2012
Report on the State of the Environment in China

Ministry of Environmental Protection
The People's Republic of China

The "2012 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.*

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May 28, 2013

CONTENTS

Boxes

The 18th National Congress of the Communist Party of China was held on November 8, 2012 in Beijing. Hu Jintao, General Secretary of the CPC Central Committee, delivered a report on behalf of the17th CPC Central Committee. The report noted the need to energetically promote ecological progress, give high priority to making ecological progress and incorporate it into all aspects and the whole process of advancing economic, political, cultural, and social progress, work hard to build a beautiful country, and achieve lasting and sustainable development of the Chinese nation.

Photo by Xinhua News Agency

The fifth session of the 11th National People's Congress opened on March 5, 2012 at the Great Hall of the People in Beijing. Premier Wen Jiabao delivered government work report, which noted the need to thoroughly implement the basic state policy of conserving resources and protecting the environment, strengthen environmental protection, and strive to solve major environmental problems that directly affect people's lives, such as heavy metals, drinking water sources, air, soil, and marine pollution.

Photo by Xinhua News Agency

The year 2012 is of special significance in China's development course. Confronted with the austere situation of slowdown in the world economic recovery and growing pressure from declining domestic economic growth, the CPC Central Committee and the State Council have been pursuing the theme of the outlook on scientific development, the main thread of accelerating the transformation of economic development pattern, and the general keynote of making steady progress, tightened and improved the macro control, and worked hard on ensuring steady growth, adjusting the structure, advancing reform, and benefiting the people. As a result, the macro economy has been in good shape, and the economic and social development tasks of the year have been fairly completed. The 18th National Congress of the CPC, which turned out be to a great success, incorporated the ecological progress into the overall plan for promoting economic, political, cultural, social, and ecological progress for the socialist cause with Chinese characteristics, and put forward the ideas of promoting ecological progress and building a beautiful country, which are major innovations of CPC in its theory and practice in governing and rejuvenating the country. Therefore, new progress has been made in the national environmental protection work, as shown below, under the correct leadership of the CPC Central Committee and the State Council.

1.The guidelines of the 7th National Conference on Environmental Protection have been implemented. The landmark achievement of this conference is presenting the idea to explore a new path for environmental protection in China, one that protects the environment during the development course and in turn promotes development through environmental protection effort. Afterwards, 28 local provinces, autonomous regions and municipalities directly under the Central Government convened local work meeting on environmental protection, and 26 local regions introduced local documents for further strengthening environmental protection in the name of the local government or party committee.

2.The annual tasks of reducing the total load of major pollutants were accomplished in all respects. The total load of COD, SO_2, ammonia nitrogen, and NO_x discharged in 2012 dropped by 3.05%, 4.52%, 2.62% and 2.77% respectively compared with the levels of 2011.

3.The environmental protection effort has played a growing role in optimizing the economic development. Steady progress has been made in the strategic environmental assessment for the western development drive. Ministry of Environmental Protection (MEP) reviewed and approved the environmental impact statements (EIS) of 240 construction projects with combined investment up to nearly 1.4 trillion yuan. Among these projects, 79 infrastructure development projects and projects for the improvement of people's wellbeing took up nearly half of the investments. Also, for the 24 projects with combined investment above 100 billion yuan that didn't meet related requirements, MEP adopted such measures as returning their EIS, declining or halting the review. The reform of the environmental impact assessment regime has been deepened, and an open procedure has been introduced in processing and review of EIS and acceptance check of the construction projects upon their completion. Public participation has been extended to help facilitate the social risk evaluation. The reform in environmental impact assessment institutions has been accelerated; 22 out of the 97 institutions launching pilot reform programs in two batches have completed the programs, and 47 nearly completed it.

4.New progress has been made in addressing prominent environmental problems. The State Council approved the 12th Five-Year Plan for National Safe Drinking Water Projects in Rural Areas.

The environmental conditions of centralized drinking water sources were evaluated in cities at or above prefectural level across the country, and the National Plan for Prevention and Control of Groundwater Pollution was implemented. A total of 5.4 billion yuan earmarked from the special fund was spent on remediating heavy metal contamination, and the performances in the implementation of the 12th Five-Year Plan for Prevention and Control of Heavy Metal Pollution were evaluated. 2.3 million tons of chromium slags accumulated during a long period of time were treated across the nation, which is three times of the annual average treatment volume of the previous six years. The 6.7 million tons of chromium slags, which have been stockpiled for as long as up to five decades, have been basically disposed of. The special campaigns for environmental protection were deepened. Supervisors were mobilized for over 2.55 million person•times of environmental law enforcement actions across the country with over one million site•times of inspections, identified 8,779 environmental violations, and put 1,770 environmental violation cases on watch list. The lead-acid battery producers which are in operation, in shut-down status or in operation-halting status for making corrections were subject to tougher regulation. The 100-day inspection campaign on environmental safety was completed, which involved 43,000 companies, identified 2,296 major environmental safety vulnerabilities, ordered 2,245 companies to make corrections, and put 105 companies on watch list.

5.Progress was made in combating the pollution in key basins, sea areas, and regions. The State Council approved the Plan for Prevention and Control of Water Pollution in Key Basins (2011-2015) and the 12th Five-Year Plan for Prevention and Control of Atmospheric Pollution in Key Regions. Major progress was made in fighting pollution in major lakes, and the water quality of Taihu Lake and other basins began to improve. A total of 2.5 billion yuan of special fund was allocated to preserve the sound lake ecosystems.

6.The ecological conservation and rural environmental protection efforts were strengthened. Vice Premier Li Keqiang presided over the first session of China National Committee for Biodiversity Conservation, which considered and approved China Action Plan for United Nations Decade on Biodiversity (2011-2020). The human activities in 363 national nature reserves were monitored through satellite remote sensing systems, which were then verified by field investigations. Fifteen provinces, autonomous regions, and municipalities directly under the Central Government launched their respective eco-province campaigns; over 1,000 counties (county-level cities, and districts) launched their eco-county campaigns; and 53 regions conducted pilot projects on promoting ecological progress. The Central Government allocated 5.5 billion yuan to the rural environmental protection special fund to support local efforts in the comprehensive improvement of rural environment. The national survey on soil contamination was concluded.

7.The preliminary eco-compensation mechanism for national key ecological functional zones was established. The coverage of national transfer payment system was extended, with growing amount of transfer payments, since the Central Government established the national transfer payment funds for key ecological functional zones in the year 2008. In 2012, the transfer payments covered 466 counties (county-level cities and districts), with the total amount up to 37.1 billion yuan.

8.The nuclear and radiation safety guarantee system has been strengthened. The State Council approved the 12th Five-Year Plan for Nuclear Safety and Prevention and Control of Radioactive Pollution & Long-range Objectives for 2020. The fifteen in-service nuclear power generating units across the country were operating in safe conditions, 29 nuclear power generating

units in construction were under quality control, and 19 civil research reactors were in safe conditions. National inspection campaign was conducted on radiation safety, which checked nearly 60,000 nuclear technology users.

9.Substantial progress has been made in environmental policies, legislation, science and technology, and monitoring systems. The amendments to the Environmental Protection Law have been proceeding smoothly. New ambient air quality standards have been developed and enforced. Accordingly, 496 monitoring sites located in 74 municipalities (including key regions such as Beijing-Tianjin-Hebei region, Yangtze River Delta, and Pearl River Delta, municipalities directly under the Central Government, provincial capital cities, and cities specifically designated in the state plan) have already been monitoring new indicators of $PM_{2.5}$ and ozone and released monitored data. Substantial progress has been made in the integration of air-ground environmental monitoring technologies, and Environment Satellite HJ-1C was launched successfully. Comprehensive Environmental Protection Catalogue (2012) was announced. Pilot projects were implemented in 15 local provinces, autonomous regions and municipalities directly under the Central Government on environmental pollution compulsory liability insurance. The Outline of National Environment Functional Zoning Plan was prepared, and trial programs were under way in the preparation of provincial zoning plans. New progress has been made in the Major Science and Technology Program for Water Pollution Control and Treatment. Sixty-eight national environmental protection standards were introduced. The side event in commemoration of the 20th anniversary of China Council for International Cooperation on Environment and Development (CCICED) was held successfully on the sidelines of United Nations Conference on Sustainable Development, so was the annual general meeting of CCICED.

10.The environmental protection capacity building has been enhanced, together with improved manpower. The development projects of environmental monitoring and enforcement complexes ran smoothly; 97% of all the 565 projects already commenced construction and 65% completed. The government supported 163 counties (districts) of 24 provinces (autonomous regions and municipalities directly under the Central Government) in the standardization of environmental monitoring centers, providing 170 community-level environmental supervision and enforcement agencies with mobile enforcement system and VOCs detection devices. Efforts were made to implement the Mid- and Long-Term Plan for Development of Ecological Conservation and Environmental Protection Human Resources (2010-2020), offering training programs to above 40,000 person•times.

The nationwide environmental quality this year was stable in general, which can be demonstrated by the following facts: there was slight pollution in surface waters in the country; the environmental quality of the seas was good at large, while the water quality of coastal seawaters was ordinary; the ambient air quality remained stable in urban areas, and no obvious change was observed in the geographical distribution of the acid rain; the area-wide acoustic environment quality and the road traffic noise level were stable in urban areas; and the radiation environmental quality was good in general.

Reduction of the Total Load of Major Pollutants

Basic Objectives

The objectives set for reducing the total load of major pollutants in 2012 are to reduce the total load of COD and SO_2 by 2% respectively and ammonia nitrogen by 1.5% from the 2011 baseline levels, and to manage zero growth in the total load of NO_x compared with the previous year.

Outcomes

In 2012, the total load of COD discharged throughout the country amounted to 24.237 million tons, down 3.05% from a year earlier; ammonia nitrogen 2.536 million tons, down 2.62%; SO_2 21.176 million tons, down 4.52%; and NO_x 23.378 million tons, down 2.77%. The year-on-year total load of each of the four major pollutants went down.

