverage of county level administrative regions. The government has comprehensively promoted the development of information platform at central, river-basin and province levels as well as the monitoring systems for water users, water function areas and trans-province-boundary sections. The information sharing, connectivity and business coordination have been primarily achieved with breakthrough in national project on capacity building in monitoring of water resources. The government has enhanced monitoring of water quality of water function areas, basically achieved 100% coverage of monitoring of trans-province boundary water sections and regularly reported monitoring data of trans-province boundary waters of each river basin.

【Progress and achievements of the National Special Key Research Project on Prevention and Control of Water Pollution】 In 2015, with the milestone target of "reducing pollution load and restoring the environment", the National Special Key Research Project on Prevention and Control of Water Pollution of the "12th Five-Year Plan" Period (hereinafter referred to as the Key Project) had launched 231 study projects with investment of 4.362 billion yuan from central budget. In 2015, 24 research projects were identified with total input of 515 million yuan from the central budget.

Up to 2015, the Key Project has made breakthroughs in over 400 major techniques in areas such as whole process pollution control of typical industries such as iron & steel and petrochemicals; urban development with low impacts and control of black & odorous river waters; integrated control of non-point pollution of scaled livestock & poultry farms; water ecology restoration of rivers, lakes and wetlands; four grade zoning of water ecological function areas; management of pollution discharge permits; and monitoring and assessment of water ecology. The Key Project has developed a range of equipment and materials for treatment and recycling of wastewater such as ozone generator, mobile organic compound monitoring instrument, membrane of ultrafiltration membrane modules and magnetic resins as well as materials and equipment for water quality monitoring. The Key Project has developed a group of operational platforms for monitoring and early warning of water environment; carried out more than 300 scientific and technological demonstration projects with application of nearly 1,000 patents; developed over 70 standards, norms or technical guides; created 221 production, teaching, research and development platforms and bases and established 8 industrial technology innovation strategic alliances. It has identified 44 major policy recommendations in 10 subjects such as "Target Management of River-basin Water Quality", "Improvement of Urban Water Environment with Proper Functions", "Ensuring the Security of Water Supply of Urban-rural Areas" and developed the technical system on the control of water pollution and technical system on management of water environment covering 829 key technologies. The demonstration cities of the Key Project have been included in the name list of Group I Trial Sites of Sponge Cities. It has provided comprehensive support to the release and implementation of national key plans such as the Action Plan for Prevention and Control of Water Pollution and building of Sponge Cities.

Monitoring of the surface water environment quality of China in the "13th Five–Year Plan" period

We will further improve national surface water monitoring network covering the mainstream and important tributaries and secondary tributaries of major rivers across the country with consideration of the tertiary and lower tributaries in key regions, important lakes and reservoirs in the "13th Five-Year Plan" period. A total of 2,767 water sections (sites) have been established under national monitoring program (2,424 river water sections and 343 monitoring sites in lakes and reservoirs) based on screening and adjustment of existing 972 national water sections (sites) and existing sections (sites) under province, city and county monitoring programs. Among them, 1,940 sections were for assessment, examination and ranking; 195 were control sections (85 of them were for assessment, examination and ranking at the same time) of rivers flowing into the sea and 717 were for research purpose.

In 2015, the assessment results of 1,940 surface water sections (monitoring sites) (75 of which were not included in the statistics due to no data) across the country show that 66.0% met Grade Ⅰ ~ Ⅲ standard, 24.3% met Grade Ⅳ or Ⅴ standard and 9.7% failed to meet Grade Ⅴ standard.

Marine Environment

General Situation

All Sea Areas

In 2015, the monitoring results of pollution indicators in marine waters under jurisdiction of China such as inorganic nitrogen, active phosphates, petroleum and COD show that marine water pollution of some parts of nearshore marine areas was still under heavy pollution, but the water quality of off-shore marine areas was good.

The marine area failing to meet Grade Ⅳ standard was 67,150 km^2 in the winter, 51,740 km^2 in the spring, 40,020 km^2 in the summer and 63,230 km^2 in the autumn, taking up 2.2%, 1.7%, 1.3% and 2.1% respectively of total marine area under jurisdiction of PRC. Nearshore marine waters subject to pollution mainly were distributed in Liaodong Bay, Bohai Bay, Laizhou Bay, coastal waters along Jiangsu, estuary of the Yangtze River, Hangzhou Bay, coastal areas near Zhejiang, estuary of the Pearl River. There were 1,690 km^2 reduction of marine waters in Bohai Sea and 1,660 km^2 reduction of marine waters in the East China Sea, but 1,710 km^2 increase in the Yellow Sea and 520 km^2 increase of marine waters in the South China which failed to meet Grade Ⅳ standard as compared with that of the summer of 2014.

Nearshore Marine Areas

In 2015, 33.6% of nearshore marine water monitoring sites under national monitoring program met Grade Ⅰ* water quality standard, up by 5.0 percentage points compared with that of 2014; 36.9% met Grade Ⅱ standard, down by 1.3 percentage points compared with that of 2014; 7.6% met Grade Ⅲ standard, up by 0.6 percentage point; 3.7% met Grade Ⅳ standard, down by 4.0 percentage points; 18.3% failed to meet Grade Ⅳ standard, down by 0.3 percentage point compared with that of 2014. Major pollution indicators were inorganic nitrogen and active phosphates.

Bohai Sea 14.3% of nearshore marine water met Grade Ⅰ quality standard, down by 12.2 percentage points compared with that of 2014; 57.1% met Grade Ⅱ standard, up by 10.2 percentage points; 14.3% met Grade Ⅲ standard, up by 8.1 percentage points; 8.2% met Grade Ⅳ standard, down by 6.1 percentage points compared with that of 2014; 6.1% failed to meet Grade Ⅳ standard, same as that of 2014. Major pollutant was inorganic nitrogen.

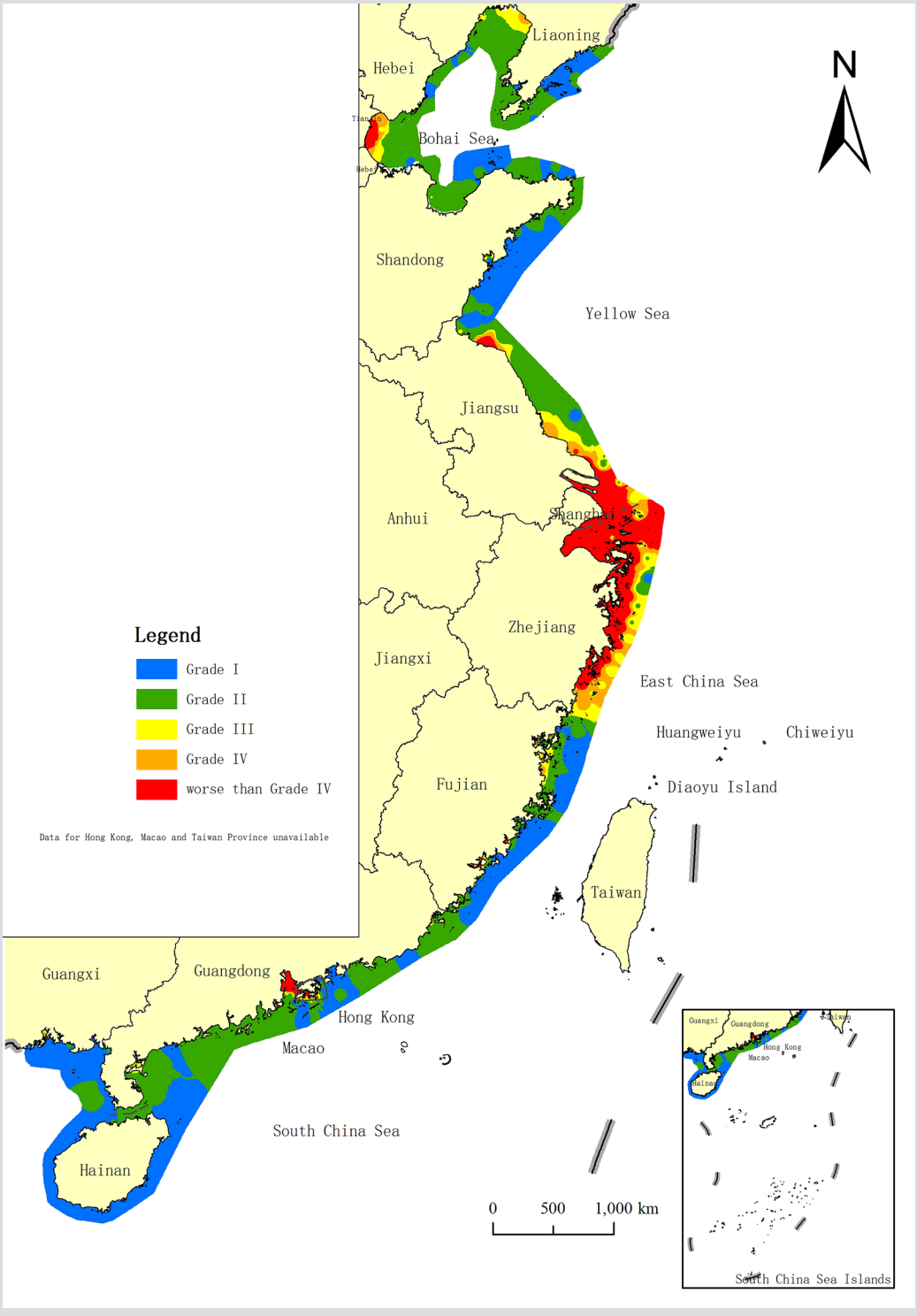
Yellow Sea 37.0% of nearshore marine water met Grade Ⅰ standard, down by 5.6 percentage points; 51.9% met Grade Ⅱ standard, up by 11.2 percentage points; 5.6% met Grade Ⅲ standard, down by 3.7 percentage points; 1.9% met Grade Ⅳ standard, down by 3.7 percentage points; 3.7% failed to meet Grade Ⅳ standard, up by 1.8 percentage points compared with that of 2014. Major pollutant was inorganic nitrogen.

East China Sea 20.0% of nearshore marine water met Grade Ⅰ standard, up by 17.9 percentage points; 16.8% met Grade Ⅱ standard, down by 10.6 percentage points; 11.6% met Grade Ⅲ standard, up by 2.2 percentage points; 5.3% met Grade Ⅳ standard, down by 8.4 percentage points; 46.3% failed to meet Grade Ⅳ standard, down by 1.1 percentage points compared with that of 2014. Major pollution indicators were inorganic nitrogen and active phosphate.

South China Sea 53.4% of nearshore marine water met Grade Ⅰ standard, up by 6.8 percentage points; 37.9% met Grade Ⅱ standard, down by 4.8 percentage points; 1.9% met Grade Ⅲ standard, down by 2.0 percentage points; 1.0% met Grade Ⅳ standard, up by 1.0 percentage point; 5.8% failed to meet Grade Ⅳ standard, down by 1.0 percentage point compared with that of 2014.

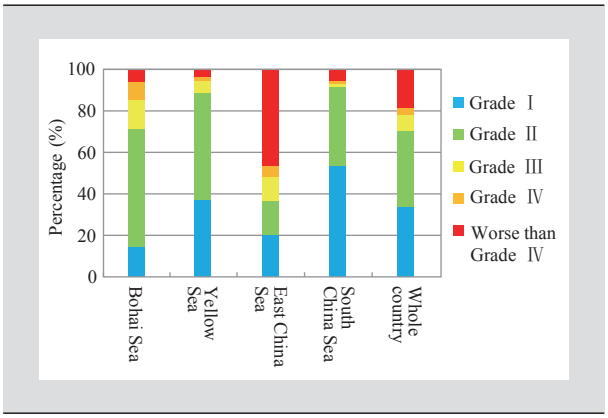
Important gulfs Among 9 important bays, Beibu Gulf had excellent water quality. The estuary of the Yellow River and Jiaozhou Bay had general water quality; while the marine water quality of Liaodong Gulf, Bohai Gulf and estuary of the Minjiang River was poor. The estuary of the Yangtze River, Hangzhou Bay and estuary of the Pearl River had extremely poor water quality. The water quality of Beibu Gulf turned better; the water quality of estuary of the Yellow River became worse and water quality of other bays basically remained the

*Marine water percent: The percent of amount of certain types of marine water monitoring sites against the total amount is marine water percent.

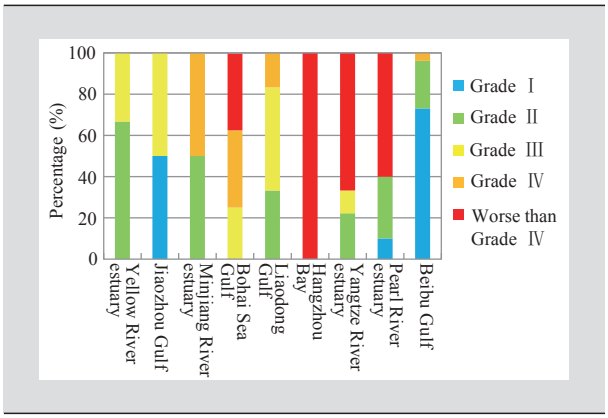


Water quality of nearshore marine waters of China in 2015

same compared with that of 2014.



Nearshore marine water quality of the four major seas of China in 2015



Water quality of important gulfs in 2015

Sea-going rivers In 2015, in 195 monitoring sections of the rivers flowing into seas, 41.5% met Grade Ⅰ ~ Ⅲ standard, down by 0.9 percentage point; 36.9% met Grade Ⅳ or Ⅴ standard, down by 2.5 percentage points compared with that of 2014; 21.5% failed to meet Grade Ⅴ standard, up by 3.3 percentage points compared with that of 2014. The main pollution indicators were COD, BOD_5 and TP.

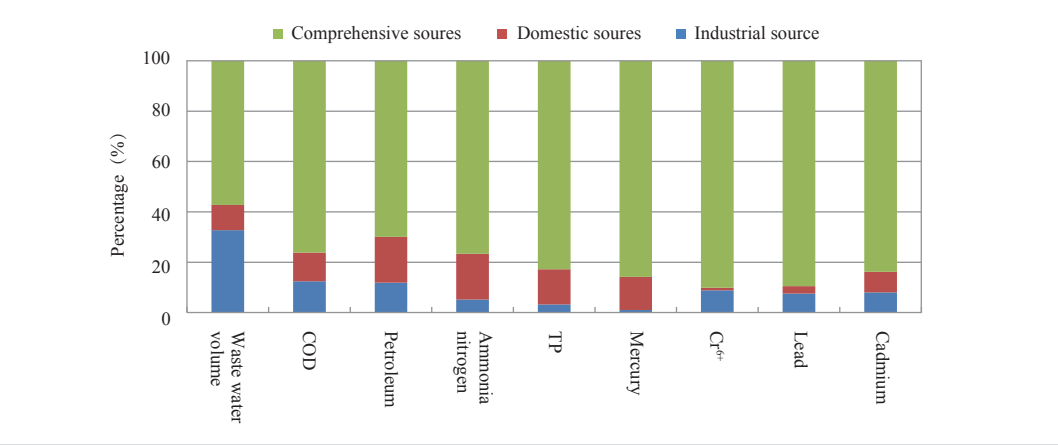
Monitoring sections of seagoing rivers with different water quality in 2015

Water quality / Sea areas	Amount of water section					
	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	＞Ⅴ
Bohai Sea	0	0	5	10	12	19
Yellow Sea	0	3	15	18	7	10
East China Sea	0	2	10	6	5	1
South China Sea	0	17	29	10	4	12

Main pollutants discharged directly into four major Chinese seas in 2015

Item / Sea areas	Wastewater (100 mil. t)	COD (10,000 t)	Petroleum (t)	Ammonia nitrogen (10,000 t)	TP (t)
Bohai Sea	2.19	2.1	19.3	0.4	350.9
Yellow Sea	10.47	4.1	82.8	0.3	525.1
East China Sea	39.61	11.4	505.6	0.5	1,387.5
South China Sea	10.18	3.4	216.5	0.3	885.7

Land-based pollutants In 2015, 401 water pollution sources directly discharging into seas with daily discharge >100 m^3 were monitored. The total discharge was about 6.245 billion t. The total discharge was 210,000 t for COD, 824.2 t for petroleum, 15,000 t for ammonia nitrogen, and 3,149.2 t for TP. Some such sources discharged heavy metals such as mercury, hexavalent chromium, lead and cadmium.



The discharge of major pollutants from different types of pollution sources in 2015

Marine Fishery Waters

In 2015, the National Fishery Ecological Environment Monitoring Network monitored 18 indicators such as water quality, sediment and biology of nearly 1,000 monitoring sites of 48 important marine fishery waters in the Bohai Sea, Yellow Sea, East China Sea, South China Sea and other major regions with total monitoring area of 4.867 million ha. The monitoring findings show that the overall eco environment of natural fishery waters, important marine culture areas and national aquatic germplasm conservation areas was good except serious non-attainment of nitrogen and phosphorus nutrients in some waters.