Major Measures

In 2012, earnest efforts were made to implement the following plans, including Comprehensive Work Plan for Energy Conservation and Pollution Reduction during the 12th Five-Year Plan Period from 2011 to 2015, 12th Five-Year Plan for National Environmental Protection, and 12th Five-Year Plan for Energy Conservation and Pollution Reduction. Tough regulation was conducted on verifying the total load of major pollutants. Pollution reduction measures were carried out with the emphasis on municipal wastewater treatment plants, paper mills, livestock and poultry breeding farms, thermal power plants, iron and steel makers, cement plants, and vehicles. There were growing financial inputs into pollution reduction, and the long-term mechanism for pollution reduction was improved. **Reduction of COD and ammonia nitrogen:** the municipal wastewater treatment capacity (including that of designated towns and industrial parks) grew by 12.94 million tons/day, and the municipal wastewater recycling capacity was up by 3.01 million tons. Advanced treatment/recycling processes through chemical oxidation approach were introduced in 315 paper mills and printing and dyeing companies. Inefficient paper making facilities were phased out with combined capacity of 7.35 million tons, so were inefficient printing and dyeing facilities with combined capacity of 3 billion meters. The wastewater and solid waste disposal facilities were upgraded in 8,630 large-scale livestock and poultry breeding farms (plots), and the efficiency for removing COD and ammonia nitrogen was up by 9 and 28 percentage points respectively. **Reduction of SO_2:** new power generating units with installed capacity up to 47.25 million kW were equipped with desulfurization facilities and put into operation this year. As a result, the total installed capacity of power generating units with desulfurization facilities added up to 718 million kW, accounting for 92% of the combined capacity of thermal power generating units. The flue gas bypasses were dismantled from 289 in-service power generating units whose combined capacity amounted to 127 million kW, so the comprehensive desulfurization rate was up to over 90% from 85% before. There were 97 new sintering machines installed with flue gas desulfurization facilities, and the sintering area amounted to 18,000 m^2. **Reduction of NO_x:** denitrification facilities were installed onto 250 sets of thermal power generating units with combined installed capacity of 96.7 million kW this year, adding the installed capacity of the units with denitrification facilities up to 226 million kW, which accounted for 27.6% of the installed capacity of thermal power generating units, up from 16.9% in the previous year. Denitrification facilities were also installed on 148 new type dry-process cement production lines, whose production capacities totaled 523,000 tons/day. Moreover, 1.32 million yellow-labeled vehicles were banned from the street. By the end of the year, the denitrification efficiency of the power generating units all over the country had averaged at 48%, up 18 percentage points compared the same period last year. The power generating units with denitrification facilities in 14 pilot provinces (which introduced the pricing policy

for power generated by such units) took up two thirds of the national total in terms of installed capacity; the denitrification efficiency of the pilot provinces averaged at 51.6%, 11 percentage points higher than that of the rest provinces. The pricing policy set for the electricity generated by power generating units with denitrification facilities had mobilized the enthusiasm of thermal power companies to build and operate the denitrification facilities. As a result, the NO_x emitted from the power industry dropped by 7.1%.

12th Five–Year Plan for Energy Conservation and Pollution Reduction

The State Council officially released 12th Five-Year Plan for Energy Conservation and Pollution Reduction (hereinafter referred to as the Plan) on August 6, 2012. The Plan is one of the specific plans approved by the State Council for the 12th Five-Year Plan period and is also a guideline in promoting energy conservation and pollution reduction during this period. This Plan is crucial for meeting the obligatory targets for energy conservation and pollution reduction. According to requirements of the Plan, the targets of reducing total discharge of major pollutants during the 12th Five-Year Plan period are 8% reduction of COD and SO_2 and 10% reduction of ammonia nitrogen and NO_x by 2015 compared with that of 2010.

The Plan has the following characteristics. First, the Plan is based on objective analysis of the reality and correct estimation of current situation. Second, the Plan has a practical guiding principle with emphasis on establishing target-driven mechanism, perfecting incentive and constraint mechanism, and forming work pattern for energy conservation and pollution reduction. The Plan's principles have set precise directions and a clear overall target, with specific reduction goals in key industrial areas, agriculture, etc. Third, the Plan has a focus on major tasks, which include optimizing industrial structure, improving energy efficiency, strengthening reductions of major pollutants, strengthening five subsequent tasks in reductions of major pollutants, strengthening construction of urban sewage treatment facilities, strengthening reductions of pollutants in key industries, launching the prevention and control of agricultural source pollution, controlling emissions from motor vehicles, and pushing forward the control of $PM_{2.5}$. Fourth, the Plan proposes with ten major projects in energy conservation and pollution reduction, six of which are closely related to pollution reduction, that is, construction of urban sewage treatment facilities, prevention and control of pollution of key basins, desulfurization and denitrification project, project of the prevention and control of pollution caused by livestock and poultry breeding farms, circular economy model projects, and capacity building project for energy conservation and pollution reduction. Fifth, the Plan proposes ten matching measures, utilizing legal, economical, technological and necessary administrative resources to guarantee the implementation of the Plan. Sixth, the Plan has further identified the responsibilities and functions of local governments at all levels as well as relevant departments.

Source of Data and Evaluation Standards

The environmental quality data in this report is mainly based on the monitoring data from national environmental monitoring network and includes the environmental data provided by relevant State Departments and Commissions. Among others, the data on groundwater environment quality and geological disasters were provided by Ministry of Land and Resources; data on provincial boundary water quality, soil erosion, floods and droughts of each water resources zone were provided by Ministry of Water Resources; data on water quality of inland and marine fishery waters, invasion of alien species, situation of grasslands and so on were provided by Ministry of Agriculture; data on forests, forest nature reserves, wetland conservation, alien forest pest invasion and so on were provided by State Forestry Administration; data on climatic conditions and meteorological disasters were provided by China Meteorological Administration; data on earthquake disasters were provided by China Earthquake Administration; data on water quality of the national marine environment and open sea area, marine sediments, marine nature reserves, important areas of coastal wetlands, and marine disasters were provided by State Oceanic Administration.

The national environmental monitoring network comprises the following networks: national ambient air monitoring network, which has 1,436 monitoring sites covering 338 cities (cities at or above prefectural level); national surface water environment monitoring network, with 972 sections (sites) of 423 rivers and 62 lakes (reservoirs); national acid deposition monitoring network, with more than 1,000 sites covering 487 cities (districts and counties); source water environment monitoring network, which covers 389 centralized drinking water sources in 113 major environmental protection cities; near-shore environmental monitoring network, with 301 monitoring sites covering national near-shore coastal areas; urban acoustic environment monitoring network, with nearly 80,000 sites covering all cities at or above prefectural level.

In this report, unless specifically noted, the assessment of the ambient air quality is in accordance with the Ambient Air Quality Standards (GB 3095-1996), the evaluation indicators are sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and inhalable particulate matters (PM_{10}). The assessment of surface water quality is in accordance with the Environmental quality standards for surface water (GB 3838-2002) and the Measures for Evaluation of Surface Water Environmental Quality (on trial), the evaluation indicators are pH value, dissolved oxygen, permanganate index , Chemical Oxygen Demand (COD) , 5-day Biochemical Oxygen Demand (BOD_5), ammonia nitrogen, total phosphor, copper, zinc, fluoride, selenium, arsenic, mercury, cadmium, hexavalent chromium, lead, cyanide, volatile phenol, petroleum pollutants, anionic surfactants and sulphides, totally 21 indicators; the assessment indicators for lake (reservoir) nutrition status are chlorophyll a, total phosphor, total nitrogen, transparency and permanganate index; the assessment of the water quality of the centralized drinking water sources in major environmental protection cities is in accordance with the Environmental quality standards for surface water (GB 3838-2002) and the Quality standard for ground water (GB/T 14848-93). The assessment of water quality at the coastal sea areas is in accordance with the Seawater quality standards (GB 3097-1997) and Specification for offshore environmental monitoring (HJ 442-2008), the evaluation indicators are pH value, dissolved oxygen, COD, BOD_5, inorganic nitrogen, un-ionized ammonia (UIA), active phosphate, mercury, cadmium, lead, hexavalent chromium, total chromium, arsenic, copper, zinc, selenium, nickel, cyanide, sulphides, volatile phenol, petroleum pollutants, HCH, DDT, malathion, methyl parathion, benzo (a) pyrene, anionic surfactants and coliform, totally 28 indicators. The assessment of the acoustic environmental quality is in accordance with the Technical specifications for environmental noise monitoring/Routine monitoring for urban environmental noise (HJ 640-2012) and Environmental quality standard for noise (GB 3096 - 2008).

Freshwater Environment

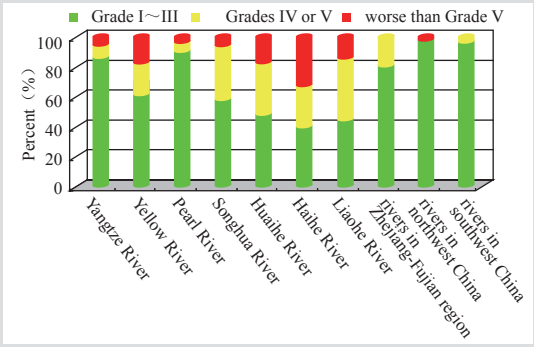
General Situation

The surface water sections under national monitoring program suffered from mild pollution in the year 2012.

Rivers

Of the national monitoring sections of 10 major river basins including Yangtze River, Yellow River, Pearl River, Songhua River, Huaihe River, Haihe River, Liaohe River, rivers in the Zhejiang-Fujian region, rivers in northwest China and rivers in southwest China, 68.9% observed water quality ranging between Grades I and III, 20.9% at Grade IV or V, and 10.2% worse than Grade V. The major pollution indicators were COD, BOD_5, and permanganate index.

Yangtze River Basin enjoyed good water quality. 86.2% of the 160 sections under national monitoring program recorded water quality ranging between Grades I and III, 9.4% of the sections observed water quality at Grade IV or V, and 4.4% of the sections had water quality worse than Grade V.



Percentage of graded water quality in 10 major river basins in 2012

The mainstream of Yangtze River enjoyed excellent water quality. 97.6% of the 42 sections under national monitoring program recorded water quality ranging between Grades I and III, and 2.4% at Grade IV or V.

The tributaries of Yangtze River observed good water quality. 82.2% of the 118 sections under national monitoring

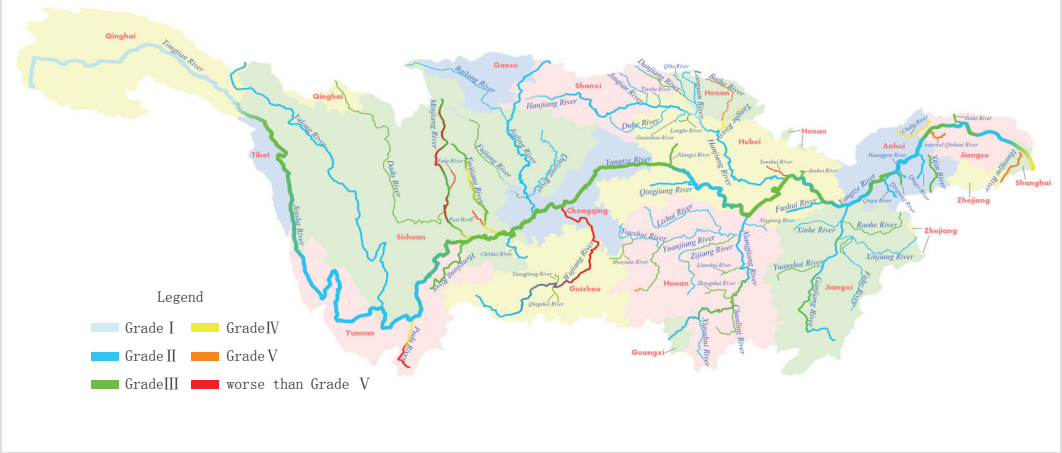


Illustration of Graded Water Quality of Yangtze River Basin in 2012

program recorded water quality between Grades I and III, 11.9% at Grade IV or V, and 5.9% worse than Grade V. Among major tributaries, Tanglang River, Wujiang River, Yunshui River, Fuhe River, and Fuxi River suffered from serious pollution; External Qinhuai River and Huangpu River recorded moderate pollution; Pudu River, Minjiang River, Tuojiang River, Chuhe River, Baihe River, Tanghe River, and Tangbai River observed mild pollution; and other tributaries enjoyed excellent or good water quality.