The major pollution indicators of important natural marine fishery waters were inorganic nitrogen and active phosphate. The nonattainment range of inorganic nitrogen of part of fishery waters of the East China Sea was relatively big, including waters such as Hangzhou Bay and estuary of the Yangtze River. The nonattainment range of active phosphate was relatively big in Zhoushan Fishing Ground and Hangzhou Bay. The nonattainment range of petroleum and COD had some decrease, but that of active phosphate had some increase compared with that of 2014.

The major pollution indicators of key marine culture areas were inorganic nitrogen, active phosphate and petroleum. The nonattainment range of inorganic nitrogen and active phosphate of part of marine culture areas in East China Sea and South China Sea was relatively big; so was petroleum in some marine culture areas of the South China Sea. There was some rise of non-attainment range of active phosphate but evident reduction of non-attainment range of COD compared with that of 2014.

The major pollution indicator of sediments of important marine fishery waters was cadmium. Cadmium concentration of some individual fishery waters of the Yellow Sea exceeded the limit by relatively big margin.

The major pollution indicators of some parts of national aquatic germplasm resource protection areas (seas) were inorganic nitrogen, active phosphate and COD.

Marine sediment

In 2015, the overall quality of sediments of marine waters under the jurisdiction of China was good. The copper and sulfide contents of coastal sediments of 93% monitoring sites met Grade Ⅰ marine sediment quality standard and the percent of all other pollution indicators of monitoring sites meeting Grade Ⅰ marine sediment quality standard was over 96%. The

arsenic concentration of individual monitoring sites of marine waters beyond nearshore waters exceeded Grade Ⅰ quality standard. The polychlorinated biphenyl content of the samples from individual monitoring sites in Bohai Gulf exceeded Grade Ⅰ marine sediment quality standard. In the four seas, the coastal sediments of 100% of the monitoring sites in the Yellow Sea have good quality, followed by the East China Sea at 99%, Bohai Sea at 98% and South China Sea at 86%. The quality of marine sediments in Liaodong Gulf and Shantou Bay was ordinary. The petroleum concentration of the samples from individual monitoring sites in Liaodong Gulf exceeded Grade Ⅲ marine sediment quality standard. The main pollution indicators of Shantou Bay were petroleum and copper. The quality of marine sediments of other gulfs or bays was good.

Measures and Actions

【Development of marine ecological progress】 In 2015, the Implementation Program of State Oceanic Administration on the Development of Marine Ecological Progress (2015-2020) was printed out and distributed in order to implement the Suggestions of CCCPC and the State Council on Accelerating the Development of Ecological progress and Action Plan for Prevention and Control of Water Pollution and greatly facilitate the development of marine ecological progress. They require enhancing guidance and constraint by plans; total amount control of pollutants and red line control; deepening scientific allocation and management of resources; strict supervision on marine environment and prevention and control of pollution; strengthening protection and restoration of marine ecology; intensifying marine supervision and law enforcement and implementing 31 major tasks in 10 areas such as performance examination and accountability, improvement and innovation of marine science and technology and supporting capacity, promotion of cultivation of the talents in the field of developing marine ecological progress, enhancing publicity and education and public participation. To facilitate the completion of major tasks, the government has identified 20 key projects such as "Blue Gulf", "Mangroves in South China and Willow in North China" and "ecological sea islands" to actively promote development of marine ecological progress and control and restoration of marine environment and accelerated the development of "Beautiful Seas". The government has actively developed national demonstration sites on the development of marine ecological progress. Up to the end of 2015, provinces (autonomous region) like Liaoning, Shandong, Zhejiang, Fujian, Guangdong, Guangxi and Hainan have established 24 national demonstration sites in the development of marine ecological progress.

【Prevention and control of pollution of coastal marine waters】 In 2015, the government identified seagoing rivers and the list of 195 monitoring sections of such rivers as well as water quality targets. It conducted the preparation of the Program on Prevention and Control of Pollution of Coastal Marine Waters, facilitated the prevention and control of pollution of coastal marine waters in 8 areas such as comprehensive control of seagoing rivers, standardized set-up of sea-disposed pollutant discharge outlets, implementation of the control of total discharge of TN of coastal cities, studied the system on total discharge control of major marine areas, controlled the pollution of key river estuaries and bays, raised access conditions of sea-related projects, promoted ecological and healthy marine culture and controlled chemical pollution by environmental hormones.

【Enhancement of environmental supervision and management of sea-disposed pollutant discharge outlets】 In 2015, the government implemented relevant requirements of Environmental Protection Law, Marine Environment Protection Law and Action Plan for Prevention and Control of Water Pollution, enhanced environmental supervision and management of sea-disposed pollutant discharge outlets and prepared the Guidelines for Strengthening Environmental Supervision and Management of Sea-disposed Pollutant Discharge Outlets. It makes clear overall requirements for strengthening environmental supervision and management of sea-disposed pollutant discharge outlets, the implementation of main responsibility and supervision responsibility, strict management of sea-disposed pollutant discharge outlets, enhancement of routine environmental supervision on sea-disposed pollutant discharge outlets, improvement of information disclosure and social supervision, strict law enforcement and increase punishment and so on.

International cooperation on environmental protection

In 2015, the leaders of China, Japan and Korea for the first time jointly released the special document on environmental cooperation—Joint Statement of China, Japan and Korea on Environmental Cooperation. China has successfully held CCICED 2015 Annual General Meeting and International Environment and Development Workshop on China's "13th Five-Year Plan". This is the first time that the Chinese Government solicits the comments and suggestions of international experts on its "Five-Year Development Plan for National Economic and Social Development". China has strengthened its environmental cooperation with Japan, Korea, the United States, Russia, EU and Kazakhstan. China has held important activities such as the 17th Tripartite Environmental Ministers Meeting, the Fifth Meeting of China-US Joint Committee on Environmental Cooperation and the Tenth Meeting of China-Russia Subcommittee on Environmental Protection. The government has materialized the achievements of the visit of Xi Jinping in Cuba and donated two sets of air quality monitoring equipment to Cuba. China has built the mechanism and platforms for exchange and cooperation between China and countries such as the United States, Germany, France, Italy, Canada, Australia, Japan and Korea. China has actively promoted the development of green "The Belt and Road Initiative". The government has prepared the "going global strategy" on nuclear safety and finished the preparation of Country Report and Summary on the Environment of 24 major counties and regions involved in the "The Belt and Road Initiative". China has actively taken part in the negotiation and implementation of international conventions such as the mercury convention, Stockholm Convention on Persistent Organic Pollutants, Convention on Biological Diversity, 3 international conventions on chemicals, Nuclear Safety Convention, Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management, China-US Investment Agreement, China-EU Investment Agreement, China-Japan-Korea Free Trade Agreement and WTO Agreement on Environmental Goods. Taking full advantage of multilateral and bilateral cooperation mechanisms and platforms such as COPs of international environmental conventions, MEP has successfully told the stories of China. China had showcased its achievements in implementation of international environmental conventions during the COPs of Basel Convention, Rotterdam Convention and Stockholm Convention and Montreal Protocol by means of exhibition on achievements in implementation of international conventions.

Acoustic Environment

General Situation

Regional Acoustic Environment

In 2015, the average regional noise of 321 APL cities with daytime noise monitoring was 54.1 dB(A). Among them, 4.0% of the above cities met Grade I daytime environmental noise standard, up by 2.2 percentage points; 68.5% met Grade Ⅱ daytime environmental noise standard, down by 3.1 percentage points; 26.2% met Grade Ⅲ noise standard, down by 0.1 percentage point; 0.9% met Grade Ⅳ daytime noise standard, up by 0.6 percentage point; and 0.3% met Grade Ⅴ daytime noise standard, up by 0.3 percentage point compared with that of 2014. *

Traffic noise

In 2015, the average traffic noise of 324 APL cities with daytime noise monitoring was 67.0 dB(A). Among them, 65.4% of the cities met Grade Ⅰ traffic noise standard, down by 3.5 percentage points compared with that of 2014; 29.6% of the cities met Grade Ⅱ traffic noise standard, up by 1.5 percentage points compared with that of 2014; 2.8% met Grade Ⅲ traffic noise standard, up by 1.0 percentage point compared with that of 2014; 2.2% met Grade Ⅳ traffic noise standard, up by 1.3 percentage points compared with that of 2014; 0% met Grade Ⅴ traffic noise standard, down by 0.3 percentage point compared with that of 2014. **

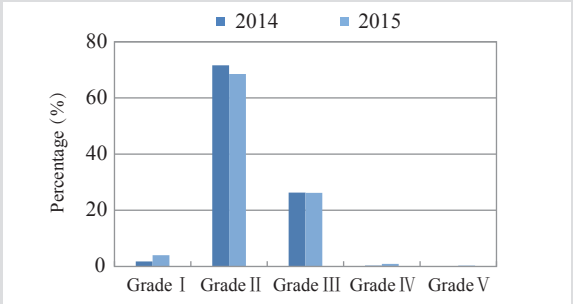
Acoustic environment of urban functional zones

In 2015, on the average 92.4% of daytime monitoring sites of 308 cities at or above prefecture level with monitoring of acoustic environment of urban functional zones met noise standard, up by 1.1 percentage points compared with that of 2014. On the average, 74.3% of night noise monitoring sites met noise standard, up by 2.5 percentage points compared with that of 2014. The attainment rate of daytime environmental noise of various kinds of urban functional areas*** was higher than that of night environmental noise.

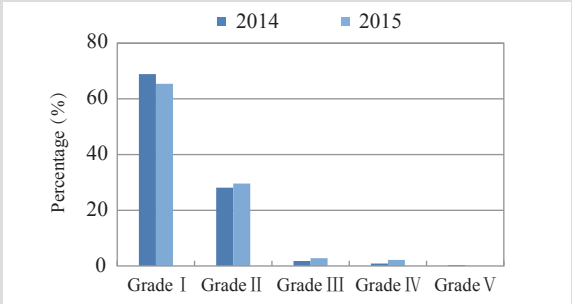
*The average equivalent sould level of regional acoustic environment ≤ 50.0 dB(A) is at Grade Ⅰ; 50.1 ～ 55.0 dB(A) at Grade Ⅱ; 55.1 ～ 60.0 dB(A) at Grade Ⅲ; 60.1 ～ 65.0 dB(A) at Grade Ⅳ and > 65.0 at Grade Ⅴ.

**The average equivalent sould level of traffic noise ≤ 68.0 dB(A) is at Grade Ⅰ, 68.1～70.0 dB(A) at Grade Ⅱ, 70.1～72.0 dB(A) at Grade Ⅲ, 72.1～74.0 dB(A) at Grade Ⅳ and > 74.0 dB(A) at Grade Ⅴ.

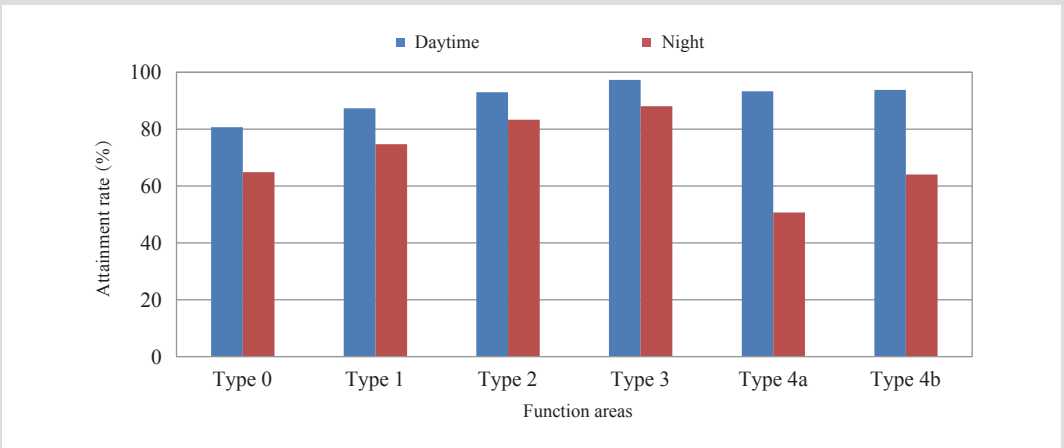
***Type 0 function area refers to the areas especially requiring quiet environment such as rehabilitation and recuperation area. Type 1 function area refers to the areas with residential community, health care, culture and education, scientific research and design, administration and offices as the main functions, which need quiet environment. Type 2 function area refers to the areas with commerce, finance and market as main functions or areas mixed with residential communities, commerce and industries, which need to maintain quiet residential environment. Type 3 function area refers to the areas dominated by industrial production, warehouse and logistics and in need of prevention of the strong impacts of industrial noise on surrounding environment. Type 4a function area refers to the areas along highways. Type 4b function area refers to the areas along railways.



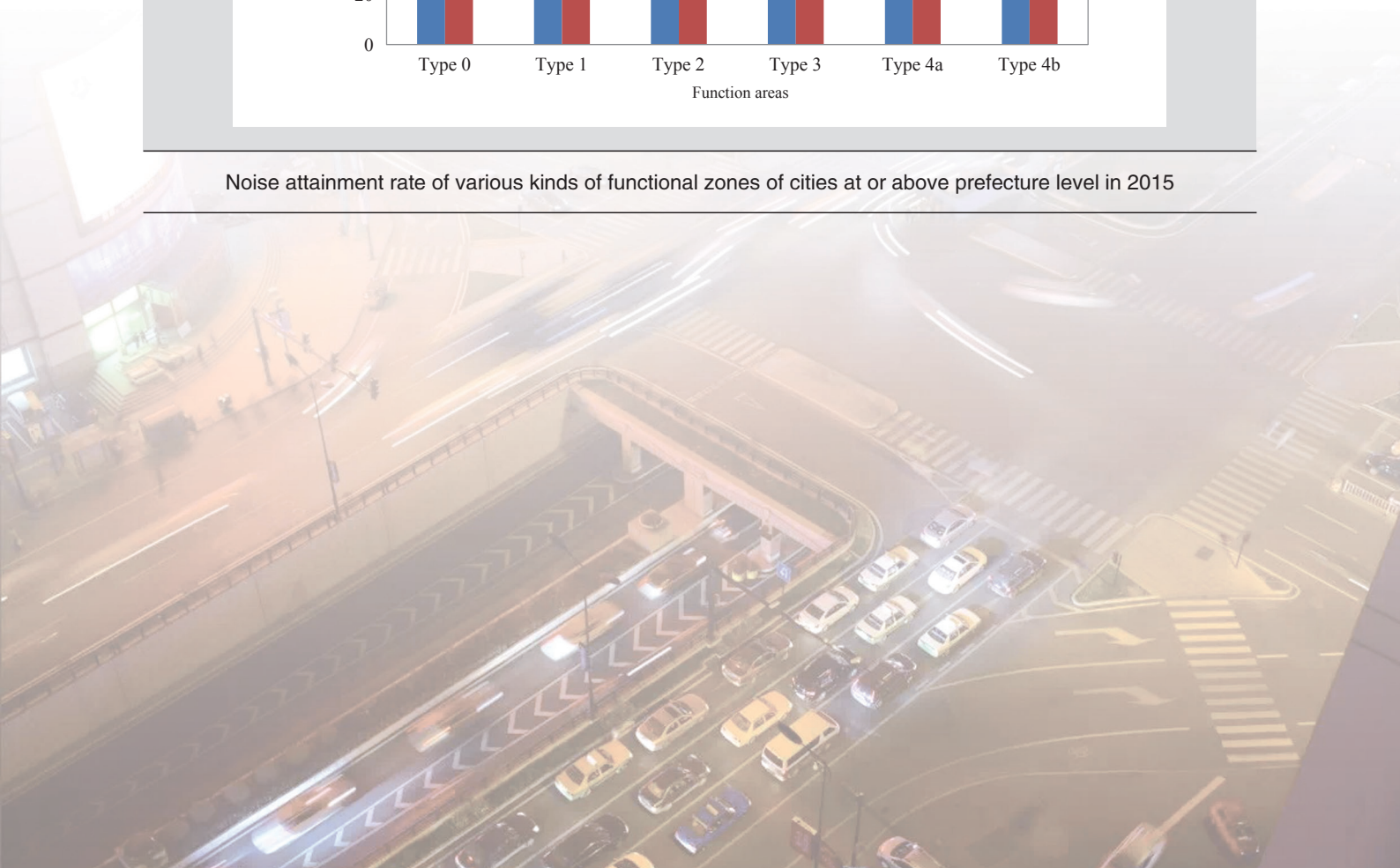
Annual comparison of urban daytime regional noise of cities at or above prefecture level between 2014 and 2015



Annual comparison of urban daytime traffic noise of cities at or above prefecture level between 2014 and 2015



Noise attainment rate of various kinds of functional zones of cities at or above prefecture level in 2015