Sections sitting across provincial boundaries recorded good water quality, 82.1% of the sections had water quality ranging between Grades I and III, 14.3% at Grade IV or V, and 3.6% worse than Grade V. Wanmu Section, which belongs to Wujiang River and sits across Guizhou Province and Chongqing Municipality, suffered from serious pollution, and the major pollution indicator was total phosphor. Analysis of water resources regionalization indicated 79.0% of the sections in Yangtze River region recorded water quality between Grades I and III, and 8.6% worse than Grade V.

Illustration of Graded Water Quality of Yellow River Basin in 2012

Yellow River Basin was mildly polluted. 60.7% of the 61 sections under national monitoring program recorded water quality between Grades I and III, 21.3% at Grade IV or V, and 18.0% worse than Grade V. The major pollution indicators were BOD_5, COD, and ammonia nitrogen.

The mainstream of Yellow River enjoyed excellent water quality. 96.2% of the 26 sections under national monitoring program observed water quality between Grades I and III, and 3.8% at Grade IV or V.

The tributaries of Yellow River recorded moderate pollution. 34.3% of the 35 sections under national monitoring program recorded water quality between Grades I and III, 34.3% at Grade IV or V, and 31.4% worse than Grade V. The major pollution indicators were BOD_5, COD, and ammonia nitrogen.

The sections across provincial boundaries observed mild pollution. 63.1% of the sections recorded water quality between Grades I and III, 21.1% at Grade IV or V, and 15.8% worse than Grade V. The major contributors to the pollution were BOD_5, COD, and ammonia nitrogen. Analysis of water resources regionalization indicated 42.7% of the sections in the Yellow River region recorded water quality between Grades I and III, and 33.3% worse than Grade V.

Illustration of Graded Water Quality of Pearl River Basin in 2012

Pearl River Basin enjoyed excellent water quality. 90.7% of the 54 sections under national monitoring program observed water quality between Grades I and III, 5.6% recorded Grade IV or V water quality, and 3.7% had water quality worse than Grade V.

The mainstream of Pearl River recorded excellent water quality. 94.4% of the 18 sections under national monitoring program recorded water quality between Grades I and III, and 5.6% at Grade IV or V.

The tributaries of Pearl River observed good water quality. 84.6% of the 26 sections under national monitoring program observed water quality between Grades I and III, 7.7% at Grade IV or V, and 7.7% worse than Grade V.

Among the four rivers in the Hainan Island which flow into South China Sea, Nandu River, Wanquan River, and Changhua River enjoyed excellent water quality, while Shilu River recorded good water quality.

Sections across provincial boundaries observed good water quality, 80.0% of them recorded water quality ranging between Grades I and III, and 20.0% at Grade IV or V. Analysis of water resources regionalization indicated 86.4% of the sections in Pearl River region recorded water quality between Grades I and III, and 2.3% saw water quality worse than Grade V.

Songhua River Basin was mildly polluted. 58.0% of the 88 sections under national monitoring program recorded water quality between Grades I and III, 36.3% at Grade IV or V, and 5.7% worse than Grade V. The major pollution indicators were COD, permanganate index, and BOD_5.

The mainstream of Songhua River enjoyed good water quality. 75.0% of the 16 sections under national monitoring program observed water quality between Grades I and III, 18.7% at Grade IV or V, and 6.3% worse than Grade V.

The tributaries of Songhua River were mildly polluted. 67.6% of the 34 sections under national monitoring program recorded water quality between Grades I and III, 23.6% at Grade IV or V, and 8.8% worse than Grade V. The major contributors to the pollution were COD, permanganate index, and BOD_5.

Heilongjiang River waters were mildly polluted. 45.5% of the 22 sections under national monitoring program observed water quality between Grades I and III, and 54.5% at Grade IV or V. The major pollution indicators were permanganate index and COD.

Ussuri River waters were mildly polluted. 44.4% of the 9 sections under national monitoring program recorded water quality between Grades I and III, and 55.6% at Grade IV or V. The major pollution indicators were COD, permanganate index, and ammonia nitrogen.

Tumen River was mildly polluted. 33.3% of the 6 sections under national monitoring program observed water quality between Grades I and III, 50.0% at Grade IV or V, and 16.7% worse than Grade V. The major pollution indicators were COD, permanganate index, and total phosphor.

One national monitoring section of Suifen River recorded Grade IV water quality, with the major pollutant being COD.

Sections across provincial boundaries enjoyed excellent water quality, and all of them observed water quality between Grades I and III. Analysis of water resources regionalization showed 84.6% of the sections in Songhua River region

Illustration of Graded Water Quality of Songhua River Basin in 2012

recorded water quality between Grades I and III, and 3.8% worse than Grade V.

Huaihe River was mildly polluted. 47.4% of the 95 sections under national monitoring program recorded water quality between Grades I and III, 34.7% at Grade IV or V, and 17.9% worse than Grade V. The major contributors to pollution were COD, BOD_5, and total phosphor.

The mainstream of Huaihe River enjoyed excellent water quality. 90.0% of the 10 sections under national monitoring program recorded water quality between Grades I and III, and 10.0% at Grade IV or V.

The tributaries of Huaihe River suffered from moderate pollution. 38.1% of the 42 sections under national monitoring program observed water quality between Grades I and III, 38.1% at Grade IV or V, and 23.8% worse than Grade V. The major pollution indicators were COD, BOD_5, and total phosphor.

Yihe River, Shuhe River, and Sishui River waters had mild pollution. 72.7% of the 11 sections under national monitoring program observed water quality between Grades I and III, and

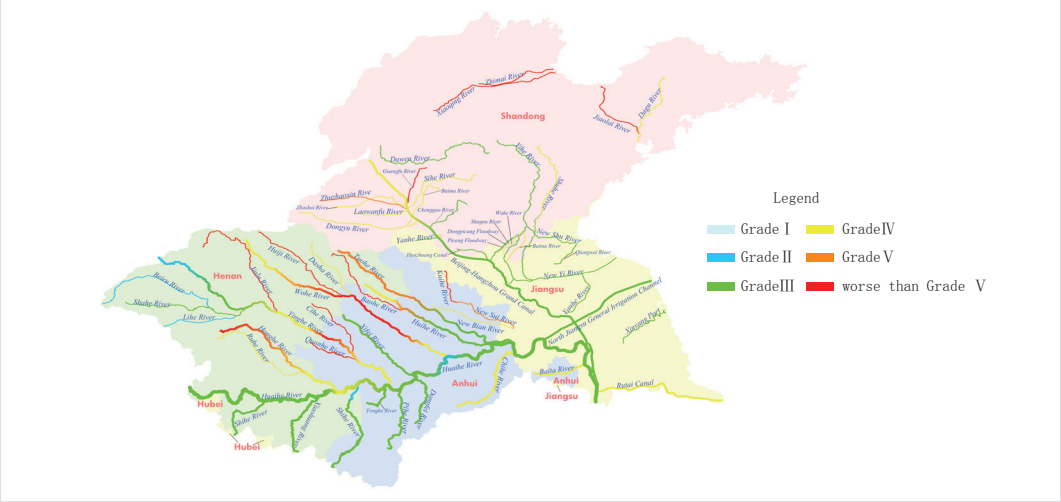


Illustration of Graded Water Quality of Huaihe River Basin in 2012

27.3% at Grade IV or V. The major pollution indicators were COD, permanganate index, and total phosphor.

Other waters in the Huaihe River Basin were moderately polluted. 37.5% of the 32 sections under national monitoring program recorded water quality between Grades I and III, 40.6% at Grade IV or V, and 21.9% worse than Grade V. The primary pollutants were COD, BOD_5, and petroleum pollutants.

Sections across provincial boundaries were moderately polluted. 40.7% of them recorded water quality ranging between Grades I and III, 33.4% at Grade IV or V, and 25.9% worse than Grade V. The major contributors to pollution included COD, total phosphor, and permanganate index. Analysis of water resources regionalization indicated 33.3% of the sections in Huaihe River region recorded water quality between Grades I and III, and 25.5% saw water quality worse than Grade V.

Haihe River Basin was moderately polluted. 39.1% of the 64 sections under national monitoring program recorded water quality between Grades I and III, 28.1% at Grade IV or V, and 32.8% worse than Grade V. The major pollution indicators were COD, BOD_5, and ammonia nitrogen.

The water quality of two national monitoring sections in the mainstream of Haihe River ranked at Grade V and worse than Grade V respectively. The major pollution indicators included ammonia nitrogen, permanganate index, and total phosphor.

The major tributaries of Haihe River were moderately polluted. 42.0% of the 50 sections under national monitoring program recorded water quality between Grades I and III, 24.0% at Grade IV or V, and 34.0% worse than Grade V. The major pollution indicators were COD, BOD_5, and ammonia nitrogen.

Luanhe River waters were mildly polluted. 66.7% out of the 6 sections under national monitoring program recorded water quality between Grades I and III, and 33.3% at Grade IV or V. The major pollution indicator was BOD_5.

Tuhaimajia River waters were seriously polluted. Three out of the 6 sections under national monitoring program recorded water quality at Grade IV or V, and the other three sections had water quality worse than the Grade V standard. The major pollution indicators were BOD_5, COD, and permanganate index.

Sections across provincial boundaries were moderately polluted. 41.2% of them recorded water quality ranging between Grades I and III, 26.5% at Grade IV or V, and 32.3% worse than Grade V. The major contributors to pollution included COD, BOD_5, and ammonia nitrogen. Analysis of water resources regionalization indicated 23.0% of the sections in Haihe River region recorded water quality between Grades I and III, and 63.9% saw water quality worse than Grade V.

Liaohe River Basin was mildly polluted. 43.6% of the 55 sections under national monitoring program recorded water quality between Grades I and III, 41.9% at Grade IV or V, and 14.5% worse than the Grade V. The major pollution indicators were BOD_5, ammonia nitrogen, and petroleum pollutants.