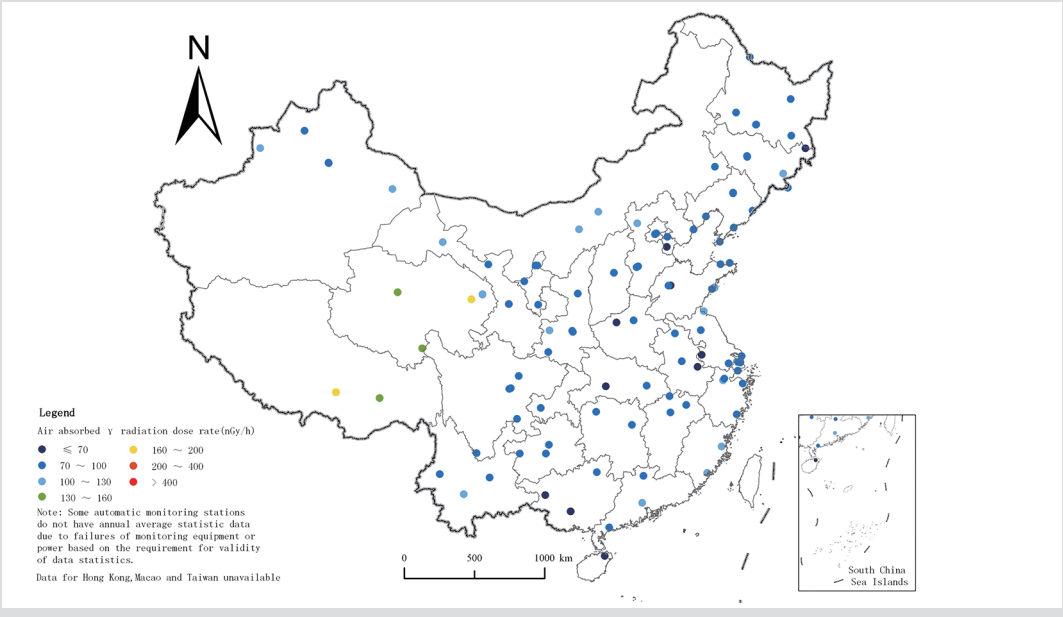


Radiation Environment

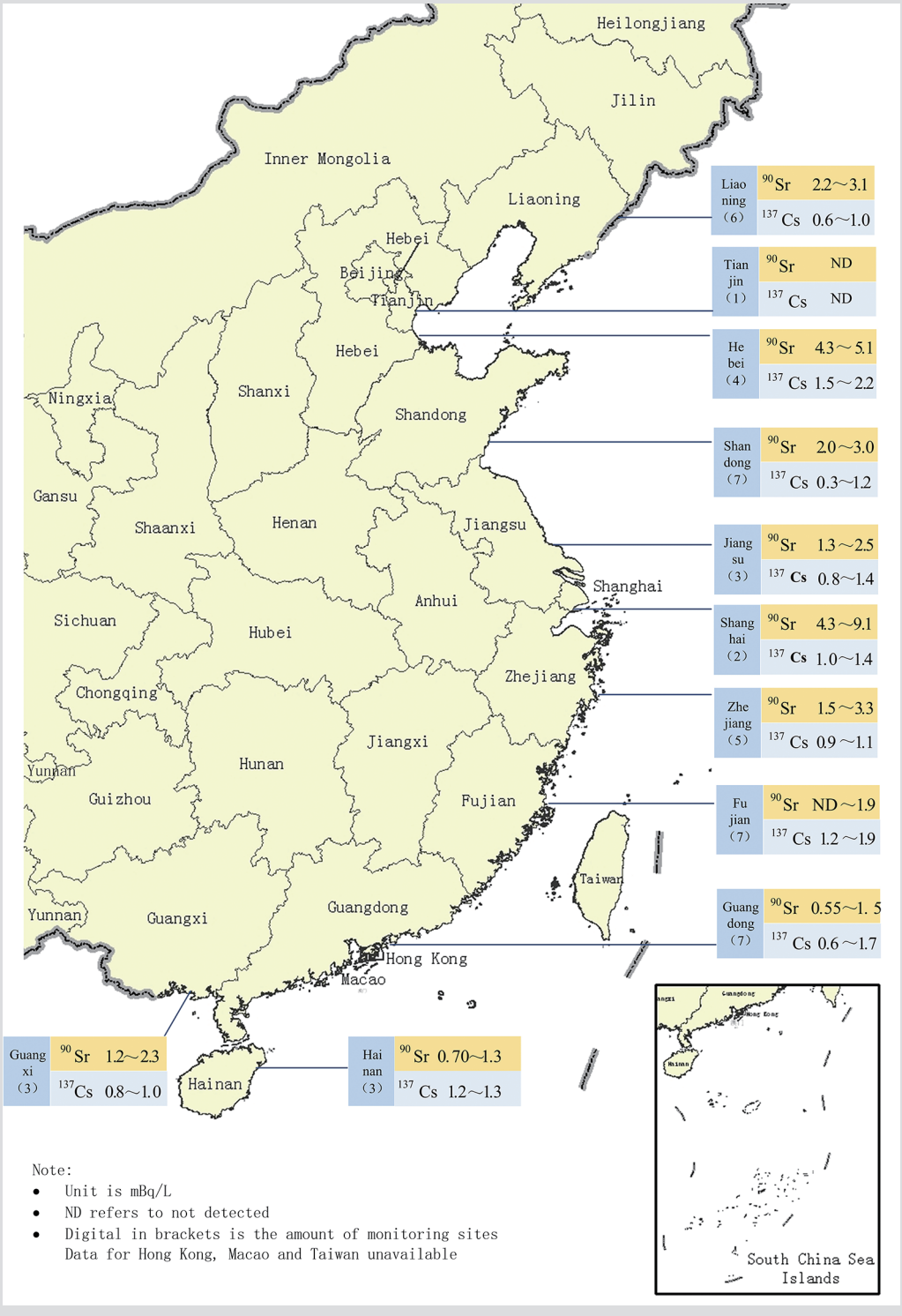
General Situation

Ionizing Radiation

The environmental ionizing radiation level in China remained within the fluctuation range of natural background level in 2015. The real-time continuous air absorbed γ radiation dose rate of radiation environment automatic monitoring stations were within the fluctuation range of natural baseline value. There was no abnormal situation of all the activity concentrations of radionuclide activity concentrations in aerosols and fallout and tritium activity concentration in air. The activity concentration of natural radionuclides of the Yangtze River, Yellow River, Pearl River, Songhua River, Huaihe River, Haihe River, Liaohe River, rivers in Zhejiang and Fujian, rivers in Southwest China, rivers in Northwest China and major lakes (reservoirs) was at the same level with the results of 1983-1990 national investigation on natural radioactivity. There was no abnormal situation of the activity concentration of artificial radionuclides. The activity concentration of gross α and gross β of urban centralized drinking water sources and groundwater met the guidance limit of radioactivity specified in the Standard for Drinking Water Quality (GB 5749-2006). The activity concentration of natural radionuclides of nearshore marine water and organisms was at the baseline level. There was no abnormal situation of the activity concentration of artificial radionuclides. Among them, the activity concentration of artificial radionuclides Sr-90 and Cs-137 of marine water was lower than the limit specified in the Marine Water Quality Standard (GB 3097-1997). The activity concentration of natural radionuclide of soil was at the same level with the results of 1983-1990 national investigation on natural radioactivity and there was no abnormal situation of the activity concentration of artificial



The real-time consecutive air absorbed γ radiation dose rate monitored at radiation environment automatic monitoring stations in China in 2015



Activity concentration of Sr-90 and Cs-137 of nearshore water in China in 2015

radionuclides.

Environment ionizing radiation in the vicinity of in-service nuclear power plants In 2015, the real-time consecutive air absorbed γ radiation dose rate of automatic radiation environment monitoring stations near in-service nuclear power bases was within the fluctuation range of local natural baseline value. There was no abnormal activity concentration of radionuclides in air, water, soil and organisms in the vicinity of nuclear power bases except tritium. There was some rise of activity concentration of tritium in some environmental media in vicinity of Qinshan Nuclear Power Base, Dayawan Nuclear Power Base, Yangjiang Nuclear Power Base and Tianwan Nuclear Power Base compared with the background value before the operation of those nuclear power plants. The assessment findings show their radiation dose to the public was far lower than the national limit.

Environment ionizing radiation in the vicinity of civil research reactors In 2015, there was no abnormal situation of air absorbed γ radiation dose rate and activity concentration of radionuclides in aerosol, sediments, water and soil in vicinity of research facilities such as Institute of Nuclear and New Energy Technology of Tsinghua University and miniature neutron source reactor in Shenzhen University. Trace content of artificial radionuclides such as Iodine-131 was detected in some environmental media in the vicinity of China Institute of Atomic Energy Science and Nuclear Power Institute of China. The assessment findings show that its radiation dose to the public was far less than relevant national limit.

Environment ionizing radiation in the vicinity of nuclear fuel cycle facilities and waste disposal facilities In 2015, the γ radiation air absorbed dose rate of vicinity environment of CNNC Lanzhou Uranium Enrichment Co., Ltd., CNNC Shaanxi Uranium Enrichment Co., Ltd., CNNC North China Nuclear Fuel Element Co., Ltd., CNNC Jianzhong Nuclear Fuel Element Co., Ltd., CNNC 404 Co., Ltd.; Northwest Disposal Site for Low and Medium Level Radioactive Waste and Beilong Disposal Site of Guangdong for Low and Medium Level Radioactive Waste was within the fluctuation of natural baseline value. There was no abnormal activity concentration of radionuclides in environmental media in relation to the activities of the above enterprises.

Environment ionizing radiation in the vicinity of uranium mines and metallurgical plants In 2015, the overall radiation environment quality in the vicinity of uranium mines and smelting facilities was stable. The air absorbed γ radiation dose rate in ambient environment, radon activity concentration in air, gross α activity concentration of aerosol, total uranium and Ra-226 concentrations in surface water were similar to the historical average. Both the total uranium and Ra-226 concentrations in the drinking water of surrounding environment were lower than relevant limits specified in the Regulations for Radiation and Environmental Protection in Uranium Mining and Milling (GB 23727-2009).

Electromagnetic radiation In 2015, the environment electromagnetic radiation level of 31 cities (including 4 municipalities directly under the central government and 27 provincial capital cities) was far lower than the public exposure limit 12 V/m (frequency at 30～3000 MHz) specified in the Controlling Limits for Electromagnetic Environment (GB 8702-2014). The environmental electromagnetic radiation levels of large electromagnetic radiation emitting facilities and antenna of mobile communication base stations as well as the power frequency electric field strength and magnetic induction intensity of environmental sensitive sites under monitoring such as power transmission lines and transformers were lower than the public exposure limit specified in the Controlling Limits for Electromagnetic Environment (GB 8702-2014).

Measures and Actions

【Radiation environment protection】 In 2015, the government strengthened institutional design for monitoring of radiation environment and studied and developed the Measures on Management of the Qualification of Radioactivity Monitoring Institutions. The government has optimized and improved National Radiation Environment Monitoring Network with the increase of amount of national radiation environment quality monitoring sites from 890 to 987. It has released the real-time monitoring data of radiation environment automatic monitoring sites on air absorbed γ radiation dose rate. The government has comprehensively promoted the investigation and assessment of current radiation environment status of nuclear bases and nuclear facilities and finished investigation and assessment of No.381 Mine and No.765 Mine in Yunnan Province. The government has conducted comprehensive national check on radiation safety in areas with application of nuclear technologies such as urban radioactive waste repositories, organizations applying Grade Ⅲ or above radioactive sources and Grade Ⅱ or above ray devices (excluding hospitals and radioactive medicine manufacturing enterprises) and Grade A non-sealed radioactive sites. In addition, it has adjusted and simplified the types of EIA of nuclear technology application projects, electromagnetic projects, uranium mine geological exploration and decommissioning projects included in the Catalogue of Classified Management of EIA of Construction Projects. The

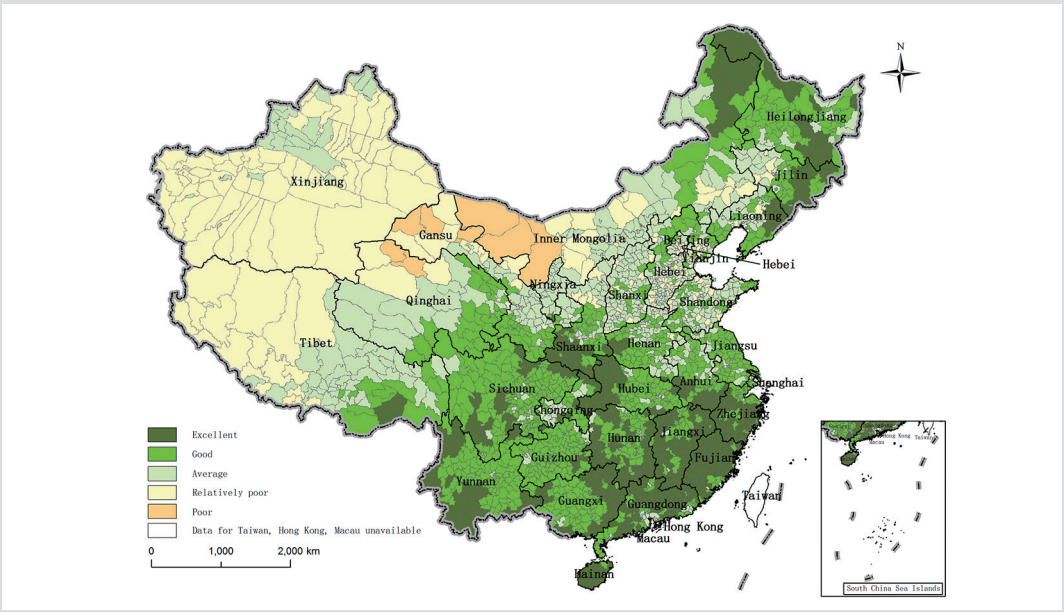
government has printed out and distributed the Circular on Exemption of Radiation Safety Management for End Users of Cabinet X-Ray Luggage Inspection Equipment in Public Areas, Circular on Relevant Matters for Management of the Radiation Safety of Radioactive Medicines, Guide for Public Communications in Nuclear Technology Application Projects (Trial), Guide for Public Communications in Power Transmission and Distribution Projects (Trial) and Requirements for Safety and Protection System of Urban Radioactive Waste Repositories and organized their implementation.

Natural and Ecological Environment

General Situation

Ecological environment quality

In 2014*, in 2,591 county cities, 564, 1,034, 708, 262 and 23 had excellent, good, ordinary, relatively poor and poor ecological environment quality respectively. The total area of counties with "excellent" or "good" ecological environment quality took up 45.1% of total land area. They are mainly distributed in the region south to Qingliang Mountain and the Huaihe River, Daxing'anling, Xiaoxing'anling areas and Changbai Mountain region in Northeast China. The total area of counties with "ordinary" ecological environment quality took up 24.3%; they mainly are distributed in regions such as North China Plain, central and western parts of Northeast China Plain, central part of Inner Mongolia, Qinghai-Tibetan Plateau. The total area of counties with "relatively poor" or "poor" ecological environment quality took up 30.6% of the total, they mainly are distributed in western part of Inner Mongolia, central and western part of Gansu, western part of



Map of countywide eco environment quality of China in 2014

*The assessment of eco environment quality lags behind the assessment of other environmental elements by one year due to time required for data collection.

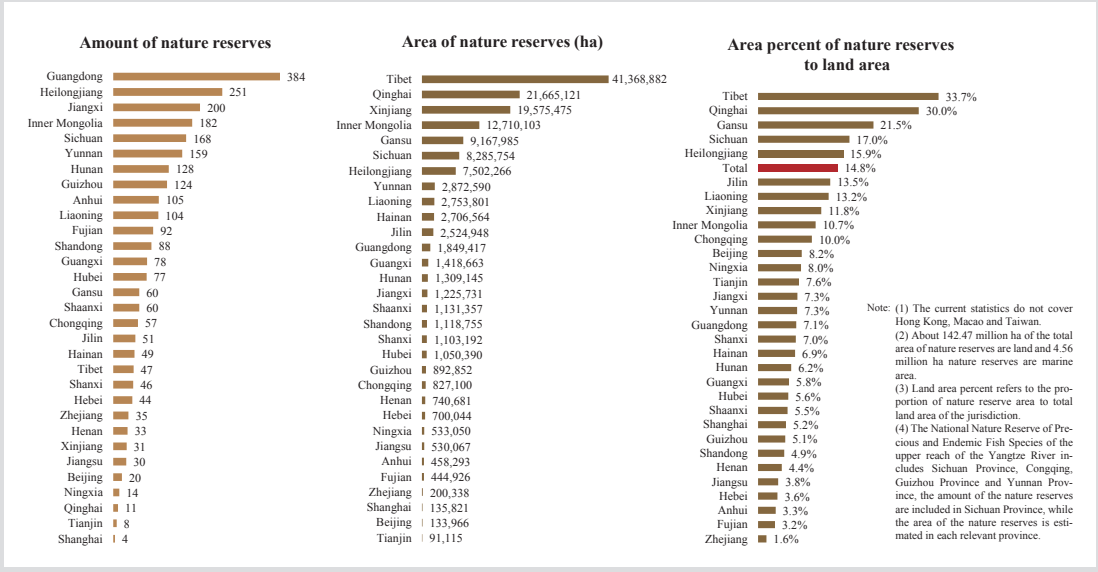
Tibet and most part of Xinjiang.*

Biodiversity

In ecosystem diversity, China has all kinds of terrestrial ecosystem on Earth. There are 212 types of forest, 36 types of bamboo forest, 113 types of shrubs, 77 types of meadows, and 52 types of deserts. The freshwater ecosystems in China are complex. Natural wetlands include 4 types: marsh, nearshore and coastal wetland, riparian wetland and lake wetland. For nearshore marine waters, there are 4 big marine ecosystems such as the Yellow Sea, East China Sea, South China Sea and Kuroshio Basin, distributed with typical marine ecosystems such as coastal wetland, mangrove, coral reef, estuary, gulf, lagoon, island, upwelling and seagrass bed; natural landscape such as submarine ancient forest, marine-abrasion and marine accumulation geomorphy as well as natural relics. There are also artificial ecosystems such as cropland ecosystem, artificial forest ecosystem, artificial wetland ecosystem, artificial grassland ecosystem and urban ecosystem.

In species biodiversity, China has 34,792 species of higher plants. Among them, 2,572 are bryophyte species, 2,273 are fern species, 244 are gymnosperm species, and 29,703 are angiosperm species. In addition, China has almost all woody species of temperate zone. There are about 7,516 species of vertebrates in China. Among them, 562 are mammal species, 1,269 are bird species, 403 are reptile species, and 346 are amphibian species and 4,936 fish species. A total of 420 precious endangered wildlife species are included in the National Catalogue of Wildlife under Key State Protection. Several hundred animal species are unique in China, including giant panda, crested ibis, golden monkey, South China tiger and Yangtze alligator. More than 10,000 fungi species have been identified in China.

In genetic resource diversity, China has 1,339 cultivated varieties of 528 species of cultivated crops with over 1,000 species of economic trees. A total of 7,000 varieties of ornamental plants and 576 varieties of domestic animals are



Natural reserves in each province (autonomous region or municipality) in 2015

*Eco environment quality: It is assessed according to the Technical Criterion for Ecosystem Status Evaluation (HJ 192-2015). Ecological Index ⩾75 indicates excellent environment with high vegetation coverage, rich biodiversity and stable ecosystems. Ecological Index at 55～75 indicates good environment with relatively high vegetation coverage, relatively rich biodiversity and suitable for human life. Ecological Index 35～55 refers to ordinary eco environment with intermediate vegetation coverage, general biodiversity and relatively suitable to human life but with some factors constraining human life. Ecological Index at 20～35 refers to relatively poor eco environment with poor vegetation coverage, severe drought, less species and factors evidently constrain human life. Ecological Index < 20 refers to poor eco environment with bad conditions and constraints on human life.

Various types of nature reserves of China in 2015

Type	Amount	Area (ha)
Forest	1,423	31,723,950
Grassland and meadow	41	1,654,155
Desert	31	40,054,288
Inland wetland	378	30,823,440
Sea coast	68	715,830
Wild animals	525	38,725,859
Wild plants	156	1,787,537
Geological relics	85	993,776
Ancient biological relics	33	549,557
Total	2,740	147,028,392

originated from China.

Nature reserves

Up to the end of 2015, 2,740 nature reserves of various kinds at different administrative levels had been established across the country with total area of about 147.03 million ha; 142.47 million ha of which were land, taking up 14.8% of total land area. There were 428 national nature reserves with total area of 96.49 million ha, taking up about 10.0% of total land area.

National Marine Nature Reserves Up to the end of 2015, 68 national marine nature reserves/special protection areas had been developed with over 200 species of protection targets. Monitoring on protection targets in 35 nature reserves the protection targets such as mangroves, coastal dunes, shell ridges as well as marine and coastal ecosystems has been conducted and they basically kept stable. The declining trend of protection targets such as coral and amphioxux has been under control.

Important coastal wetlands All estuary ecosystems under monitoring were under sub-health status. The marine water of 80% estuary ecosystems was under eutrophication with relatively high concentration of phytoplankton. The tidal flat wetland ecosystems of northern part of Jiangsu Province were under sub-health status. The nutrient salt content of sea water of some areas failed to meet Grade Ⅳ marine water standard with abnormal high density of large benthos and big biomass. The mangroves ecosystems in both Beihai and Beilun estuaries of Guangxi Autonomous Region are healthy. In general, mangrove ecosystems have remained healthy status with basic stable area and community types of mangroves as well as relatively high benthos density and biomass over the past 5 years.

Scenic spots

Up to the end of 2015, the area of scenic spots across the country took up about 2.0% of total land area. Among them, 225 scenic spots were at national level with total area of about 104,000 km^2. There were 737 scenic spots at province level with total area of about 92,000 km^2.

Desertification and sandification

The monitoring results of the Fifth National Monitoring of Desertification Land and Sandy Land show that up to 2014, there were 2.6116 million km^2 desertification land and 1.7212 million km^2 sandy land across the country. There were net decrease of 12,120 km^2 desertification land with annual average reduction of 2,424 km^2; 9,902 km^2 net reduction of sandification area with annual reduction of 1,980 km^2 over the past 5 years compared with that of 2009. There has been reduction of both desertification area and sandification area across the country in three consecutive monitoring periods since 2004, showing good trend of overall control, continuous shrinkage, increase of functions and evident effects. However, the situation of prevention and control of desertification is still grave.

Measures and Actions

【Accelerate the identification of ecological red lines】 The government has printed out and distributed the Technical Guide for Identification of Ecological Red Lines. All the 31 provinces (autonomous regions or municipalities) have begun identification of ecological red lines. 28 provinces (autonomous regions or municipalities) have included the identification of ecological red lines in their government tasks of 2015. Most provinces have developed the primary identification program. The government has printed out and distributed the Circular on Trial Work on Management and Control of Ecological Red Lines. The provinces (or municipalities) like Jiangsu, Hubei, Chongqing and Hainan have started the trial work on management and control of ecological red lines and promoted the development of ecological red line management system.

【Establish national park system】 China has finished the Report on the Study of National Park System. With analysis of current status existing problems and causes of developing and management of nature reserves across the country and introduction of international experience and lessons, the government has presented the program on development of nature reserves system and China national parks composed of "nature reserves + national park + other various protection areas". China has set up the coordination mechanism for national parks. It has printed out and distributed the Trial Program on Establishment of National Park System to guide the trial work on national parks in 9 provinces (or municipalities) such as Beijing, Jilin, Heilongjiang, Zhejiang, Fujian, Hubei, Hunan, Yunnan and Qinghai. The government has printed out and distributed the Trial Program on Sanjiangyuan National Park System.

【Comprehensive management of nature reserves】 The government has printed out and distributed documents such as the Circular on Further Strengthen Supervision on Development Activities Involving Nature Reserves to enhance supervision on various kinds of nature reserves at different levels. It has conducted remote sensing monitoring and field investigation on human activities in over 400 national nature reserves; key inspection on law enforcement in 12 nature reserves and given warning to the local government, competent departments of nature reserves at province level and nature reserve administration of 7 national nature reserves with quite serious problems. It has adjusted the range of 6 national nature reserves. The amount of national aquatic germplasm resource protection areas was 492. The aquatic germplasm resource protection area network covering each seas and major rivers and lakes has taken shape.

【Biodiversity conservation】 China has finished the verification of the boundary of priority areas for biodiversity conservation in China. China has released the National Range of Priority Areas for Biodiversity Conservation. It has completed the Catalogue of Life China (2015). The comprehensive assessment of the threats to 4,357 species of invertebrates across the country except marine fish has been conducted. China has finished the preparation of Red List of Biodiversity in China — Vertebrates. The assessment findings show 4 EX species, 3 EW species, 10 RE species, 185 were CR species, 288 EN species, 459 VV species, 598 NT species and 1,869 LC species of vertebrates in China.

【Comprehensive management of scenic and historic interest spots】 Up to the end of 2015, the government had finished satellite remote sensing monitoring on the protection of resources of 225 national scenic and historic spots, covering all national scenic and historic spots. The government has inspected comprehensive law enforcement of 78 national scenic and historic spots; made public 8 scenic and historic spots failing to meet the standard and ordered them to make corrections within a given period of time. The government has developed the Measures on Management Assessment and Supervision on National Scenic and Historic Spots. It has included 11 national scenic and historic spots with serious damage of resources or poor management and protection in the endangered list and given yellow card warning. The government has urged relevant sites to make corrections and investigated legal responsibility of relevant executive staff of the sites with poor correction.

【Wetland protection】 The central government invested 237 billion yuan from central budget for 48 projects on wetland protection. The central government has arranged 1.6 billion yuan fund to give subsidy to 336 wetland projects. Among them, 20 sites have conducted the trial on wetland ecological compensation. A total of 115,000 mu farmland had been returned to wetland. The government has conducted assessment on the health, functions and value of 19 important wetland ecosystems in Beijing-Tianjin-Hebei region. It has approved 137 National Wetland Parks (trial), checked and accepted 46 National Wetland Parks (on trial) with new increase of 345,000 ha wetland protection area. The government has established national wetland park database. In addition, the government has designated Shengjin Lake National Nature Reserves in Anhui Province, South Penghu Islands Marine Ecology National Nature Reserves in Guangdong Province and Zhangye Heihe River Wetland National Nature Reserves in Gansu Province as Wetland of International Importance.

【Monitoring, prevention and control of invasion of alien species】 China has conducted baseline investigation on the invasive alien species under key management program or with serious regional threats in order to further improve the database of invasion of alien species in China. The spread of alien aquatic plant species has been monitored in 20 major lakes (reservoirs) in 11 provinces across the country with application of satellite remote sensing technology. Thirty provinces (autonomous regions or municipalities) across the country have carried out the activities on elimination of invasive alien species, concentrating on eradication of alternanthera philoxeroides and sandbur in Jintang County in Sichuan, Horqin Right Wing Front Banner in Inner Mongolia and Taizhou City in Jiangsu Province. In addition, the government has developed trial site on cultivation of natural enemy for alternanthera philoxeroides, demonstration site on prevention and control of sandbur and blocking belt for controlling the spread of Eupatorium adenophorum, which has laid a sound foundation for comprehensive promotion the prevention and control of the invasion of alien species.

Integrated Reform Plan for Promoting Ecological Progress

The Political Bureau of CCCPC has held a meeting to review and adopt the Integrated Reform Plan for Promoting Ecological Progress (hereinafter referred to as the Integrated Reform Plan) on September 11, 2015. It is crucial to fully implement the the gist of the 18th National Congress of CPC and the second, third and fourth plenary sessions of the 18th National Congress; follow the guidance of Deng Xiaoping Theory, the important thought of the "Three Represents" and the Outlook on Scientific Development; thoroughly put into practice the gist of a series of important speeches of CPC General Secretary Xi Jinping; act in accordance with decisions and plans of CCCPC and the State Council; adhere to the fundamental state policy of conserving resources and protecting the environment; and give high priority to resource conservation, environmental protection and restoration of nature. Based on the fundamental context of China being in the primary stage of socialism and in the particular characteristics new to China in the present phase, and in order to build a Beautiful China, handle correctly the relationship between man and nature, and solve serious ecological and environmental problems, it is essential to safeguard China's ecological security, improve environment quality, ensure high resource efficiency, and step up efforts to promote the development of a new modernization pattern with harmonious development of man and nature.

The Integrated Reform Plan points out that the idea of reform of ecological progress system is "6 establishment": establishment of the idea of respecting, complying with and protecting nature; establishment of the idea of the harmony between development and environmental protection; establishment of the idea of lucid waters and lush mountains being invaluable assets; establishment of the idea of value and assets of nature; establishment of the idea of spatial balance and establishment of the idea that mountains, waters, forests, farmland and lakes are a life community. The government adheres to correct direction of reform, public ownership of natural resource assets, unity of urban-rural environmental governance system, adoption of both incentive and constraint measures, combination of initiatives with international cooperation as well as the combination of encouragement of first trial with promotion of overall coordination. It requires that by 2020, China will develop systematic and complete ecological progress system composed of property right system of natural resources, national land development and protection system, spatial planning system, system for total amount management and conservation of resources, compensated use of resources and eco-compensation system, environmental governance system, environmental governance and ecological protection market system as well as examination and accountability system for the performances of development of ecological progress, which have clear property right and diversified participation and pay equal attention to incentive and constraint measures. China will promote modernization of national governance system and capacity in the field of ecological progress and follow the new era of socialist ecological progress.

"1+6" reform of ecological civilization system

Based on the overall arrangements of CCCPC and the State Council, the government has presented "1+6" "combined measures" for reform of ecological progress system to carry out the Integrated Reform Plan for Promoting Ecological Progress. "1" refers to the Integrated Reform Plan for Promoting Ecological Progress. "6" refers to the Environmental Protection Supervision Program (Trial), Program on Development of Eco Environment Monitoring Network, Trial Program on Off-Office Auditing of Leaders on Natural Resource Assets, Measures on Eco Environment Damage Accountability of CPC and Government Leaders (Trial), Program on the Trial of Development of Balance Sheet of Natural Resources and Program on Trial Reform of Eco Environment Damage Compensation System.

Environmental Protection Supervision Program (Trial) requires establishment of supervision mechanism for environmental protection. As an important tool for facilitating the development of ecological progress, it urges local CPC commissions and governments to seriously fulfill their main body responsibility for environmental protection and practically carry out "same responsibility of both local CPC and government leaders" and "dual responsibility of one post" for environmental protection.

The Program on Development of Eco Environment Monitoring Network requires wide distribution of monitoring sites, improvement of eco environment monitoring network; establishment of national network; achievement of integration and sharing of eco environment monitoring information; automatic early warning to guide environmental management and prevention of risks; accountability according to law, establishment of the joint mechanism for monitoring and supervision on eco environment; and improvement of eco environment monitoring and guarantee system. It is expected that by 2020, national eco environment monitoring network will basically achieve full coverage monitoring of environment quality, major pollution sources and ecological status; connection and sharing of various kinds of monitoring data system at all levels; significant improvement of the capacity in sound monitoring, prediction, early warning and application of information technology; and joint action of environmental monitoring and supervision. As a result, China will develop a national land-sea eco environment monitoring network with application of land and space monitoring equipment and sharing of monitoring data. As a result, eco environment monitoring capacity will meet the requirement for developing ecological progress.

Trial Program on Off-Office Auditing of Leaders on Natural Resource Assets states that the trial of off-office leader auditing on natural resource assets aims at exploring and gradually improve the off-office leader auditing system on natural resource assets. The focus areas of the auditing include land resource, water resource, forest resource as well as improvement of mine-site eco environment and prevention and control of air pollution. Auditing and assessment on fulfillment of responsibility for conservation of natural resources and protection of eco environment of the leaders under examination should be conducted during their terms of office to identify the responsibilities that relevant leaders should assume.

Measures on Eco Environment Damage Accountability of CPC and Government Leaders (Trial) stipulates that local CPC commissions and government at all levels shall assume the overall responsibility for the protection of eco environment and resources of their region and main leadership members of local CPC commission and government shall take the main responsibility. Other relevant leadership members should shoulder relevant responsibility within the scope of their duty. Relevant departments of CCCPC and national government, local CPC commissions and relevant departments of governments at all levels as well as leaders of relevant agencies shall assume relevant responsibility based on their duties. It makes clear various circumstances for investigating and affixing the responsibility of main leadership members of relevant local CPC commissions and governments, relevant government leadership members and leadership members of relevant government departments. When selecting and appointing local CPC and government leadership members, the CPC commissions and their organizational department according to relevant requirements should take resource consumption, environmental protection and ecological benefits

as important elements for performance evaluation and do not promote the leaders being responsible for serious damages of eco environment and resources or let them take important post.

The Program on Trial Development of Balance Sheet of Natural Resource Assets requires that with the development of balance sheet of natural resource assets; we could promote the establishment of scientific and standard statistic investigation system for natural resources; understand the baseline situation and changes of natural resource assets; provide information, monitoring, early warning and decision support to promoting the development of ecological progress and effective protection and sustainable use of natural resources. Based on the requirements of the current Program, we will develop the trial balance sheet of natural resource assets, put forward recommendations on improvement of natural resource statistic investigation system and provide experience for the program on the development of balance sheet of natural resources.