The mainstream of Liaohe River was mildly polluted. 35.7% of the 14 sections under national monitoring program observed water quality between Grades I and III, 57.2% at Grade IV or V, and 7.1% worse than Grade V. The major pollution indicators included BOD_5, permanganate index, and petroleum pollutants.

The tributaries of Liaohe River were moderately polluted. 38.1% of the 6 national monitoring sections recorded Grade IV or V water quality, and 61.9% worse than Grade V. The primary pollutants were BOD_5, ammonia nitrogen, and total phosphor.

Daliao River had moderate pollution. 18.8% of the 16 sections under national monitoring program observed water quality between Grades I and III, 56.2% at Grade IV or V, and 25.0% worse than Grade V. The major pollution indicators included ammonia nitrogen, BOD_5, and total phosphor.

Daling River was moderately polluted as well. 40.0% of the 5 sections under national monitoring program recorded water quality between Grades I and III, 40.0% at Grade IV or

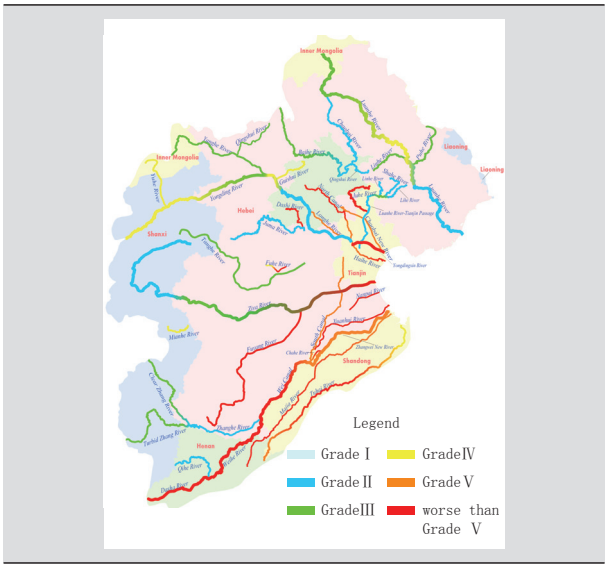


Illustration of Graded Water Quality of Haihe River Basin in 2012

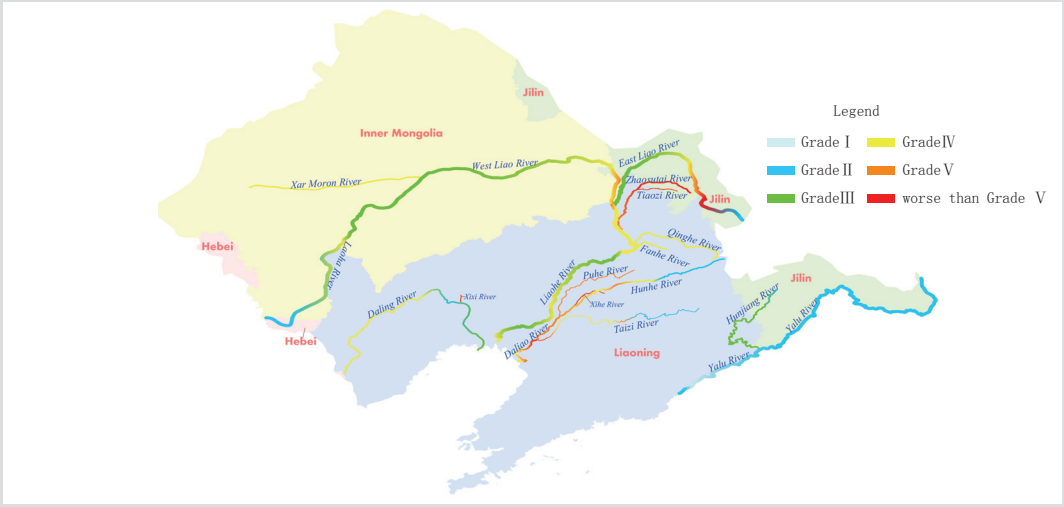


Illustration of Graded Water Quality of Liaohe River Basin in 2012

V, and 20.0% worse than Grade V. The major contributors to pollution were COD, BOD_5, and total phosphor.

Yalu River enjoyed excellent water quality. All of the 14 sections under national monitoring program recorded water quality between Grades I and III.

Sections across provincial boundaries were moderately polluted. 37.5% of them recorded water quality ranging between Grades I and III, 37.5% at Grade IV or V, and 25.0% worse than Grade V. The major pollution indicators included BOD_5, COD, and permanganate index. Analysis of water resources regionalization indicated 63.6% of the sections in Liaohe River region recorded water quality between Grades I and III, and 18.2% saw water quality worse than Grade V.

Rivers in Zhejiang–Fujian region have good water quality. 80.0% of the 45 sections under national monitoring program observed water quality between Grades I and III, and 20.0% at Grade IV or V.

Rivers in Zhejiang Province were mildly polluted. 70.8% of the 24 national monitoring sections recorded water quality between Grades I and III, and 29.2% at Grade IV or V. The major pollution indicators were petroleum pollutants, ammonia nitrogen, and COD.

Rivers in Fujian Province observed good water quality. 88.2% of the 17 sections under national monitoring program recorded water quality between Grades I and III, and 11.8% at Grade IV or V.

The water quality of all of the 4 national monitoring sections in Anhui Province ranked at Grade II.

Jiekou Section of Xin'an River sitting on the Anhui-Zhejiang border recorded excellent water quality.

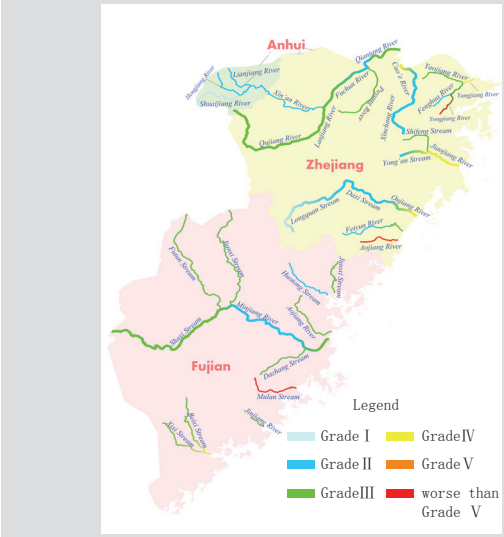


Illustration of Graded Water Quality of Rivers in Zhejiang–Fujian Region in 2012

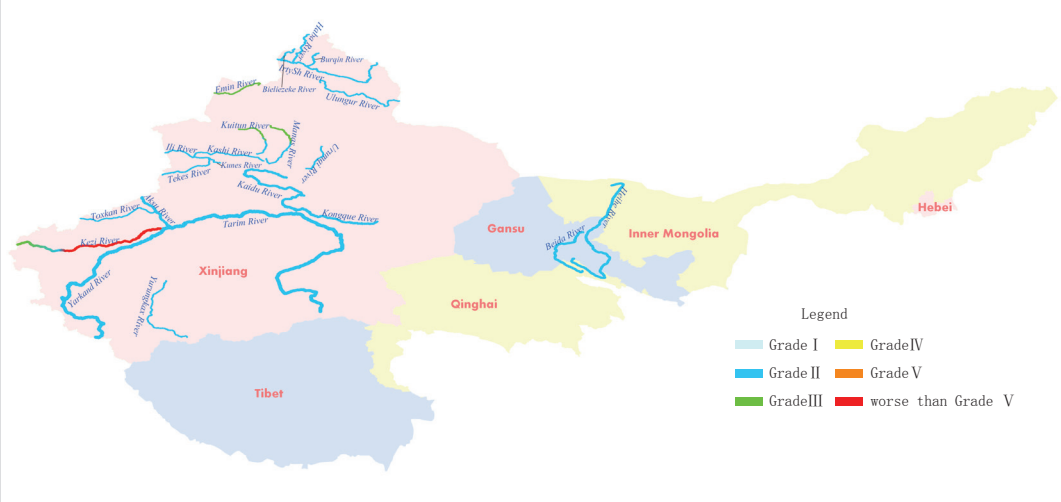


Illustration of Graded Water Quality of Rivers in northwest China in 2012

Rivers in northwest China enjoyed excellent water quality. 98.0% of the 51 sections under national monitoring program observed water quality between Grades I and III, and 2.0% worse than Grade V.

Rivers in Xinjiang Autonomous Region enjoyed excellent water quality. 97.8% of the 46 sections under national monitoring program recorded water quality between Grades I and III, and 2.2% worse than Grade V.

The water quality of all of the 4 national monitoring sections in Gansu Province ranged between Grades I and III.

One national monitoring section in Qinghai Province recorded Grade II standard water quality.

The Huangzangsi Section of Heihe River sitting on the Qinghai-Gansu border observed excellent water quality.

Rivers in southwest China enjoyed excellent water quality. 96.8% of the 31 sections under national monitoring program recorded water quality between Grades I and III, and 3.2% at Grade IV or V.

Rivers in Tibet Autonomous Region enjoyed excellent water quality. All of the 10 national monitoring sections observed water quality between Grades I and III.

Rivers in Yunnan Province observed excellent water quality as well. 95.2% of the 21 national monitoring sections recorded water quality between Grades I and III, and 4.8% at Grade IV or V.

The Qucainka Section of Lancang River sitting on the Tibet-Yunnan border observed good water quality. Analysis of water resources regionalization indicated that all of the sections in rivers of southwest China met with Grade III water quality standard.

Lakes （Reservoirs）

61.3% of the 62 major lakes (reservoirs) under national monitoring program recorded water quality between Grades I and III, 27.4% at Grade IV or V, and 11.3% worse than Grade V. The major pollution indicators were total phosphor, COD, and permanganate index.