The Program on the Trial Reform of Eco Environment Damage Compensation System makes comprehensive planning and arrangements for the reform of ecological damage compensation system of China in the next period. 1) Identify the overall requirement and targets. Some provinces are selected for trial during 2015-2017 with nationwide trial in 2018. It is expected that by 2020, the eco environment damage compensation system with clear responsibility, smooth channel, sound standard, strong guarantee and effective restoration will the primarily established. 2) Make clear the trial principle. It presents the trial principle of "promoting the work according to law and encouraging innovation; compensation for environmental damages; consultation with legal guarantee; information sharing, public supervision". 3) Identify applicable scope. It is applicable to the damages of eco environment elements and functions due to environmental pollution and ecological damages, i.e. damages of eco environment itself. The requirements of relevant laws such as Tort Liability Law and Marine Environment Protection Law but the current Program shall be applicable respectively to the compensations for personal injury, loss of individual and collective assets as well as the damages of marine eco environment. 4) Identify trial components. It presents the following 8 trial activities: identify the compensation scope, identify the person with compensation obligation, make clear the person with compensation right, establish the consultation mechanism for eco environment damage compensation, improve relevant procedural rules, strengthen the implementation and supervision on compensation and remedy, standardize appraisal and assessment and intensify fund management. 5) Emphasize guarantee measures. It requires that trial regions should strengthen organization and leadership, set up a leading group on trial work, develop suggestions on implementation of trial activities; enhance business guidance of relevant national departments for trial; accelerate the development of national technical system; provide more fund and policy guarantee; facilitate information disclosure and encourage public participation.

Reform of national environmental monitoring system

In 2015, the study on reform program of environmental monitoring system was carried out based on the instructions of CCCPC and the State Council as well as the requirements of the Integrated Reform Plan for Promoting Ecological Progress and Program on the Development of Eco Environment Monitoring Network.

The government has printed out and distributed the Suggestions on Support to the Reform of Environmental Monitoring System, which makes clear the philosophy on the reform of environmental monitoring system. The government has worked through national environmental monitoring management system and created a national environmental monitoring network in areas such as air water and soil based on the principle of "he who examines should carry out environmental monitoring". It is expected that in 2018, the work on taking back the administrative authority on national monitoring stations (sites) and water sections under national monitoring program will be finished in an all round way. Air, water and soil environment quality monitoring network under direct national management will be set and improved. Provincial environment quality monitoring systems will be effectively established and they will connect with and verify national network monitoring data. The commercial reform of environmental monitoring has been deepened. There has been wide application of the third party managed operation mechanism with great rise of environment monitoring efficiency. The land-sea eco environment monitoring system with air and space measurement equipment and information sharing has enjoyed continuous improvement. As a result, environmental monitoring capacity has been more met the requirements for the development of ecological progress.

The government has printed out and distributed the Implementation Program on National Authority on Monitoring of Eco Environment Quality, which give detailed division of the scope, procedures and operational management approaches of the reform of environmental monitoring system. It clearly states that the scope of national environmental monitoring authority is the national ambient air quality monitoring system composed of 1,436 urban monitoring sites in 338 cities at or above prefecture level, 96 regional stations (rural monitoring stations) and 16 baseline stations; national water environment quality monitoring system composed of 2,767 surface water sections (sites) under national control program, 300 national surface water automatic monitoring stations and 419 nearshore marine water monitoring sites; national soil quality monitoring system composed of 20,000 ordinary monitoring sites and 15,000 risk monitoring sites as well as the national ecological monitoring system composed of comprehensive monitoring and assessment of ecological status, stationary monitoring of ground ecology and special work on monitoring, assessment and examination of countywide eco environment quality of national major ecological function areas. The authority over national supervision monitoring of pollution sources includes the development of pollution source monitoring standards and norms, disclosure of the monitoring data of sources of major polluting organizations (including enterprise self monitoring and supervision monitoring of pollution sources), random measurement of major polluting organizations and inspection on the quality of supervision monitoring on local pollution sources. The operation form of the authority over national environmental monitoring is that the central government provides full financial support to ensure construction, operation, maintenance, quality control, data transmission and data application of the national network. It is planned that by the end of 2018, the authority of central and local governments on environmental monitoring will be made clear in an all round way with remarkable improvement of the quality management and QC of national network, national construction, national monitoring, national examination and national environmental monitoring. Administrative disturbance will be under control with basic understanding of the status of national environment quality. In addition, public need for access to environmental monitoring information will basically be met. It has basically met the technical requirement for supporting the development of ecological progress and provided strong support to overall improvement of environment quality.

Remote sensing monitoring of the environment

In 2015, No.1 A and B Environment Satellites had normal operation with steady increase of the service capacity of environment application system. The government has continued remote sensing monitoring on smog pollution in Beijing-Tianjin-Hebei, the Yangtze River delta and Pearl River delta, nationwide straw combustion, sand and dust in North China and aerosols. It has increased the remote sensing monitoring of air particulates, air pollutants, night monitoring of straw combustion and so on. The government has kept on remote sensing monitoring on algae bloom, eutrophication of major lakes and reservoirs, thermal effluent from nuclear power stations, oil spills and red tides. It has expanded environment remote sensing monitoring for non-point pollution, drinking water source areas, coastal marine environment, urban water environment and dry-up of rivers. In addition, it has continued remote sensing monitoring and assessment on nature reserves, biodiversity, national key ecological function areas, resource development and ecological damages, response to major natural disasters, transboundary river basin ecology. Moreover, it has added businesses such as the eco footprint of nature reserves, ecological carrying capacity and remote sensing monitoring and assessment of ecological assets. The government has continuously applied remote sensing monitoring data for supervision on air pollution sources in industrial cluster areas, examination on countywide eco environment quality of national major ecological function areas as well as nuclear safety supervision and EIA and planning. It has conducted environmental emergency remote sensing monitoring and applications with high efficiency. In addition, remote sensing monitoring on the environment has provided key support to key events such as ensuring good air quality during commemoration of the 70th Anniversary of the Victory of the Chinese People's War of Resistance Against Japanese Aggression and The World Anti-Fascist War, emergency response to heavy pollution weather in winter, monitoring of industrial pollution in Tengger Desert, and emergency response to trans-province boundary water pollution accident due to leakage of a tailing ponds in Gansu Province.

Status of county–wide eco environment of national major ecological function areas

In 2015, monitoring, assessment and examination of the status of eco environment of 556 counties in national major ecological function areas were conducted by means of many technical approaches such as satellite remote sensing, environmental monitoring, unmanned aerial vehicle, statistic study and site inspection (The 44 counties newly added in 2015 only conducted assessment on current status of eco environment. Sansha City in Hainan Province has no data, so it did not take part in 2015 assessment).

In 2015, 68 counties had "fragile" eco environment, accounting for 12.3%, concentrating on wind sheltering and sand fixation areas and water conservation areas. A total of 170 counties had "ordinary" eco environment, accounting for 30.6%, concentrating on water conservation areas and water & soil conservation areas. 317 counties had "good" eco environment, taking up 57.1%, concentrating on water conservation areas and biodiversity conservation areas. There were 103 counties with eco environment quality "turning good", taking up 20.1%. 344 counties with "basically stable" eco environment, taking up 67.2%; and 65 counties with eco environment quality "turning bad", taking up 12.7% compared with that of 2014.

Land and Rural Environment

General Situation

Land resource and farmland

Up to the end of 2014*, there were 645.7411 million ha agricultural land across the country, 135.0573 million ha of which were farmland, 14.3782 million ha were orchards, 253.0713 million ha were forest, 219.466 million ha were pasture and grassland; 38.1142 million ha were construction land. 31.0566 million ha construction land was used for cities, towns, villages, plants and mines.

In 2014, there were 388,000 ha reduction of farmland across the country due to reasons such as construction, disasters, grain for green and adjustment of agricultural structure. A total of 280,700 ha farmland was created due to land control and adjustment of agricultural structure. As a result, there was net decrease of 107,300 ha farmland in the year.

The findings of National Assessment of Quality of Farmland** show that the average quality of farmland across the country in 2014 was relatively low at Grade 9.97. A total of 3.865 million ha farmland were excellent land, taking up 2.9% of total area; 35.776 million ha were high grade land, taking up 26.5% of the total; 71.35 million ha were intermediate land, taking up 52.9% of the total; and 23.947 million ha were low grade land, taking up 17.7% of the total.

Water loss and soil erosion

According to the findings of the water and soil conservation of the First National Census on Water, there were 2.949 million km^2 land subject to water and soil erosion in China, taking up 31.1% of the total area under the census. Among them, 1.293 million km^2 were under water erosion and 1.656 million km^2 were under wind erosion.

Measures and Actions

【Control of water and soil erosion】 In 2015, the government finished comprehensive prevention and control of water and soil erosion of 74,000 km^2 land across the country. Among them, 54,000 km^2 were for comprehensive control and improvement; 20,000 km^2 were for ecological restoration; and 4 million mu slope cropland had been turned into terrace. More than 300 small ecological sound river basins have been developed. The State Council has approved the National Plan for Water and Soil Conservation (2015-2030). The government has continuously facilitated major national projects on water and soil conservation in poor areas with serious water and soil erosion in regions such as mid and upper reaches of the Yangtze River, mid and upper reaches of the Yellow River, black soil area in Northeast China and stony desertification areas in Southwest China. As a result, both the area and intensity of water and soil erosion have been under steady decrease.

【Improvement of rural environment】 In 2015, the central government allocated 6 billion yuan special fund for energy saving and emission reduction in countryside to support the contiguous improvement of rural environment in all provinces (autonomous regions and municipalities). The focuses were improvement of water source areas and areas along the route of South-North Water Diversion Project, villages in vicinity of other important drinking water source areas, focusing on the control of the pollution of sewage, domestic garbage and pollution of livestock and poultry farms and ensuring the safety of drinking water. The central government has greatly promoted PPP mode for the control of rural sewage and garbage, government procurement of services and integration of corporate construction and operation. In addition, the government has strengthened credit support from national policy banks.

*Up to the time of publishing the current Report, 2014 data was employed due to 2015 data under review.

**There are 15 grades for assessing the quality of farmland. Grade 1 is the best and Grade 15 is the poorest. Grade 1～4 is excellent land, Grade 5～8 is high grade land, Grade 9～12 is intermediate land and Grade 13～15 is low grade land.

Trial and demonstration work on the control of rural sewage have been conducted step by step across the country. Many approaches such as extension of urban pipelines, centralized treatment and decentralized treatment have been adopted to accelerate the treatment of rural sewage and improvement of toilets.

The government has printed out and distributed the Guidelines for Comprehensive Promotion of Control of Rural Garbage. It identifies the 2020 targets on control of rural garbage and main tasks and establishes the system on check and acceptance province by province. Sichuan was the first province having passed check and acceptance on the control of rural garbage.

A total of 39.7 billion yuan were invested in project on rural drinking water safety, 26.668 billion yuan of which were from the central government and 13.032 billion yuan were from local government. A total of 53,800 centralized drinking water supply projects and 128,700 non-central water supply projects have been constructed, which provide safe drinking water for 64.34 million rural residents and teachers and students in rural schools.

【Prevention and control of agricultural non-point pollution】 In 2015, the government had made more efforts in protection and improvement of agriculture eco-environment focusing on relevant objectives. The fertilizer utilization rate of rice, maize and wheat across the country was 35.2%, up by 2.2 percentage points compared with that of 2013. The pesticide utilization rate was 36.6%, up by 1.6 percentage points compared with that of 2013. A total of 160 million yuan from central government were invested for demonstration project on recycling of mulch film in 49 demonstration counties in 6 provinces (autonomous regions) such as Xinjiang and Gansu and Xinjiang Production and Construction Corps. There was newly added capacity of about 46,000 t in processing waste film and about 12.12 million mu mulch film have been recycled.

【Prevention and control of endemic diseases】 The central government invested 929 million yuan for prevention and control of endemic diseases during the "12th Five-Year Plan" period. Up to 2015, 2,646 counties across the country met the criterion on continuous elimination of iodine deficiency disorder, taking up 94.2%. Over 90% of 90.8% counties with high iodine content in water sources do not add iodine in their salt. 81.5% villages subject to fluorine poisoning and 95.3% villages subject to arsenic poisoning from drinking water have improved their drinking water sources. The utilization rate of water quality improvement projects was 84.1% and 93.3% respectively. The boiler and stove reform rate was 98.4% for fluorine poisoning affected regions due to coal combustion and 100% for arsenic poisoning affected regions. The correct utilization rate of reformed furnaces and stoves was 97.2% and 83.3% respectively. 95.4% of the villages in the affected region have met the criterion on elimination of Kaschin-Beck disease and 95.4% of counties in the region have met the control limit for Keshan disease. There was no occurrence of new acute and subacute type Keshan disease.

Soil in vicinity of livestock and poultry farms

In 2015, monitoring was carried out at 5,048 soil monitoring sites in vicinity of 1,029 livestock and poultry farms in 311 APL cities of 31 provinces (autonomous regions or municipalities) and Xinjiang Production and Construction Corps. The findings show that 83.5% monitoring sites met soil quality standard; 11.0% monitoring sites were under very light pollution, 3.0% monitoring sites were under light pollution, 1.8% monitoring sites were under intermediate pollution and 0.7% monitoring sites were under heavy pollution.

Forest Environment

General Situation

Forest Resource

According to the findings of the Eighth National Investigation on Forest Resources (2009-2013), the total forest area of the country was 208 million ha, forest coverage at 21.63%, the total stumpage volume was 16.433 billion m^3. China ranks No.5 in forest area and No.6 in forest reserves in the world. The artificial forest area of China ranked No.1 in the world. Compared with the findings of the Seventh National Investigation on Forest Resources (2004-2008), forest area went up by 12.23 million ha, forest coverage went up by 1.27 percentage points, the total stumpage volume rose by 1.520 billion m^3 and forest stock increased by 1.416 billion m^3.

The investigation findings show that forest resources in China enter the steady growth period with improvement of quality. With the increase of forest resources and improvement of forest structure and quality, forest ecological functions have been further strengthened. The total biomass of forests in the country was 17.002 billion t and total carbon reserve reached 8.427 billion t. There were 580.709 billion m^3 for annual water conservation, 8.191 billion t for annual soil fixation, 430 million t for annual conservation of nutrients, 38 million t for annual adsorption of pollutants and 5.845 billion t for annual dust retention.

Forest biological hazards

In 2015, 12.0051 million ha forests across the country were subject relatively heavy impacts of forestry pest, up by 0.85% compared with that of 2014. Some regions were under relatively heavy disaster. The forest area with serious harmful pests was 803,100 ha, slightly more than that of 2014. A total of 8.4664 million ha forests were under insect hazards and 1.3905 million ha under tree disease, up by 0.70% and 0.76% respectively compared with that of 2014. A total of 2.1482 million ha forests were subject to rat and rabbit hazards, up by 1.53% compared with that of 2014. The invasion of a total of 38 invasion of alien species has caused serious damages to forestry such as North American pinewood nematode (Bursaphelenchus xylophilus), American white moth (Hyphantria cunea), red turpentine beetle, Cydia pomonella and Mikania micrantha Kunth involving over 2.80 million ha with loss of over 70 billion yuan, accounting for about 64% of total loss caused by forest hazardous organisms.

In 2015, 8.1384 million ha forests across the country had finished the prevention and control of forestry pest. The disaster rate of major forestry pest was controlled under 4.5‰ and over 85% of total forests had no forestry pests.

Forest fire

In 2015, there were a total of 2,936 forest fires across the country affecting 12,900 ha forests with 26 injuries and deaths, down by 24.1%, 17.0% and 58.5% respectively compared with that of the annual average of 2012-2014.

Measures and Actions

【Grain for Green Project and protection of natural forests】 In 2015, the government arranged another 10 million mu arable land back to forest or grassland and afforestation in 333,000 mu waste land. The central government has invested a total of 33.95 billion yuan subsidy for Grain for Green Project. As a result, the achievements of Grain for Green Project have enjoyed further consolidation and development. A total of 1.732 billion mu forest have been under effective protection. China has finished the development of 499,000 ha forest for public welfare as well as cultivation of 1.678 million ha young forests and 125,000 ha reserved forests. All natural forests in Daxin'anling Mountain range, Xiaoxing'anling Mountain range and Changbai Mountain area were prohibited from logging.

【Management of forest ownership】 In 2015, the ownership of 2.705 billion mu collective forest land across the country was confirmed. A total of 100 million farmers have got forest ownership certificate and 540 million farmers

obtained direct benefits. This has greatly mobilized the initiatives of forest farmers in developing, cultivating and protecting forest and played an important role in areas such as protecting forest ecosystems and cracking down illegal logging. Meanwhile, taking advantage of forest land resource, farmers have greatly developed forest tourism, woody grain and oil and under-forest economy. The total output value of under-forest economy reached 541.5 billion yuan, which has greatly developed forest resources and fully tapped forest potential.

【Development of state-owned forest farms and forest parks】 In 2015, there were 4,855 state owned forest farms across the country, distributed in over 1,600 counties (cities, or urban districts) in 31 provinces (autonomous regions or municipalities). The reform of state owned forest farms has made great breakthrough. The government has printed out and distributed the Program on the Reform of State-Owned Forest Farms. Up to the end of 2015, the programs on reform of 5 provinces (autonomous regions or municipalities) such as Guangdong, Inner Mongolia, Beijing, Shanxi and Ningxia on reform of state owned forest farms have been finished review and approval. 39 national forest parks were newly built with total amount of national forest part at 826. The total amount of forest parks at all level in the country was 3,234. The government has printed out and distributed the National Plan for the Development of Suburban Forest Parks (2016-2025) to carry out scientific plan for the development of forest parks in cities and towns as well as surrounding areas of cities. The government has printed out and distributed the Measures on Review and Approval of Master Plan of National Forest Parks. The government has reviewed and approved the master plan for 51 national forest parks. It has organized supervision and inspection on the development and management of national forest parks and cancelled 3 national parks with prominent problems and poor correction.

Grassland Environment

General Situation

Grassland resource

In 2015, grassland area across the country was about 400 million ha, accounting for about 41.7% of total land area. It is the biggest terrestrial ecosystem and ecological security barrier. North China and West China are the main areas of natural grassland. The total grassland area of 12 provinces (autonomous regions or municipality) in West China was 331 million ha, taking up 84.2% of the total. The total grassland area of the 6 big pasture regions such as Inner Mongolia, Xinjiang, Tibet, Qinghai, Gansu and Sichuan was 293 million ha, accounting for 3/4 of total grassland area. The grassland in southern part of China was dominated by grass hills and slope grass land, most of them were located in mountain and hill areas with total area about 67 million ha.

Grassland productivity

In 2015, the total fresh grass output of natural grassland was 1,028.0565 million t, up by 0.57% compared with that of 2014; equivalent to 317.343 million t dry grass; the carrying capacity for livestock was about 249.4361 million sheep, both up by 0.74% compared with that of 2014. The total fresh grass output of 23 major provinces (autonomous regions or municipality) was 955.4211 million t, taking up 92.93% of the total, up by 1.24% compared with that of 2014; equivalent to 298.8706 million t dry grass, the carrying capacity for livestock was 234.8529 million sheep, both up by 1.18% compared with that of 2014.

Grassland disaster

In 2015, there were 88 grassland fires across the country. Among them, 80 were ordinary grassland fires, 3 were relatively big fires and 5 were especially big fires. A total of 118,116.8 ha grassland in accumulation were under fire with 107.61 million yuan economic loss, 2 deaths, 22 injured and loss of 4,724 heads livestock. There were 70 times reduction of grassland fires, 78,778.2 ha rise of fire affected area and 85.361 million yuan increase of economic loss compared with that of 2014.

A total of 29.084 million ha grassland across the country was under rat damage, taking up about 7.4% of total grassland area, down by 16.5% compared with that of 2014. A total of 12.547 million ha grassland across the country was under insect damages, about 3.2% of total grassland area, down by 9.6% compared with that of 2014.

Measures and Actions

【Subsidy and reward for conservation of grassland ecology】 In 2015, the central government arranged 16.949 billion yuan as the subsidy and reward for conservation of grassland ecology to continue the subsidy and reward for conservation of grassland ecology in 13 provinces (autonomous regions) such as Inner Mongolia, Xinjiang, Gansu and Qinghai. Policy measures such as subsidy to herdsmen subject to prohibition of grassland grazing, reward for the balance between grassland and livestock and subsidy for herdsmen production material have been taken based on the basic principle of "target, task, responsibility and fund in place at province level" as well as task execution, grant of subsidy, service and guidance, supervision and management, establishment of file and card at household level.

【Project on grassland protection and development】 In 2015, the central government invested 2 billion yuan for the pasture for grassland project in Inner Mongolia, Sichuan, Gansu, Ningxia, Tibet, Shaanxi, Qinghai, Xinjiang, Guizhou, Yunnan, Heilongjiang, Jilin, Liaoning and Xinjiang Production and Construction Corps. The central government invested 444 million yuan to carry out the projects on the control of grassland of the sand sources to Beijing and Tianjin in regions such as Beijing and Shanxi Province. The central government invested 119 million yuan to carry out trial project on comprehensive control of stony desertification in karst area in Hubei Province, Hunan Province, Guangxi Autonomous

Region, Chongqing, Sichuan Province, Yunnan Province and Guizhou Province.

【Supervision on grassland law enforcement】 There were 17,020 various kinds of grassland infringement cases across the country in 2015, down by 1,978 cases compared with that of 2014. The government put 16,427 cases on record, concluded 16,066 cases, taking up 97.8%. A total of 12,000 ha grassland were damaged due to illegal reclamation of grassland, illegal requisition and use of grassland and illegal tentative occupation of grassland, down by 8,889.6 ha (42.5%) compared with that of 2014. Only 1,800 ha grassland was sold or illegally transferred.

Discharge of Pollutants

General Situation

Major pollutants in wastewater

In 2015, the total COD discharge was 22.235 million t, down by 3.1% compared with that of 2014 and 12.9% compared with that of 2010. The total ammonia nitrogen discharge was 2.299 million t, down by 3.6% compared with that of 2014 and 13.0% compared with that of 2010.

Major pollutants in waste gas

In 2015, the total SO_2 emission was 18.591 million t, down by 5.8% compared with that of 2014 and 18.0% compared with that of 2010. The total NO_x emissions were 18.518 million t, down by 10.9% compared with that of 2014 and 18.6% compared with that of 2010.

Measures and Actions

【Very low emissions】 In 2015, the government carried out technical reform on very low emissions and energy conservation of coal fueled power plants in an all round way. The government has printed out and distributed the Program on Comprehensive Implementation of Very Low Emissions and Energy Saving Reform of Coal Fueled Power Plants and accelerated the technical reform on very low emissions of existing coal fueled power generating units. All coal-fueled power generating units at 300,000 kW or above in eastern part and self-provided coal-fueled power generating units at 100,000 kW or above will finish the reform on very low emission by 2017. While the coal-fueled power generating units at 300,000 kW or above in central part and western part will finish the reform by 2018 and 2020 respectively. In addition, the government has clearly identified policy measures such as subsidy for the price electricity generated with very low emissions, power generation incentive, incentive in pollutant discharge fee and credit financing support.

【Release and treatment of urban domestic pollutants】 Up to the end of 2015, national urban sewage treatment capacity was 140 million m^3/d, the accumulated treatment amount of sewage in the whole year was 41.03 billion m^3. In 2015, urban sewage treatment rate reached 91.97%, meeting the target of the "12th Five-Year Plan".

In 2015, there were 126,000 public toilets across the country; 64,000 in eastern part, 35,000 in central part and 27,000 in western part of China, taking up 50.6%, 27.7% and 21.7% respectively of the total. The amount of public toilets meeting Grade III standard was 95,000, taking up 75.5%, 51,000 of them in eastern part, 23,000 in central part and 21,000 in western part, accounting for 53.7%, 24.7% and 21.6% respectively of the total.

In 2015, the clean-up amount of urban garbage across the country was 192 million t, 180 million t of which were under environment-friendly treatment. Among them, 115 million t were under sanitary landfill, taking up 63.9%; 61 million t were under incineration, taking up 33.9%; 2.2% were treated in other ways. The environment-friendly treatment rate reached 93.7%, up by 1.9 percentage points compared with that of 2014. The environment-friendly treatment capacity of domestic garbage incineration facilities across the country was 216,000 t/d, accounting for 32.3% of total treatment capacity.

In 2015, the total cleaning area of urban roads across the country was 7.33 billion m^2, 4.03 billion m^2 of which were by mechanical cleaning, accounting for 55.0%, up by 4.5 percentage points compared with that of 2014.

Reform of Environmental Impact Assessment

MEP has actively promoted the reform of EIA. It has enhanced the supporting role of SEA in macro decision making. MEP has developed the guidelines for promoting harmonious development of economy and environmental protection in city clusters in mid and lower reaches of the Yangtze River and economic zones in central part of China. MEP has carried out SEA of three key regions. It has promoted environmental impact assessment of plans. MEP has developed the Guidelines for Strengthening Spatial Regulation, Total Amount Control and Environmental Access for Environmental Impact Assessment of Plans. MEP has released the Guidelines for Consultation on Environmental Impact Assessment of Plans (Trial) and Suggestions on Strengthening Interaction of EIA of Plans and EIA of Construction Projects. Having further delegated its authorities, it has released the Catalogue of Ministry of Environmental Protection on Construction Projects Subject to Review and Approval of EIA Documents (2015) and revised the Directory of Classified Management of Environmental Impact Assessment of Construction Projects. MEP has standardized EIA management. It has developed EIA approval principle and access conditions of 7 industries including thermal power industry and released the elements for site inspection and review of 9 industries such as hydropower and water resources. MEP has released the Circular on Printing Out and Distribution of the List of Major Changes of Construction Projects of Some Industries in EIA Management. MEP has made more efforts in disclosure of EIA information. It has printed out and distributed the Program on Information Disclosure Mechanism for Environmental Impact Assessment of Construction Projects.

The government has improved the whole process supervision system for construction projects. MEP has released the Measures on Supervision and Management of Environmental Protection of Construction Projects (Trial). It identifies the responsibility of national and provincial environmental protection departments for supervision and guidance; management responsibilities of environmental protection department at city or county level; strengthens the main body responsibility of construction organizations and specifies the responsibilities of local CPC commissions and governments. MEP has released the Measures on Post-EIA Management of Construction Projects (Trial), which would assess the environmental impacts of key and sensitive projects after operation of some period and effectiveness of eco environment protection measures. It has developed the Measures on Rejecting the Approval of EIS of Any New Construction Project in Regions with Excessive Pollution Load (Trial). The Measures require rejecting the approval of EIA of any new construction project in regions failing to meet national environmental quality standard or with serious environmental infringements and urge local governments and enterprises to fulfill their environmental responsibility according to law.

Separation of EIA centers from government environmental protection departments across the country. In 2015, all 8 EIA centers from institutions affiliated to MEP have finished separation work. All environmental protection departments at province level have submitted their separation plan according to the requirement. A total of 67 EIA centers have finished the separation work ahead of schedule.

Environmental management of chemicals

In 2015, MEP revised the Guide for Registration of New Chemical Substances and Measures on Environmental Management Registration of Hazardous Chemicals (Trial) and relevant supporting documents. MEP has conducted review and approval of the import and export registration of toxic chemicals. It has approved the registration applications of 49 batches of import or export of toxic chemicals, involving 42 kinds of toxic chemicals and approving the import or export of 2.10 million t. MEP has strengthened environmental registration of new chemical substances. It has approved environmental management registration of 59 batch-times of new chemicals, approved the grant of 205 routine registration certificates, 2,949 simplified registration certificates, alteration of 288 registration certificates and nullification of 318 registration certificates. MEP has facilitated the prevention and control of POPs and printed out and distributed the Report on Interim Assessment of the National 12th Five-Year Plan for Prevention and Control of POPs of Major Industries. MEP has continuously carried out POPs statistic report system. MEP has promoted the prevention and control of mercury pollution. It has released the Circular on Inspection of Phasing Out of High Mercury Content Catalysts in CCP PVC Manufacturing Enterprises and conducted such inspection. In addition, MEP has strictly carried out the Rotterdam Convention and received and handled 126 export notices from EU in relation to the Rotterdam Convention.

Handling of environmental pollution accidents

In 2015, MEP handled 82 sudden environmental pollution accidents. Among them, 3 were major accidents (tailings leakage accident due to break of overflowing well of the tailings pond of Longxing Antimony Industry Limited Company in Gansu Province; groundwater pollution accident in urban area of Xinhe County, Xingtai City of Hebei Province; and poisoning to death due to dumping of hazardous waste in Puji Town, Zhangqiu City of Jinan), 3 were relatively big accidents and 76 general accidents. Among them, 48 accidents were caused by production, 12 accidents were caused by traffic accidents, 9 were caused by natural disasters, 4 were caused by illegal discharge of pollutants by enterprises, 9 were caused by other reasons, taking up 58.5%, 14.6%, 11.0%, 4.9% and 11.0% respectively of the total.

In 2015, MEP received 38,689 environmental complaints through “010-12369” environmental tip-off hotline, messages and email reports and handled 1,145 cases; 896 of which were on air pollution, 356 cases were water pollution, 265 cases on noise and 59 cases on solid waste (some tip-offs involve the pollution of several pollutants; the accumulated amount is more than the accepted amount). A total of 751 cases of environmental pollution problems reported by the public turned out to be true or basically to be true. The regions involving these tip-offs mainly concentrated on provinces (municipalities) such as Henan, Jiangsu, Guangdong, Shandong and Tianjin. There were more tip-offs in Central China and South China compared with that in Northwest China and Southwest China. More tip-offs involved the industries such as chemicals, non-metallic mineral processing industry and metal smelting and processing industry, taking up 52% of total cases.

Transport

General Situation

Transport infrastructure

Up to the end of 2015, the total mileage of railway in operation across the country was 121,000 km, 74,000 km of them was electric mileage. The total road length of China reached 4.5773 million km, 123,500 km of which were highway. The total length of navigable inland river channels across the country was 127,000 km. There were 31,259 berths in all ports and harbors across the country. Among them, the berths of coastal production ports and berths of production harbor of inland rivers accounted for 18.9% and 81.1% respectively of the total. There were a total of 210 civil airports with certificate in the country. The total length of bus and trolley operation lines across the country was 894,300 km, while the total operation lines of rail transport was 3,195.4 km.

In–service transport vehicles

Up to the end of 2015, there were 21,000 locomotives across the country; 56.8% of which were electric locomotives and 43.2% of which were diesel locomotives . There were 14.7312 million commercial vehicles across the country, 5.7% of which were passenger vehicles and 94.3% were trucks. There were 165,900 transport ships across the country; inland river transport ships, coastal transport ships and ocean transport ships took up 91.92%, 6.46% and 1.62% respectively of the total. There were a total of 561,800 buses and trolleys in cities and county cities across the country. 45.1%, 32.5% and 1.7% of the buses were fueled by diesel, natural gas or petrol respectively. There were 19,941 urban rail transport vehicles across the country, 90.76% of which were metro vehicles and 7.19% of them were light rail vehicles. In addition, there were 1.3925 million taxis across the country.

Transport volume

In 2015, the railway across the country completed 2.535 billion people passenger traffic volume with 1,196.06 billion people·km turnover of passenger traffic. It had finished 3.358 billion t total shipments of goods with total freight volume at 2,375.431 billion t·km. The business coaches across the country had finished 16.191 billion people highway traffic with 1,074.266 billion person·km of turnover volume of passenger transportation. The commercial freight vehicles across the country have finished transport of 31.5 billion t freight volume with 5,795.572 billion t·km freight mileage. The country finished waterway transport of 271 million people with 7.308 billion person·km turnover volume of passenger transportation. The country finished 6.136 billion t waterway freight volume with 9,177.245 billion t·km freight mileage. The civil aviation across the country has finished 436 million person·times volume of passenger traffic with 727.066 billion person·km turnover volume of passenger transportation. The government has finished 6.253 million t freight volume with 20.727 billion t·km freight turnover. In the whole year, urban passenger transport system had carried 130.317 billion passengers. Among them, buses and trolleys transported 76.540 billion people with mileage of 35.233 billion km; rail transport system transported 14.001 billion people with mileage of 374 million train·km; taxis finished transport of 39.674 billion people with mileage of 160.242 billion km. Moreover, passenger ferries had transported 101 million people.

Measures and Actions

【Environmental protection of transport sector】
In 2015, China continuously made more investment in highway and waterway environmental protection facilities. Among them, 14.050 billion yuan (65.1% of which for ecological protection facilities) were invested in highway environmental protection and 2.659 billion yuan (64.7% for pollution prevention and control facilities) were invested in port environmental protection. The government has strengthened top-level design for green transport; started the

study on the Program of Transport Sector on the Development of Ecological progress and finished the preparation of the "13th Five-Year Development Plan for Energy Saving and Environmental Protection of Transport Sector". It also printed out and distributed the National Plan for Highway and Waterway Transport Environmental Monitoring Network. The government has promoted the prevention and control of pollution of ships and ports in an all round way. It has printed out and distributed the Implementation Program for Special Campaign on Prevention and Control of Ship and Port Pollution (2015-2020). The government for the first time has set up ship emission control areas and released the Implementation Program on Ship Pollution Discharge Control Areas in Waters of the Pearl River Delta, Yangtze River Delta and Bohai Rim (Beijing-Tianjin-Hebei) and Implementation Program on Trial Recovery of Oil Gas from Crude Oil or Finished Oil Terminals. The government has conducted special inspection on supply of ship oils. The government has strengthened the prevention and control of vehicle pollution. It has printed out and distributed the Circular on Comprehensive Promotion of Phasing Out of Yellow Label Vehicles, Circular of Ministry of Transport on Implementation of the Requirement of General Office of the State Council on Special Supervision on Phasing Out of Yellow-Label Vehicles and Meeting the Requirements of 5 ministries such as MEP and Ministry of Public Security for Comprehensive Promotion of Phasing Out of Yellow Label Vehicles. China has further facilitated the phasing out of in-service yellow label vehicles with phasing out 1.26 million yellow-label vehicles across the country in the year, meeting the annual target. The government has studies and established vehicle inspection and maintenance system. It has facilitated treatment and reuse of wastewater of expressway service areas and conducted national campaign on good services in highway service areas. The government has actively guided the operation and management unit in each service area to conduct technical reform on energy saving and environmental protection. It has carried out assessment on oil spill risks and emergency response capacity, released the Guidelines for Operation and Management of National Warehouse of Oil spill Emergency Response Equipment, established China Ship Oil Pollution Damage Compensation Fund Management Committee and set up the "China Center for Ship Oil Pollution Damage Compensation".