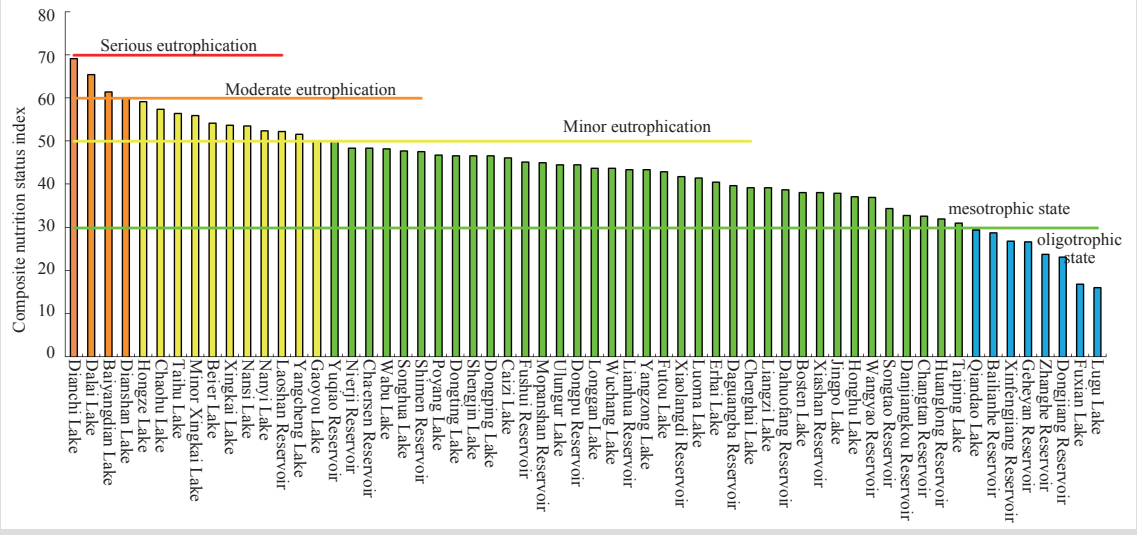
Sixty lakes (reservoirs), except Miyun Reservoir and Pangong Tso, were monitored for nutrition status. Four of the sixty lakes (reservoirs) observed moderate eutrophication, taking up 6.7%; 11 recorded minor eutrophication, taking up 18.3%; 37 were in mesotrophic state, taking up 61.7%; and 8 were in oligotrophic state, taking up 13.3%.

Illustration of Graded Water Quality of Rivers in southwest China in 2012

Water quality of major lakes (reservoirs) in 2012

Type of lakes (reservoirs)	Grade Ⅰ	Grade Ⅱ	Grade Ⅲ	Grade Ⅳ	Grade Ⅴ	Worse than Grade Ⅴ
Three lakes*	0	0	0	2	0	1
Major lakes	2	3	8	12	1	6
Major reservoirs	3	10	12	2	0	0
Total	5	13	20	16	1	7

* Taihu Lake, Dianchi Lake, and Chaohu Lake



Eutrophication status of major lakes (reservoirs) in 2012

Taihu Lake was mildly polluted. The major pollution indicators were total phosphor and COD. Geographical analysis indicated that the western shore waters were moderately polluted, while the northern shore, lake center, eastern shore, and southern shore waters were mildly polluted.

The evaluation results of nutrition status showed the lake as a whole recorded minor eutrophication. Geographical analysis indicated moderate eutrophication in the western shore waters and minor eutrophication in the northern shore, lake center, eastern shore, and southern shore waters.

Among the major inflow and outflow rivers of the lake, Liangxi River was moderately polluted; Wuxi River, Hongxiang Port, Yincun Port, Baidu Port, Taige Canal, and Wujin Port were mildly polluted; and other major rivers enjoyed excellent or good water quality.

Dianchi Lake was seriously polluted.The major pollution indicators were total phosphor, COD, and permanganate index. Geographical analysis showed Caohai Lake and Waihai Lake were seriously polluted.

The evaluation results of nutrition status showed the lake waters as a whole recorded moderate eutrophication. Geographical analysis indicated moderate eutrophication in Caohai Lake and Waihai Lake.

Among the major inflow and outflow rivers of the lake, Xinhe River, Laoyunliang River, Haihe River, Wulong River, Chuanfang River, Laoyu River, and Xiba River were seriously polluted; Chaihe River, Maliao River, Zhonghe River, and Daguan River were moderately polluted; and Panlong River, Baoxiang River, Luolong River, and Dongda River were mildly polluted.

Chaohu Lake was mildly polluted. The major pollution indicators included petroleum pollutants, total phosphor, and COD. Geographical analysis indicated moderate pollution in the western half of the lake and mild pollution in the eastern.

The evaluation results of nutrition status revealed minor eutrophication in the lake as a whole, and geographical analysis indicated moderate eutrophication in the western half of the lake and mild eutrophication in the eastern.

Among the major inflow and outflow rivers, Nanfei River, Shiwuli River, and Paihe River recorded serious pollution; Zhaohe River observed moderate pollution; and other major rivers enjoyed excellent or good water quality.

Major lakes

Poyang Lake observed good water quality and was in mesotrophic state. Dongting Lake recorded mild pollution with the major pollutant of total phosphor. The lake as a whole was in mesotrophic state. Hongze Lake was moderately polluted, and the major contributor to the pollution was total phosphor. The lake as a whole recorded mild eutrophication.

Among other 29 major freshwater lakes under national monitoring program, 6 lakes including Dalai Lake, Baiyangdian Lake, Dianshan Lake, Bei'er Lake, Ulungur Lake, and Chenghai Lake suffered from serious pollution; 11 lakes including Minor Xingkai Lake, Xingkai Lake, Nansi Lake, Yangcheng Lake, Gaoyou Lake, Shengjin Lake, Caizi Lake, Longgan Lake, Wuchang Lake, Yangzong Lake, and Bosten Lake observed minor pollution; 7 lakes including Nanyi Lake, Wabu Lake, Dongping Lake, Luoma Lake, Erhai Lake, Jingpo Lake, and Pangong Tso enjoyed good water quality; and 5 lakes including Futou Lake, Liangzi Lake, Honghu Lake, Lugu Lake, and Fuxian Lake recorded excellent water quality.

Evaluation results of the nutrition status of the 28 lakes showed 3 lakes including Dalai Lake, Baiyangdian Lake, and Dianshan Lake suffered from moderate eutrophication; 7 lakes including Minor Xingkai Lake, Bei'er Lake, Xingkai Lake, Nansi Lake, Nanyi Lake, Yangcheng Lake, and Gaoyou Lake recorded minor eutrophication; 16 lakes including Wabu Lake, Shengjin Lake, Dongping Lake, Caizi Lake, Ulungur Lake, Longgan Lake, Wuchang Lake, Yangzong Lake, Futou Lake, Luoma Lake, Erhai Lake, Chenghai Lake, Liangzi Lake, Bosten Lake, Jingpo Lake, and Honghu Lake were in mesotrophic state; and Lugu Lake and Fuxian Lake were in oligotrophic state.

Major reservoirs Twenty-five out of the 27 major reservoirs had excellent or good water quality. Minor pollution was recorded in Ni'erji Reservoir and Lianhua Reservoir, with the major pollutant as total phosphor.

The evaluation results of the nutrition status of 26 major reservoirs indicated minor eutrophication in Laoshan Reservoir, and the rest of those reservoirs were in mesotrophic or oligotrophic state.

Major Water Conservancy Projects

Three Gorges Project Area enjoyed good water quality. All of the three sections under national monitoring program met Grade III water quality standard.

Eastern route of South–to–North Water Diversion Project Sanjiangying Section of Jiajiang River, the intake of the eastern route from Yangtze River, met Grade III water quality standard. Along the mainstream of the route, the Inner Canal, Baoying Segment, Suqian Segement, South Shandong Segment, and Hanzhuang Segment of the Grand Canal met Grade III water quality standard; and Liangji Segment recorded Grade IV water quality. Hongze Lake had Grade V water quality with the major contributor to the pollution as total phosphor, where minor eutrophication was observed.

Luoma Lake met Grade III water quality standard and was in mesotrophic state. Yihe River which empties into Luoma Lake also met Grade III standard. Nansi Lake observed Grade IV water quality with the major contributors to the pollution as total phosphor and COD; minor eutrophication was observed in the lake. Among the 11 rivers that flow into Nansi Lake, the water quality of Old Canal (Jining Segment) and Guangfu River was worse than Grade V standard; Zhuzhaoxin River met Grade V standard; Sihe River, Baima River, Weishan Segment of Old Canal, Xizhi River, Dongyu River, and Zhushui River met Grade IV standard; and Yanhe River and Chengguo River met Grade III standard. Dongping Lake recorded Grade III water quality and was in mesotrophic state. Grade III water quality was observed in Dawen River which empties into Dongping Lake.

Middle route of South–to–North Water Diversion Project Danjiangkou Reservoir met Grade II water quality standard and was in mesotrophic state. Among the 9 tributary rivers that flow into Danjiangkou Reservoir, Hanjiang River, Jinqian River, Tianhe River, Duhe River, Guanshan River, Danjiang River, Qihe River, and Laoguan River enjoyed excellent water quality; and Langhe River observed good water quality. Taocha Section of the intake of the middle route of South-to-North Water Diversion Project met Grade II water quality standard.

Inland Waters for Fishery

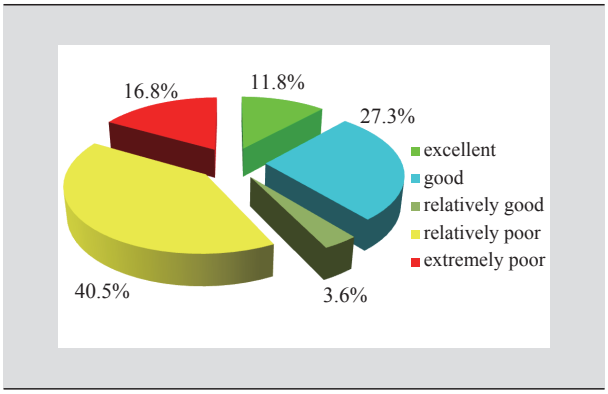
The primary pollution indicators of major river waters for fishery included total nitrogen, total phosphor, UIA, permanganate index, and copper. The level of total nitrogen and total phosphor in some fishery waters of Yellow River, Yangtze River, and Heilongjiang River Basins; of UIA in some fishery waters of Yellow River and Heilongjiang River Basins; of permanganate index in several fishery waters of Heilongjiang River and Yellow River Basins; and of copper in fishery waters of Yellow River exceeded the pollution limits by a relatively large margin.The level of copper slightly exceeded the upper limit in some fishery waters of Yangtze River. Excessive level of permanganate index and volatile phenol was observed in more waters, while excessive level of total nitrogen, UIA, petroleum pollutants, copper, and cadmium was recorded on a smaller scale compared with the previous year.

The major pollution indicators of essential lake/reservoir waters for fishery were total nitrogen, total phosphor, permanganate index, petroleum pollutants, and copper. The level of total phosphor and total nitrogen was relatively farther beyond the upper limit than other pollutants. Excessive level of total nitrogen and total phosphor was recorded on a smaller scale, while excessive level of permanganate index, petroleum pollutants, copper, and volatile phenol were observed in more waters from a year earlier.