【Energy saving and emission reduction in transport sector】 In 2015, the government continued the improvement of its policy on energy saving and emission reduction in transport sector. It has printed out and distributed the Suggestions of Ministry of Transport on Accelerating Extension and Application of New Energy Vehicles, Circular on Improving the Policy on Subsidy for Refined Oil Price for Urban Buses and Accelerating the Extension of New Energy Vehicles, Measures on Examination on Extension of New Energy Buses (Trial) and Measures on Assessment and Identification of Inland River Ship Technologies. The government has kept on the trial on energy saving and emission reduction in transport sector. It has carried out regional trial work such as 3 green transport provinces including Zhejiang Province and 10 green transport cities including Langfang City; as well as trials of 8 green highways including Yuexi—Wuhan Highway (Anhui section), 3 green ports including Shanghai Port, and 30 green transport equipment including natural gas fueled vehicles and ships in Hebei Province. In addition, the government has conducted trial monitoring of energy consumption of transport at ministry level and province level in 6 cities including Beijing. Moreover, the government has organized demonstration project on LNG application in 16 water transportation enterprises.

Energy

General Situation

Energy Production

In 2015, the total energy output of primary energy across the country reached 3.62 billion t coal equivalent, up by 500 million t coal equivalent compared with that of 2010. Among them, the output was 3.75 billion t for raw coal, 210 million t for crude oil and 134.61 billion m^3 for natural gas. The percent of installed capacity of non-fossil energy generating units against the total went up from 27% in 2010 to 34% in 2015. The installed capacity reached 1.51 billion kW, up by 540 million kW compared with that of 2010. The length of oil and gas trunk pipelines exceeded 100,000 km. The transmission line length of 220 kV or above went beyond 600,000 km. In addition, the capacity of West-to-East Power Transmission Project has reached 130 million kW.

In 2015, the installed capacity of hydropower (including pumped storage), nuclear power, wind power, solar photovoltaic power reached 320 million kW, 26.08 million kW, 130 million kW and 43.18 million kW respectively with annual average growth of 8.1%, 19.2%, 34.3% and 178.0% respectively in the "12th Five-Year Plan" period.

Energy consumption

In 2015, the total consumption of primary energy across the country was 4.3 billion t coal equivalent, up by 0.9% compared with that of 2014. The annual average growth of the "12th Five-Year Plan" period was 3.6%. Among them, coal consumption took up 64.0% of total energy consumption, down by 5.2 percentage points compared with that of 2010; petroleum consumption took up 18.1%, up by 0.7 percentage point compared with that of 2010; natural gas consumption accounted for 5.9%, up by 1.9 percentage points compared with that of 2010. The consumption of non-fossil energy consumption took up 12.0%, up by 2.6 percentage points compared with that of 2010, meeting the 11.2% target ahead of schedule.

In 2015, the energy consumption per 10,000 yuan GDP went down by 5.6% compared with that of 2014 in the "12th Five-Year Plan" period, there was accumulated 18.2% reduction of energy consumption per 10,000 yuan GDP. The coal equivalent consumption of thermal power supply went down from 333 g coal equivalent/kW·h in 2010 to 315 g coal equivalent/kW·h in 2015.

Output and growth rate of major energy products in 2015

Product name	Unit	Output	Increase compared with that of 2014 (%)
Total ouput of primary energy	100 million t coal equivalent	36.2	0.0
Raw coal	100 million t	37.5	-3.3
Crude oil	100 million t	2.1	1.5
Natural gas	100 million m^3	1,346.1	3.4
Power generation	100 million kW·h	58,105.8	0.3
Thermal	100 million kW·h	42,420.4	-2.7
Hydro	100 million kW·h	11,264.2	5.0
Nuclear power	100 million kW·h	1,707.9	28.9

Measures and Actions

【Development of non-fossil energy】 In 2015, the total installed capacity of the electricity generated from non-fossil energy source reached 520 million kW, two times of that of 2010. The government has approved a group of key hydropower projects such as Wudongde and Suwalong. Nuclear thermal power generation with installed capacity of 8.20 million kW has been put into operation. The government has approved the construction of power plants with capacity of 8.80 million kW. The government has arranged the plan for Group V wind power projects with total capacity of 34 million kW identified in the "12th Five-Year Plan". The government has promoted the development of marine wind power and extended heat supply from wind power. The government has identified 24.10 million kW scale for photovoltaic power, started the construction of demonstration project on solar thermal electricity generation; facilitated industrialization of biogas, developed demonstration districts and counties. There were 500 million m^3 new increase of consumption of biogas. In addition, the government has launched the demonstration project on heat supply from biomass briquette boilers with new increase of 1 million t in consumption.

【Development and use of natural gas】 In 2015, the natural gas output of China kept steady increase. The Sichuan Moxi natural gas field with capacity of 10 billion m^3 has been finished construction and put into operation. There was stable and steady rise of the tight gas output. The government has released the policy on subsidy for development and use of shale gas in the "13th Five-Year Plan" period. Fuling, Changning, Weiyuan and Zhaotong have achieved commercial scaled development of shale gas. The government has released and implemented the Action Plan for the Exploration and Development of Coalbed Gas; facilitated highly efficient use of natural gas; made more efforts in construction of infrastructure such as natural gas pipelines, gas storage and urban emergency response peak control; actively developed distributed natural gas resource and promoted the application of natural gas in transport sector such as vehicles and ships.

【Upgrading and reform of energy saving and emission reduction of coal-fueled power industry】 In 2015, the Action Plan for Upgrading and Reform of Energy Saving and Emission Reduction of Coal-fueled Power Industry (2014-2020) has been carried out in an all round way. A total of 180 million kW capacity of generating units have finished technical reform on energy conservation. A total of 78.47 million kW capacity of power generating units have completed technical reform for very low emissions.

【Development of key power transmission projects】 In 2015, the construction of 12 key power transmission projects aiming at prevention and control of air pollution had smooth progress. All the nine HVDC extra-high voltage projects including that from Yuheng of Shaanxi Province to Weifang of Shandong Province have been approved. The construction of one 500 kV project has been finished; one 500 kV project has been approved and another 500 kV project began its early activities. The government has approved the Zhundong-Wannan ±1100 kV HVDC Power Transmission Project and Jiuquan-Hunan ± 800 kV HVDC Power Transmission Project. It has facilitated development of energy resources in West China and digestion of renewable energy sources. The check and acceptance of the Three Gorges Power Transmission and Distribution Project has been finished.

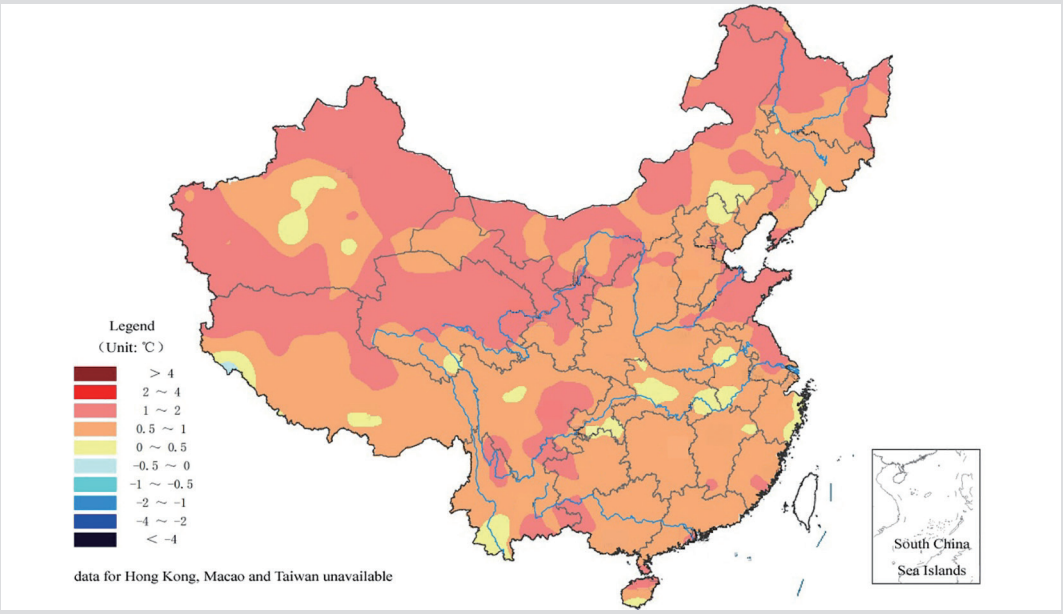
Climate and Natural Disasters

General Situation

Air temperature

In 2015, the national average air temperature was 10.50℃, 0.95℃ higher than the historic average (9.55℃), the warmest since 1961. The air temperature of each month was higher than the historic average and over 1.5℃ higher in January-March.

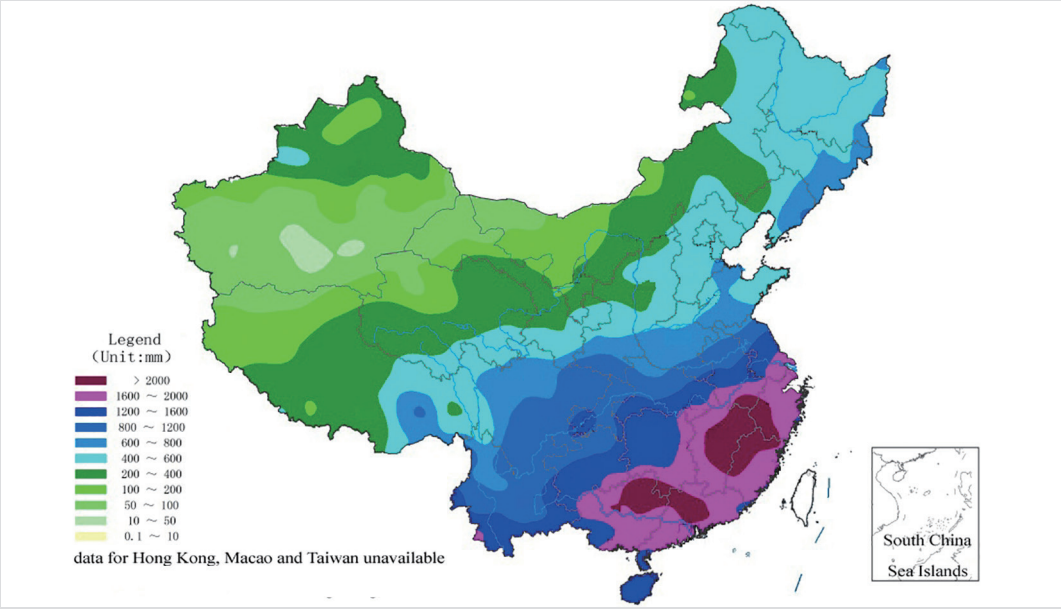
The average air temperature of 31 provinces (autonomous regions or municipalities) was higher than the historic average. The average air temperature of 10 provinces (autonomous regions or municipalities) such as Beijing, Sichuan, Ningxia, Guangdong, Guangxi, Xinjiang, Henan, Guizhou, Liaoning and Qinghai was the highest in the history.



Annual average air temperature distribution in China in 2015

Precipitation

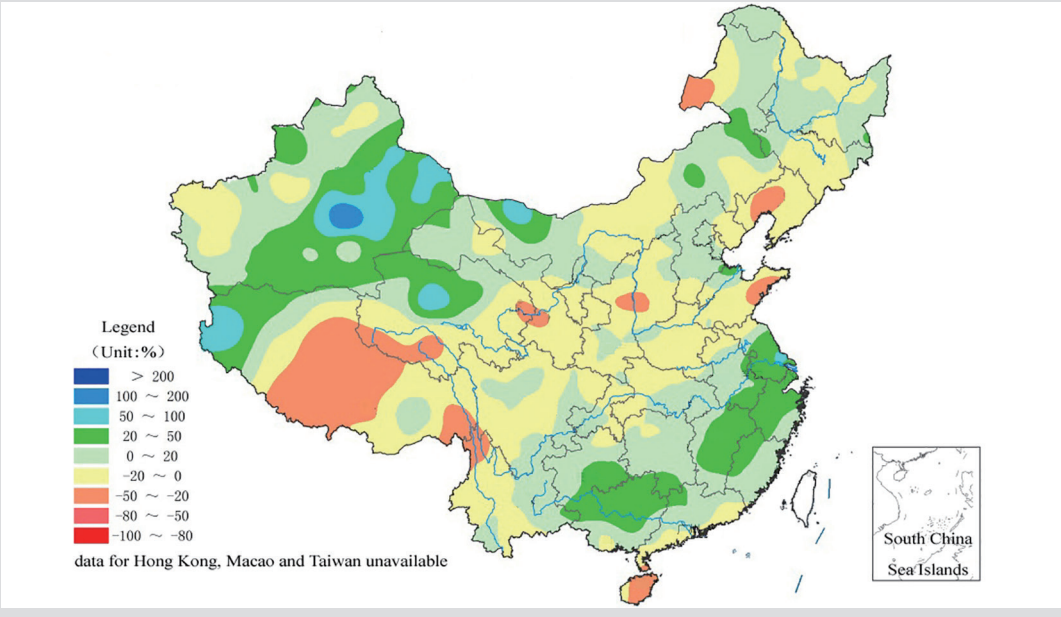
In 2015, the range of annual precipitation across the country was 15.8 mm (Toqsun in Xinjiang)～3,259.8 mm (Yongfu in Guangxi). The national average precipitation was 648.8 mm in 2015, up by 3.0% compared with the historic average (629.9 mm) and up by 2.0% compared with that of 2014 (636.2 mm). The precipitation went down in February, March, April and July with 26.5% reduction in July and 26.1% reduction in March. There was more precipitation in months such as January, May, June, September, October, November and December with 1.1 times in November and 1.3 times in



Precipitation distribution map of China in 2015

December. The precipitation of August was similar to the historic average.

The findings of spatial distribution analysis show that there were over 2,000 mm precipitation in southern part of



Map of the distribution of precipitation anomaly percentage in 2015

Anhui, western part of Zhejiang, northeastern part of Jiangxi, northwestern part of Fujian, northeastern part of Guangxi and central part of Guangdong. The precipitation was 800～2,000 mm in regions such as mid and lower reaches of the Yangtze River as well as the regions south to the river, Chongqing, eastern part of Sichuan, Guizhou, most of Yunnan and Hainan; 400～800 mm in regions such as Northeast China, most of North China, southeastern part of Northwest China, northeastern part of Inner Mongolia, western part of Sichuan, eastern part of Tibet and southeastern part of Qinghai; 100～400 mm in central and western part of Inner Mongolia, northern part of Shaanxi, Ningxia, central part of Gansu, most of Qinghai, central and western parts of Tibet and northern part of Xinjiang; and less than 100 mm in regions such as southern part of Xinjiang and western part of Gansu.

There was 120%～200% precipitation in regions such as the regions east to the Yangtze River and Huaihe River, central and eastern part of the region south to the Yangtze River, northwestern part of Fujian, northern part of Guangxi, southeastern part of Guizhou, eastern and southern parts of Xinjiang, northwestern part of Qinghai and northwestern part of Tibet compared with the historical average, over 200% in some areas. There was 20%～50% reduction of precipitation in regions such as some part of northeastern part of Inner Mongolia, central part of Liaoning, southern part of Shandong Peninsula, northwestern part of Yunnan, central part of Tibet and most of Hainan compared with that of 2014. The precipitation of other regions was similar to the historical average.

Meteorological disaster

Flood In 2015, a total of 76.41 million people in 30 provinces (autonomous regions or municipalities) across the country suffered flood disaster, leading to the damage of 91.98 million mu crops, 400 deaths or missing, collapse of 152,000 houses with direct economic loss of 166.1 billion yuan. There was 76% reduction of death compared with the historical average, the lowest death amount in history. There was 46% reduction of affected population, 45% reduction of disaster hit area and 85% reduction of collapsed houses. There were 35 disastrous rainstorms across the country in wet season of 2015, 6 times more than that of same period of 2014 (29 times). There were not large scale storm and flood disasters at river basin level with less storm and flood disasters compared with that of last year.