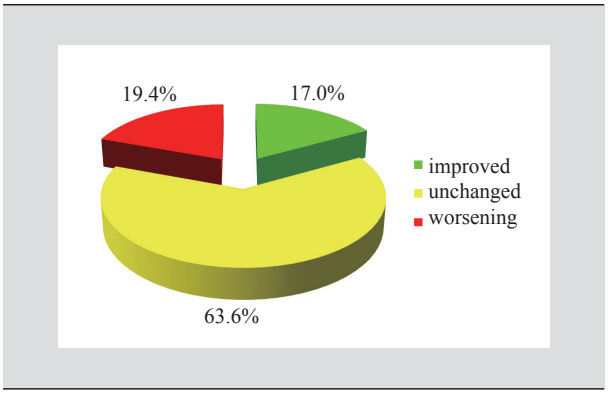
The major pollution indicators of some waters in national aquatic spasm resources conservation areas (freshwater) were total nitrogen, total phosphor, permanganate index, and copper.

Environmental Quality of Groundwater

One hundred and ninety-eight prefectural administrative regions across the country monitored the environmental quality of groundwater in 2012, with the monitoring sites totaled 4,929, among which 800 were national monitoring sites. In accordance with Quality Standard for Ground Water (GB/T 14848-93), the comprehensive evaluation results showed 580 monitoring sites were rated excellent in terms of groundwater quality, accounting for 11.8% of the total; 1,348 sites rated good, accounting for 27.3%; 176 rated relatively good, accounting for 3.6%; 1,999 rated relatively poor, accounting for 40.5%; and 826 rated extremely poor, accounting for 16.8%. The major pollution indicators that exceeded quality standards were iron, manganese, fluoride, nitrite nitrogen, nitrate nitrogen, and ammonia nitrogen, total hardness, total dissolved solids, sulphate, and chloride. The level of heavy metals (metalloids) in several monitoring sites exceeded standards.



Ground water quality in China in 2012



Year–on–year change of groundwater quality in China in 2012

There were 4,677 water quality monitoring sites in 187 cities for which continuous monitoring data were kept. Among them, 793 sites had improved water quality, accounting for 17.0%; 2,974 sites had unchanged water quality, accounting for 63.6%; and 910 sites recorded worsening water quality, accounting for 19.4%.

Centralized Drinking Water Sources in National Major Cities Tasked with Environmental Protection

There were 387 centralized drinking water sources in 113 major cities tasked with environmental protection being monitored this year, including 240 surface water sources and 147 groundwater sources. A total of 22.96 billion tons of water was supplied in those cities to 162 million populations. 21.89 billion tons met water quality standards, accounting for 95.3% and up 4.7 percentage points from a year earlier.

Total Load of Major Pollutants in Wastewater

A total of 68.46 billion tons of wastewater was discharged across the country in 2012, with discharged COD up to 24.237 million tons, down 3.05% from a year earlier; and discharged ammonia nitrogen up to 2.536 million tons, down 2.62% from a year earlier.

Total load of major pollutants in wastewater in China in 2012

COD(10,000 t)					Ammonia nitrogen (10,000 t)				
Total load	Industry	Domestic	Agriculture	Centralized	Total load	Industry	Domestic	Agriculture	Centralized
2423. 7	338. 5	912. 7	1153. 8	18. 7	253. 6	26. 4	144. 7	80. 6	1. 9

Measures and Actions

【Combating water pollution in key basins】 The State Council officially gave written instructions on the Plan for Prevention and Control of Water Pollution in Key Basins (2011-2015) in April 2012 and evaluated the performances of eight provinces (autonomous regions and municipalities) in the middle and lower reaches of Yangtze River concerning the implementation of the 2011 annual plans. The national inter-departmental meeting for environmental protection and the special meeting for combating water pollution in the Songhua River Basin were held. The interpretations to the indicators for performance evaluation in implementation of the specific plan for prevention and control of water pollution in key basins were amended. A consulting mechanism was established for combating water pollution in basins. Preparatory efforts were made in setting up the integrated water environment management platform. Moreover, an agreement was signed concerning the water environment compensation in Xin'an River Basin, officially putting forward the water environment

compensation mechanism for basins across provincial boundaries.

【Combating pollution by heavy metals】 MEP organized the evaluation of local performances last year in implementation of the 12th Five-Year Plan for Comprehensive Prevention and Control of Pollution by Heavy Metals, reported the evaluation results to the State Council, and circulated them among related provinces, autonomous regions, and municipalities directly under the Central Government, so as to urge local regions to implement the said plan. Measures for the evaluation of performances in implementing the aforementioned plan and the detailed rules for the evaluation of the discharge load of major heavy metal pollutants were also circulated.

【Progress in implementation of the National Major Science and Technology Program for Water Pollution Control and Treatment】 The tasks during the 12th Five-Year Plan period from 2011 to 2015 were arranged for the National Major Science and Technology Program for Water Pollution Control and Treatment. Acceptance check was in full swing. Management schemes and mechanisms were more creative, and all tasks proceeded smoothly. The acceptance check of the projects identified by the 11th Five-Year Planwent on orderly, so did the project proposal for the 12th Five-Year Plan period. Breakthroughs were made on a series of key technologies for water pollution control and treatment as well as for ecosystem restoration of waters. Environmental reference system and technological platform were developed. Technical breakthrough was made in upgrading the municipal wastewater treatment standard from Grade I-B to Grade I-A. The key technology for purification of lightly polluted raw water was mastered. The water environment regulation pattern was innovated, and emerging environmental industries were hatched.

【Toughest water resources management system】 The State Council issued the Opinions on Enforcing the Toughest Water Resources Management System on January 12, 2012, making both overall and specific arrangements at the State level for introducing the toughest water resources management system ever. The water resources volume, water use efficiency, and pollution cap of water functional zones were identified for all the provinces, autonomous regions, and municipalities directly under the Central Government. Substantial progress was made in allocating the water resources of 25 major rivers across provincial boundaries. The 12th Five-Year Plan for Building a Water-efficient Society was announced; the supervision and management of water functional zones were enhanced; and the national capacity building program was initiated for water resources monitoring.

【Water quality and hygiene monitoring for centralized water supply projects in rural areas】 Efforts continued to monitor the water quality and hygiene of centralized water supply projects in rural areas in the country. The amount of monitored items, counties, projects, and population increased significantly. More guidance was given to local regions about monitoring the water quality and hygienic conditions of drinking water in rural areas. The on-site sampling, laboratory management, and data review regulations were enforced to the full extent. As a result, the monitoring work of the water quality and hygienic conditions in rural areas was improved. The inter-departmental cooperation was enhanced, the funds more secured and the matching policies better implemented in this regard.

【Environmental enforcement inspection and supervision campaigns of centralized drinking water sources in lakes and reservoirs】 Special enforcement inspection campaigns were organized among centralized drinking water sources in lakes and reservoirs across the country between March and June 2012. Twelve provinces, autonomous regions and municipalities directly under the Central Government were supervised, with the focus on intensive inspection on pollution outlets, illegal construction projects, net-cage aquaculture, and tourism development activities within the first and second grade conservation areas, especially the first grade conservation areas. Investigations were conducted and punishments were meted out in accordance with law. A total of 4,008 lake- or reservoir-based centralized drinking water sources were inspected all over the country.

Marine Environment

General Situation

China enjoyed good marine environmental quality this year, and the coastal water quality was ordinary.

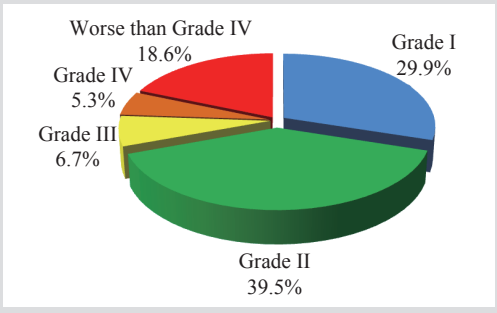
China Seas

The comprehensive evaluation results of the inorganic nitrogen, active phosphate, petroleum pollutants, and COD in China seas indicated China's territorial seawaters were in good conditions in general, with about 94% of the seawater areas meeting Grade I seawater quality standards.

Coastal Seawaters

The water quality of the coastal seawaters in China was stable and ordinary this year. The major pollutants were inorganic nitrogen and active phosphate.

Calculated by the area represented by each monitoring site, the combined area of seawater with Grade I water quality amounted to 94,437 km^2, of seawater with Grade II water quality 108,360 km^2, of seawater with Grade III water quality 24,565 km^2, of seawater with Grade IV water quality 9,655 km^2, and of seawater with worse than Grade IV water quality 43,995 km^2.



Percentage of graded coastal seawaters in China in 2012

Calculated by the number of monitoring sites, 69.4% of the seawaters met Grade I or II seawater quality standard, up 6.6 percentage points from a year earlier; 12.0% met Grade III or IV standard, down 8.3 percentage points from the previous year; and 18.6% worse than Grade IV standard, up 1.7 percentage points.

Bohai Sea coastal seawater quality was ordinary. 67.3% of seawater met Grade I or II water quality standard, up 10.2 percentage points from a year earlier; 20.5% met Grade III or IV standard, down 12.2 percentage points; and 12.2% were worse than Grade IV standard, up 2.0 percentage points. The major nonattainment indicators were inorganic nitrogen, pH value, and UIA.

Yellow Sea recorded good coastal seawater quality. 87.0% of seawater met Grade I or II standard, up 3.7 percentage points from a year earlier; and 13.0% recorded Grade III or IV standard, down 3.7 percentage points. None of the seawaters was recorded water quality worse than Grade IV standard, the same case as last year. The major nonattainment indicator was inorganic nitrogen.

East China Sea recorded very poor seawater quality along the coast. 37.9% of seawaters met Grade I or II standard, up 1.0 percentage point from a year earlier; 15.8% met Grade III or IV standard, down 7.3 percentage points; and 46.3% were worse than Grade IV, up 6.3 percentage points. The major nonattainment indicators were inorganic nitrogen and active phosphate.

South China Sea recorded good coastal seawater quality. 90.3% of seawaters met Grade I or II standard, up 11.7 percentage points from a year earlier; 3.9% met Grade III or IV standard, down 9.7 percentage points from a year earlier; and 5.8% were worse than Grade IV standard, down 2.0 percentage points. The major nonattainment indicator was inorganic nitrogen.

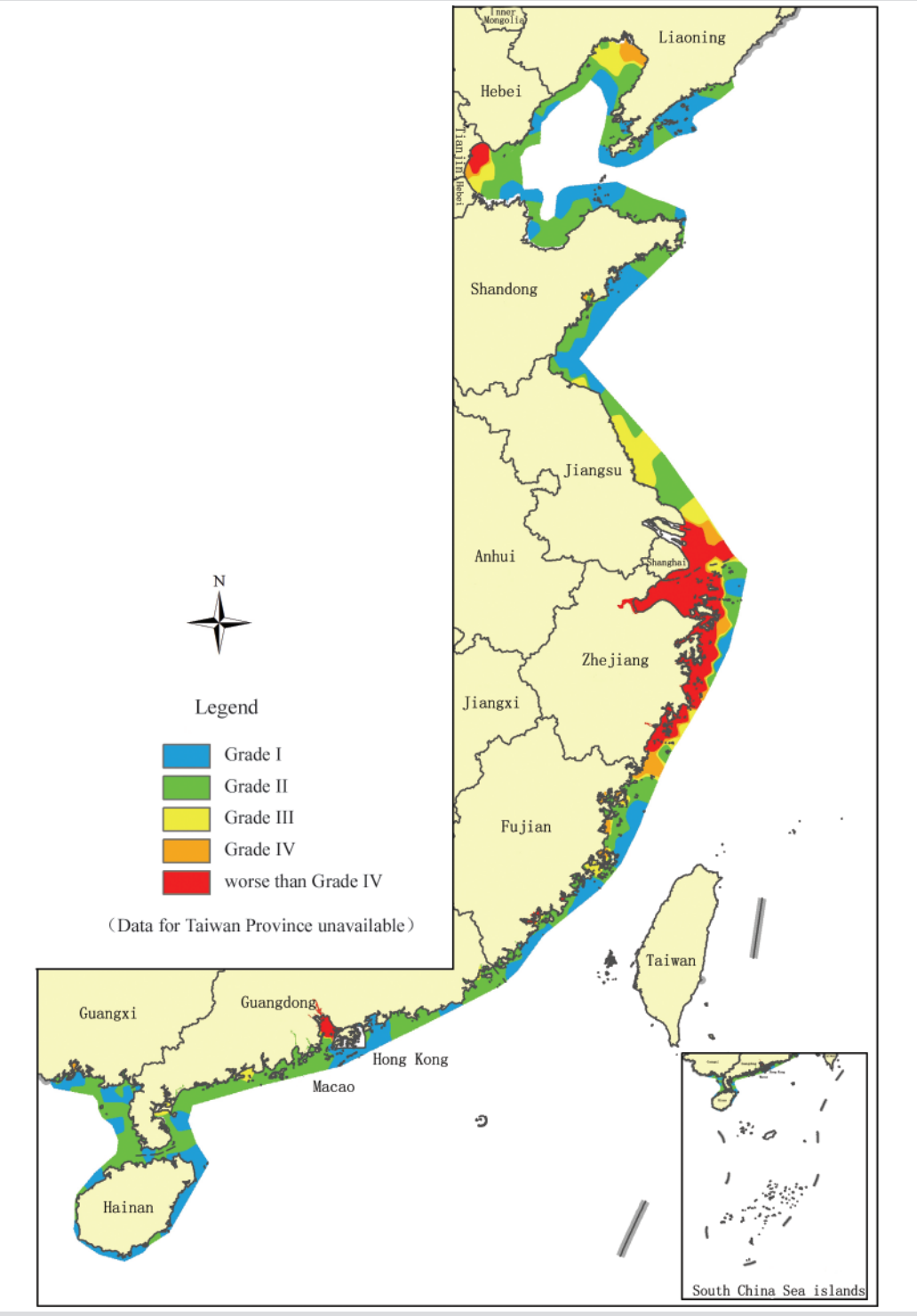
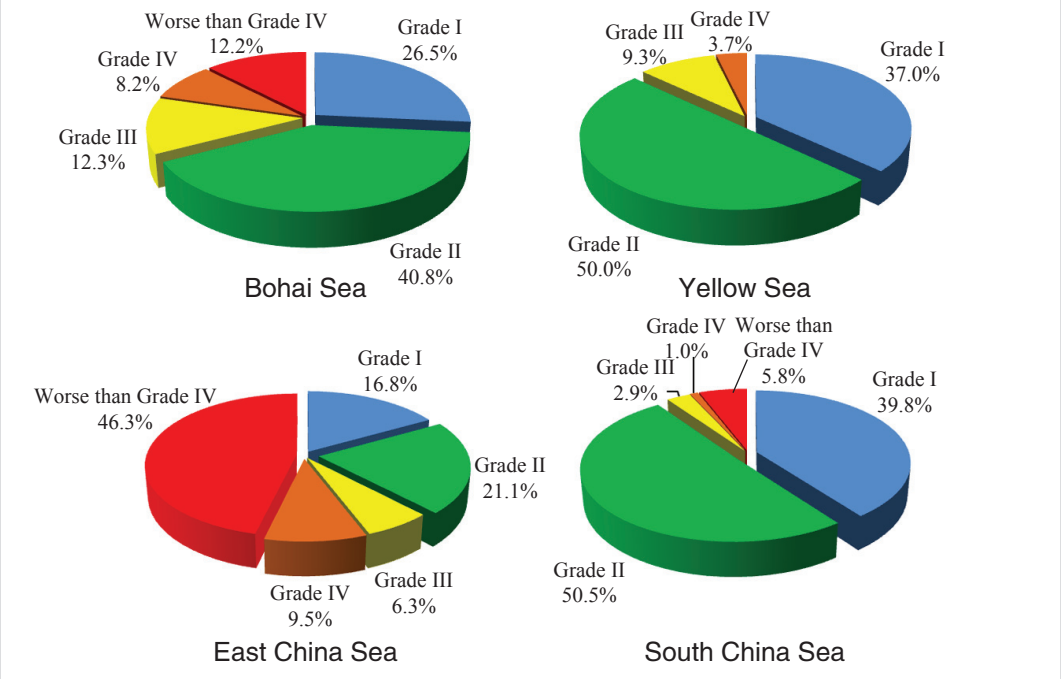


Illustration of graded coastal seawaters in China in 2012

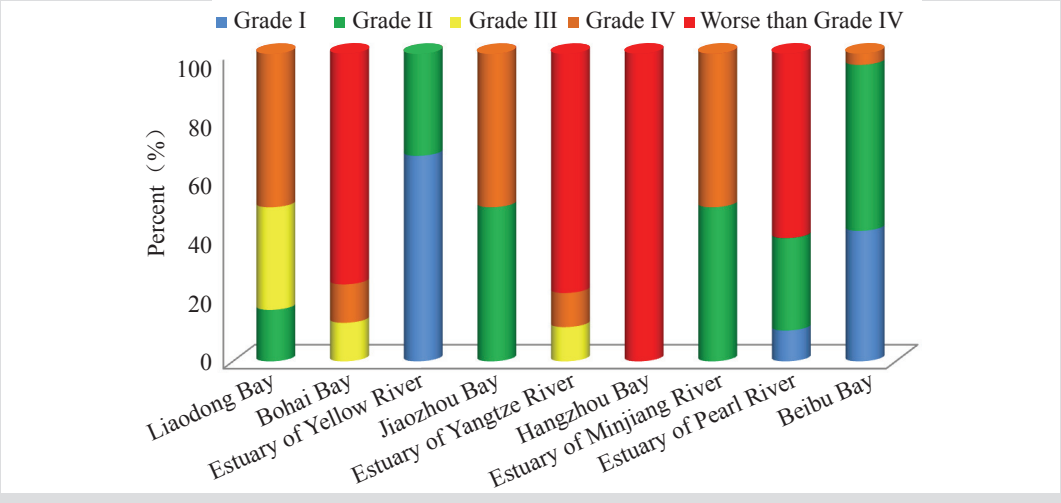


Percentage of graded coastal seawaters of four major seas in China in 2012

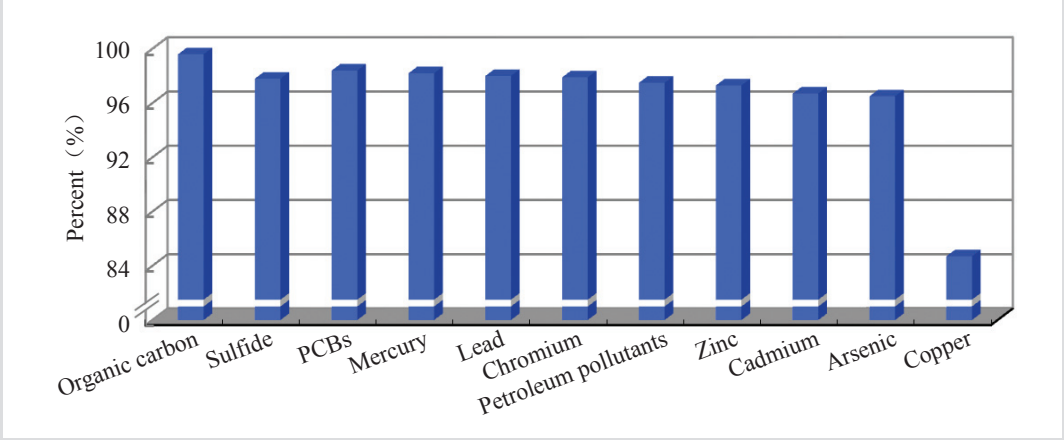
Major bays Among the nine major bays, the estuary of Yellow River enjoyed excellent water quality; Beibu Bay observed good water quality; Liaodong Bay, Jiaozhou Bay, and the estuary of Minjiang River recorded poor water quality; and Bohai Bay, the estuary of Yangtze River, Hangzhou Bay, and the estuary of Pearl River recorded very poor water quality. The estuaries of Yellow River and Minjiang River saw improved water quality compared with last year, and other major bays' water quality remained unchanged.

Open Seas

Zhongsha Islands and Nansha Islands in the central and southern South China Sea recorded good water quality this



Water quality of major bays in 2012



Percentage of monitoring sites which met Grade I quality standard concerning monitoring indicators for sediments in coastal seawaters in 2012

year, and the level of inorganic nitrogen, active phosphate, petroleum pollutants, and COD all met with Grade I seawater quality standards.

Marine Sediments

There were 581 designated sites in China's territorial seawaters this year for monitoring marine sediments in respect of petroleum pollutants, heavy metals, arsenic, PCBs, sulfide, and organic carbon. The monitoring results indicated the overall quality of sediments in coastal seawaters was good. The copper content in sediments of 85% of the monitoring sites met Grade I quality standard, while the level of other monitoring indicators in sediments of above 96% of the monitoring sites met Grade I quality standard. The sediments in seawaters other than the coastal waters also had good quality, and only some monitoring indicators in several monitoring sites exceeded the upper limit set for the Grade I marine sediment quality standard.

Land-based Pollutants

Rivers emptying into seas 4.403 million tons of permanganate index, 623,000 tons of ammonia nitrogen, 61,000 tons of petroleum pollutants, 3.694 million tons of total nitrogen, and 316,000 tons of total phosphor were discharged into seas this year through 193 sections of rivers that empty into seas.

Pollution sources discharging directly into seas Around 5.6 billion tons of wastewater was discharged altogether this year from 425 monitored pollution sources with above 100 m^3 of daily discharge volume, including industrial pollution sources, domestic pollution sources and mixed sewage outlets. The discharged pollutants amounted to around 218,000 tons of COD, 1,026.1 tons of petroleum pollutants, 17,000 tons of ammonia nitrogen, 2,920.9 tons of total phosphor, 228.5 kg of mercury, 2,752.7 kg of Cr^{6+}, 4,586.9 kg of lead, and 826.1 kg of cadmium.