Typhoon In 2015, there were 27 typhoons (the maximum wind ≥ Grade 8) in the Northwest Pacific Ocean and South China Sea, 1.5 more than the historical average (25.5). Six of them landed in China, 1.2 less than the historical average (7.2). The landing time of both the first and final typhoons was earlier compared with historic average. The intensity of typhoons when landing was stronger. The strong typhoon of "Rainbow" brought about serious disaster. Typhoons caused 57 deaths or missing with direct economic loss of 68.41 billion yuan in 2015. There was more direct economic loss but evidently less deaths due to typhoons in 2015 compared with the annual average of 2000-2014 .

High temperature In 2015, the average amount of days with high air temperature (daily maximum air temperature ≥ 35℃) across the country was 7.8 days, similar to that of normal years. There were 5～10 high-temperature days more in regions such as central and southern parts of South China and Xinjiang compared with the same period of normal years. There were more than 10 days more with high temperature in Hainan, southern part of Guangxi and southern part of Xinjiang. Among them, the average amount of days with high air temperature in Xinjiang was 21.2 days, 7 days more than the historical average and the most since 1961. The average amount of high temperature days in Hainan Province was 25.1 days, 14.5 days more than the historical average, also the most since 1961. Whereas the amount of days with high temperature in North China, Yangtze River-Huaihe River basin and regions south to the Yangtze River was less.

Low temperature In 2015, there was low-temperature freeze damages in some regions, leading to certain adverse impacts on agriculture and human health. South China suffered from cold spell in late spring in early April. Some early rice had the phenomenon of rotten seed or seedling. Vegetables and fruit trees suffered from cold damage at different degrees. In May, some parts of North China suffered from frost disaster. The vegetables and crops were under the damage of frost disasters. The North China suffered from cold wave in late November, leading to great increase of power load in provinces like Hebei and Shandong and dramatic rise of people catching cold.

Drought Drought across the country in 2015 was lighter than that of historical average with evident reduction of both the area of drought affected cropland area and amount of people and livestock with difficulty in getting access to drinking water but with significant stage characteristics. A total of 280 million mu crops across the country were under drought, 151 million mu were affected, 83.36 million mu caused disaster, 15.08 million mu with no field; leading to 14.44 million t loss of grain, 14.5 billion yuan loss of cash crops and 57.9 billion yuan direct economic loss. In 2015, a total of 8.36 million people and 8.07 million livestock suffered from tentative difficult access to drinking water due to drought. There was 52% reduction of drought affected cropland area, 51% reduction of grain loss and 65% reduction of population with difficult access to drinking water due to

drought compared with that of the historical average.

Snow disaster In 2015, there were annual average of 14.9 snow days across the country, 11.5 days less than the historical average and the second least since 1961. Snow mainly occurred in eastern part and northern part of Northeast China, northern part of Xinjiang, eastern part of Inner Mongolia, central part and northeastern part of Qinghai-Tibetan Plateau. In general, the amount of snowing days was over 30. The amount of snowing days of the country was similar to or less than that of normal years except Beijing, southern part of Liaoning and southern part of Xinjiang. Snow caused large area flight delays and suspension of classes in some middle and primary schools. The greenhouses of some regions and vegetables or crops in them were damaged by snow disaster, so did some meadows.

Hail In 2015, there were more than 2,000 county (city)-times of hail or tornado across the country, more than that of historical average. The northern part of China had prominent hail disasters. The hail disaster area of cropland due to strong convective weather was less than that of previous years with less economic loss but more death compared with that of the past 10 years.

Sand and dust weather In 2015, the overall impacts of sand & dust weather was less compared with that of last year. There were 11 times of sand and dust weather in the spring of North China, 6 times less than the historical average (17). There were 2 times of sand & dust storm and strong sand & dust storm, 6 times less than the historical average (8) of 2001-2010. The average amount of sand & dust days in North China was 2.6 days, 2.5 days less than the historical average, the fifth smallest since 1961.

Smog In 2015, there were 11 times of large scale continuous smog weather across the country, mainly concentrated on January and November-December. Many flights were cancelled and many highways were shut down due to smog. The smog brought about adverse impacts on traffic, transport and human health.

Earthquake disaster

In 2015, there were 29 earthquakes at or above 5.0 Richter Scale, 13 (including the earthquakes < Richter Scale 5.0 with casualties) of them leading to disaster. They brought about 34 deaths, 1,218 injured and about 18 billion yuan direct economic loss. All the earthquakes at or above Richer Scale 5 occurred in central and western parts of China.

Geological disaster

In 2015, there were 8,224 various kinds of geological disasters across the country; 5,616 of which were landslide, 1,801 were collapse, 486 were mud-rock flow, 278 were surface collapse, 27 were ground fissure and 16 were land subsidence. These disasters caused 229 deaths, 58 missing, 138 injured and 2.49 billion yuan direct economic loss. There was 24.6% reduction of the occurrence of geological disasters, 28.3% reduction of death & missing and 54.0% reduction of direct economic loss compared with that of 2014. Geological disasters mainly occurred in provinces such as Jiangxi, Hunan, Yunnan, Anhui, Zhejiang and Sichuan.

Marien disater

In 2015, the overall marine disasters in China were less compared with that of the past years. Various kinds of marine disasters brought about 7.275 billion yuan direct economic loss and 33 deaths (including missing). Among them, storms surges caused 7.262 billion yuan direct economic loss and 7 deaths (including missing). Sea waves caused 7 million yuan direct economic loss and 26 deaths (including missing). Sea ice disasters caused 6 million yuan direct economic loss and no death (including missing).

Red tide and green tide In 2015, there were 35 red tides in marine waters under the jurisdiction of China with accumulated area about 2,809 km^2. 2015 is the year with the least times and accumulated area of red tide over the past 5 years. There were 18 times reduction of the occurrence of red tide and 2,835 km^2 reduction of the accumulated area as compared with the average of the past 5 years. There was Enteromorpha green tide in coastal marine waters of the Yellow Sea during May-August of 2015. The distribution area of 2015 Enteromorpha green tide in coastal marine waters of the Yellow Sea was the biggest over the past 5 years, up by 48% compared with the average of the past five years. The area of the biggest covering area was slightly bigger than the average of the past 5 years.

Sea water invasion and soil salinization There was serious seawater invasion and soil salinization in coastal plains of the Bohai Sea in 2015. The coastal areas of the Yellow Sea and East China Sea subject to sea water invasion and soil salinization were relatively small. However, the chlorine ion content of coastal monitoring sites of individual monitoring areas has evident rise. The range of seawater invasion in coastal areas of the South China Sea was small with relatively light soil salinization.

Coastal erosion Coastal erosion was still serious in China in 2015. The erosion of sandy coast basically maintained stable; while the erosion of muddy silt coast became serious compared with that of 2014. The length of coastal erosion sections at Suizhong and Gaizhou in Liqaning went down with

increase of coastal erosion rate of certain areas. There was some reduction of the coastal erosion length of Chikan Village section in Leizhou City, Guangdong Province and Zhenhai Village section in Haikou City, Hainan Province, indicating less erosion rate. The length of coastal erosion of muddy silty coast bank from Zhendong River gate to Sheyang River mouth in Jiangsu Province had some increase, indicating higher erosion rate in some coastal bank. There was some reduction of the coastal erosion length of east muddy silt bank of Chongming Island in Shanghai but with bigger erosion rate.

Measures and Actions

【Meteorological emergency services】 In 2015, the government explored and developed the policy on prevention and control of urban meteorological disasters featuring "government dominance, resource integration, platform support and operation according to law" and has mainstreamed it into the development mode. It has mainstreamed prevention and control of meteorological disasters into government, department and social programs on comprehensive prevention and control of disasters as well as public service system in order to improve urban capacity in legalization, socialization and standardization for prevention and reduction of meteorological disasters. The capacity of rural areas in prevention and control of meteorological disasters has been remarkably enhanced. There were 2,167 county-level meteorological disaster prevention and reduction organizations or meteorological service organizations across the country. A total of 1,035 counties have included meteorological work in their "13th Five-Year Development Plan". The governments of 1,789 counties have released the Measures on Emergency Preparedness System for Meteorological Disasters. A total of 51,400 major organizations or villages have established emergency preparedness system for meteorological disasters. The government has finished the development of national platform for release and management of early warning information on emergencies and started operation. The unified and authoritative release of early warning to 27 kinds of natural disasters has been achieved.

【Flood control and drought relief】 In 2015, there was no burst of important dykes of big rivers and no dam failure of large and medium sized reservoirs across the country, creating a new low of flood disaster deaths in history. There was reduction of 15.65 million people subject to flood disaster in the whole year; 6.28 million people were under emergency transfer, a total of 490,000 people were rescued from flood. These efforts have avoided inundation of 17.01 million mu arable land, loss of 4.11 million t grain, inundation of 77 cities at or above county level and saved 42.2 billion yuan. A total of 250 million mu were irrigated to fight against drought, saving 22.60 million t grains, 20.1 billion yuan loss of cash crops. In addition, the government has also addressed the difficulty of 6.91 million people and 6.53 million large livestock in access to drinking water due to drought.

【Prevention and control of geological disasters】 In 2015, the central government invested 5.5 billion yuan special fund for prevention and control of large geological disasters. It has successfully predicted 452 geological disasters and avoided 20,465 casualties and 500 million yuan direct economic loss. The central government invested about 21 billion yuan special fund for prevention and control of large geological disasters in the "12th Five-Year Plan" period. The government has successfully predicted 6,561 geological disasters and avoided 316,192 casualties and 5.738 billion yuan direct economic loss. Taking advantage of activities such as Publicity Week for "April 22 Earth Day" and "May 12 National Day of Disaster Prevention and Reduction", the government has greatly publicized the knowledge on prevention and control of geological disasters to raise public awareness in this field. The government has organized 14,000 emergency drills for geological disasters with participation of 1.05 million people. It has organized 1.5 million person-times of training. The government has continuously promoted trans-province boundary prevention and control of land subsidence. It has held the joint meeting of the Yangtze River delta and meeting of Fenhe River Basin and Weihe River Basin on prevention and control of land subsidence to promote the development of the mechanism for joint prevention and control of land subsidence of key regions as well as development and implementation of relevant plan.

【Early warning to marine disasters】 In 2015, the government released over 300 types of marine prediction products, covering sea related industries such as tourism, fishery, transport and off-shore engineering. The government has finished the work on verification of benchmark tide and investigation on standard sections. It has carried out trial work on identification of major defense areas for marine disasters and investigation on marine disaster risk of large scale coastal projects. Also, the government has completed assessment of marine disaster risks and trial zoning at national, province, city and county levels. The government has further improved the joint action system and mechanism of the central government, local government at all levels in coastal regions and sea related departments for emergency response to marine disasters. The government has developed, revised and improved the

technical standards for marine observation and prediction as well as prevention and control of disasters. In addition, the government has further publicized popular knowledge on prevention and control of marine disasters in order to enhance public awareness in prevention of marine disasters and self-rescuing ability.

El Nino

The world is under the impacts of the strongest El Nino. This El Nino started in September of 2014 and reached the peak in November of 2015 (sea temperature at 2.9℃). The 3 key indicators such as the lasting period, accumulated intensity and peak intensity of this El Nino exceed that of the two strongest El Nino in history (one in 1982-1983 and another in 1997-1998). It is the strongest El Nino since the 20th century.

El Nino imposes remarkable impacts on climate. The impacts of El Nino on the climate of China gradually emerge. For example, the risk of forest fires has been high since the spring of 2015. There was dramatic increase of lightning fires in major forest areas in North China such as Heilongjiang Province and Inner Mongolia in the summer. In the autumn, there was more precipitation in South China. In the winter, the air temperature of North China was high than the historic average with less and weaker cold air activities. All these are consistent with the typical impacts of El Nino on climate. It is expected that the impacts of the current super strong El Nino will continuously decline and end in May-June of 2016. However, its impacts on climate will continue.

Data Sources and Explanations for Assessment

The data on the state of environment quality in the current report is dominated by the monitoring data of National Environmental Monitoring Network. Meanwhile, it absorbs the environment data provided by relevant ministries and commissions. Among them, the information about groundwater quality, groundwater quality assessed by groundwater aquifer system as unit, land resource and arable land as well as geological disasters is provided by Ministry of Land and Resources. Data on discharge and treatment of urban garbage (primary statistic data, the final data will be based on official annual report of relevant departments), treatment of rural garbage and sewage and scenic spots and historic sites is provided by Ministry of Housing and Urban-Rural Development. The data in transportation is provided by Ministry of Transport. The data on groundwater environment quality assessed with river basin as a unit, water quality of trans-province boundary waters, water and soil erosion, improvement of rural environment, flood and drought disasters is provided by Ministry of Water Resources. The data on the status of inland and marine fishery waters, monitoring and prevention and control of invasion of alien species, prevention and control of agriculture non-point pollution sources, and grassland chapter is provided by Ministry of Agriculture. The data on environmental protection of drinking water sources, some data on improvement of rural environment, prevention and control of endemic diseases is provided by National Health and Family Planning Commission. The data of energy chapter is provided by National Bureau of Statistics and National Energy Administration. The data of the chapter on desertification, wetland protection and forest is provided by State Forestry Administration. The data on earthquake disaster is provided by China Earth Administration. The data on air temperature, precipitation and meteorological disasters is provided by China Meteorological Administration. Finally, the data on the state of marine water environment, marine sediments, national marine nature reserves, important coastal wetlands and marine disasters is provided by State Oceanic Administration.

National Environmental Monitoring Network includes national ambient air quality monitoring network composed of 1,436 monitoring sites covering 338 APL cities; national surface water environment monitoring network including 972 water sections (sites) of 423 rivers and 62 lakes (reservoirs); national acid deposition monitoring network composed of nearly 1,000 monitoring sites covering 338 APL cities and some county-level cities; centralized drinking water source area water environment monitoring network covering 338 APL cities; coastal marine environment monitoring network composed of 301 monitoring sites across the coastal waters of the country; urban noise monitoring network covering nearly 80,000 monitoring sites in 338 APL cities; and national eco environment monitoring network including 645 ecological monitoring sites and 10 regional key monitoring stations in 31 provinces (autonomous regions or municipalities).

In the current Report, the assessment of urban ambient air quality is based on the Ambient Air Quality Standard (GB 3095-2012) with assessment indicators including SO_2, NO_2, PM_{10}, $PM_{2.5}$, CO and O_3. The assessment of surface water quality is based on Environmental Quality Standards for Surface Water (GB 3838-2002) and Measures on Assessment of Surface Water Quality (Trial) with 21 assessment indicators such as pH, dissolved oxygen, permanganate index, COD, BOD_5, ammonia nitrogen, TP, copper, zinc, cyanide, selenium, arsenic, mercury, cadmium, hexavalent chromium, lead, cyanide, volatile phenol, petroleum, anionic surfactant and sulfide. The indicators assessing trophic status of lakes (reservoirs) are chlorophyll-a, TP, TN, SD and permanganate index. The assessment of water quality of centralized drinking water source areas of cities at or above prefecture level is based on Environmental Quality Standards for Surface Water (GB 3838-2002) and Quality Standard for Groundwater (GB/T 14848-93). The assessment of the quality of groundwater is based on Quality Standard for Groundwater (GB/T 14848-93). The assessment of the quality of off-shore marine waters is based on Marine Water Quality Standard (GB 3097-1997) and Specification for Offshore Environmental Monitoring (HJ 442-2008) with 28 assessment indicators such as pH, dissolved oxygen, COD, BOD_5, inorganic nitrogen, nonionic ammonia, active phosphate, mercury, cadmium, lead, hexavalent chromium, total chromium, arsenic, copper, zinc, selenium, nickel, cyanide, sulfide, volatile phenol, petroleum, benzene hexachloride, DDT, malathion, methyl parathion, benzo[a]pyrene, anionic surfactant and E-coli. The assessment of sound environment is based on Environmental Quality Standard for Noise (GB 3096-2008) and Technical Specifications for Environmental Noise Monitoring — Routine Monitoring for Urban Environmental Noise (HJ 640-2012). The assessment of eco environment quality is based on Technical Criterion for Ecosystem Status Evaluation (HJ 192-2015). The rounding off of data is based on the Rules of Rounding Off for Numerical Value and Expression and Judgement of Limiting Values (GB/T 8170-2008).

Note: National data in the current Report does not cover Taiwan Province, Kong Kong SAR and Macao SAR except administrative zoning, national land area and earthquake disasters.

Contributors to the 2015 Report on the State of the Environment in China

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Contributing Ministries and Administrations

Ministry of Land and Resources

Ministry of Housing and Urban–Rural Development

Ministry of Transport

Ministry of Water Resources

Ministry of Agriculture

National Health and Family Planning Commission

National Bureau of Statistics

State Forestry Administration

China Earthquake Administration

China Meteorological Administration

National Energy Administration

State Oceanic Administration