Pollutants discharged by rivers that empty into four major seas in 2012

Sea	Permanganate index (10,000 t)	Ammonia nitrogen (10,000 t)	Petroleum pollutants (10,000 t)	Total nitrogen (10,000 t)	Total phosphor (10,000 t)
Bohai Sea	7.1	1.6	0.2	5.0	0.3
Yellow Sea	23.4	2.4	0.3	8.8	0.5
East China Sea	306.1	37.7	4.2	272.8	26.9
South China Sea	103.7	20.6	1.5	82.8	3.9

Pollutants from sources discharging directly into Chinese seas in 2012

Item / Pollution source	Wastewater (100 million t)	COD (10,000 t)	Petroleum pollutants (t)	Ammonia nitrogen (10,000 t)	Total phosphor (t)	Mercury (kg)	Cr^{6+} (kg)	Lead (kg)	Cadmium (kg)
Industry	17.7	2.8	105.6	0.1	79.8	2.2	247.1	729.6	10.7
Domestic	6.9	4.0	225.1	0.4	645.0	16.4	268.0	1216.6	153.5
Mixed	31.4	15.0	695.4	1.2	2196.1	209.9	2237.6	2640.7	661.9

Pollutants from sources discharging directly into four major seas in 2012

Item / Sea	Wastewater (100 million t)	COD (10,000 t)	Petroleum pollutants (t)	Ammonia nitrogen (10,000 t)	Total phosphor (t)
Bohai Sea	1.8	0.7	35.8	0.1	90.8
Yellow Sea	10.5	5.4	102.5	0.4	674.7
East China Sea	34.0	12.3	614.5	0.9	1206.6
South China Sea	9.6	3.4	273.2	0.3	948.7

Seawaters for Fishery

The major pollution indicators in the spawn sites, feeding sites, migration passages and nature reserves of major sea fish, shrimp, shellfish, and algae species were inorganic nitrogen, active phosphate, and petroleum pollutants. The level of inorganic nitrogen and active phosphate exceeded the upper limits of relevant standards by relatively large margins than other pollutants in some fishery waters in East China Sea and the estuary of Pearl River, so was the level of petroleum pollutants in the coastal seawaters in Hebei Province. Excessive inorganic nitrogen, active phosphate, petroleum pollutants, and COD were observed on a larger scale in Chinese seas than last year. Among them, the share of seawaters with excessive petroleum pollutants increased significantly, and the share of seawaters with excessive copper, zinc, and mercury decreased.

The primary pollution indicators in major marine aquaculture plots were inorganic nitrogen and active phosphate. The level of inorganic nitrogen was farther beyond the upper limits set by relevant standards in some aquaculture waters in East China Sea and South China Sea, so was the level of active phosphate in some aquaculture waters in South China Sea. Excessive inorganic nitrogen and active phosphate was observed on a much larger scale than last year, and the share of seawaters with excessive petroleum pollutants, COD, copper, cadmium, and mercury decreased.

The major pollution indicators in the sediments of major marine fishery waters were copper and cadmium. The level of copper was farther beyond the upper limits set by relevant standards in some fishery waters in East China Sea, so was the level of cadmium in some fishery waters of Yellow Sea.

The major pollution indicators in some parts of the national aquatic germplasm resources conservation areas (marine) were inorganic nitrogen and active phosphate.

Measures and Actions

【Developing the Plan for Prevention and Control of Pollution to Coastal Seawaters (2012-2015)】 The Plan for Prevention and Control of Pollution to Coastal Seawaters (2012-2015) (hereinafter referred to as the Plan), the first national plan for prevention and control of marine pollution, was developed. The Plan aims at improving the environmental quality of coastal seawaters and protecting marine ecosystems, adheres to the principle of "making overall plans for land and sea, and for rivers and seas", analyzes the situations for combating pollution to coastal seawaters, outlines the basic tasks in five aspects as well as the objectives and tasks for 40 major sea areas, identifies eight pillar projects, and comes up with comprehensive policy measures in six aspects.

【Circulating the Guidelines for Further Strengthening Environmental Protection of Coastal Seawaters】 The Guidelines for Further Strengthening Environmental Protection of Coastal Seawaters analyze the situations and pressure for marine environmental protection in China, outline the guidelines and basic principles, and propose the major tasks of environmental protection departments for protecting the marine environment. The guidelines will play an active role in guiding the environmental protection work of environmental protection departments in coastal areas.

National Environmental Emergency and Safety Guarantee

A total of 542 environmental emergencies happened in 2012, including 5 severe incidents, 5 major incidents and 532 ordinary incidents. No extremely serious incident occurred. MEP directly commanded and handled 33 environmental emergencies, down 69% compared with that of 2011. Date analysis indicated 13 emergencies took place in the first quarter, 14 in the second quarter, 5 in the third quarter and 1 in the fourth quarter. Cause analysis showed 11 emergencies resulted from work safety, 11 caused by traffic accidents, 3 by pollution discharged by enterprises, 1 by natural disasters and 7 by other factors. Pollution type analysis indicated there were 30 water pollution incidents, 2 blood lead incidents, and 1 air pollution incident. Among water pollution incidents, there were 4 marine pollution incidents; the other 26 incidents influenced drinking water source areas to different degrees.

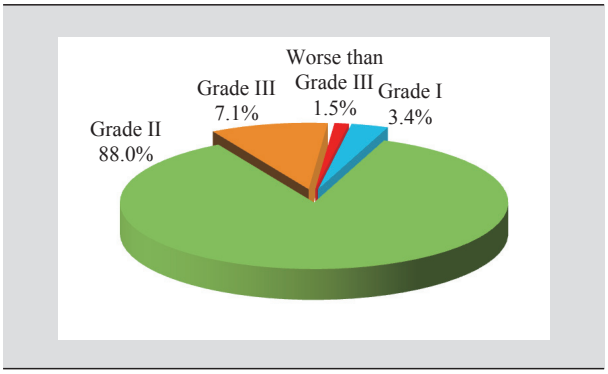
MEP organized a 100-day inspection on environmental safety from the end of May to mid-September in 2012. During this inspection, 28,746 on-site inspection forms were filled online by environmental protection departments at all levels. 360,000 person•times inspected 43,000 enterprises. 2,296 potential safety hazards were detected, 2,245 of which were rectified, and the other 51 rectified under supervision. The rectification rate reached 98%. 105 enterprises were supervised. MEP organized five national inspection groups to supervise the implementation of 100-day inspection on environmental safety by 10 provinces, autonomous regions, and municipalities directly under the Central Government. Seventy enterprises identified with major environmental risks or tailings ponds were inspected and nearly 200 problems were disclosed. The groups briefed the situations to local authorities promptly and advised local authorities on work plans. The groups also reported to the State Council and contributed to the identification of local government's role in supervising environmental safety and enterprises' role in ensuring environmental safety.

In 2012, MEP received 23,486 inquiries through environmental hot line "010-12369" and internet. It processed 1,554 cases and settled down all of them. Based on the results dispatched by MEP Emergency Response Office from local regions and those reported by local environmental protection departments across the country, pollution complaints in 1,235 cases turned out to be basically true, which accounted for 79.5% of the total cases settled. Related enterprises were punished by local environmental protection departments due to environmental violations. Among them, 384 enterprises were asked to rectify before certain deadlines, 233 enterprises were shut down for rectification, 144 enterprises were banned, shut down or partly shut down. 102 enterprises were rectified on site, 44 enterprises received fines and 19 enterprises were warned. Besides, 303 enterprises were asked to improve pollution control facilities and fix before due date. A number of environmental problems hampering public health, work and life were solved.

Atmospheric Environment

General Situation

Three major pollutants SO_2, NO_2 and PM_{10} were evaluated in 325 cities at or above prefectural level (including some prefectures, autonomous prefectures, leagues, and province-governed cities) and 113 national key cities tasked with environmental protection, in accordance with Ambient Air Quality Standards (GB 3095-1996)*.The results indicated the ambient air quality was stable in cities nationwide throughout the year. The situation was also stable concerning acid rain pollution in the country, with still serious pollution, however.



Percentage of graded ambient air quality in cities at or above prefectural level in 2012

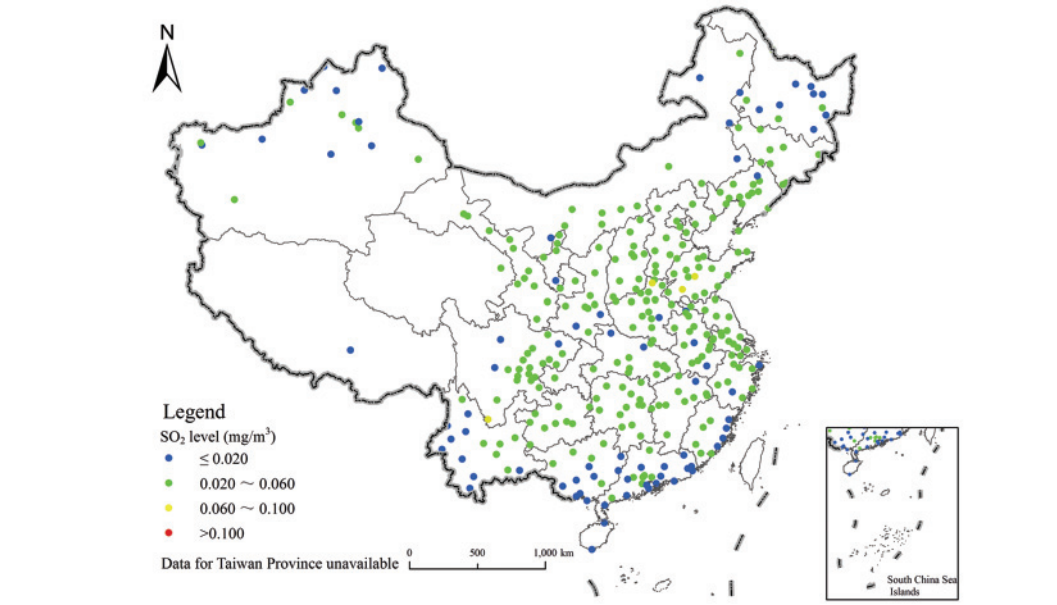
Air Quality

Cities at or above prefectural level 91.4% of the cities at or above prefectural level met ambient air quality standards (at or better than Grade II standard) this year, up 2.4 percentage points from a year earlier. Among them, 11 cities including Haikou, Sanya, Xing'an, Meizhou, Heyuan, Yangjiang, Aba, Ganzi, Pu'er, Dali, and Altay, met Grade I air quality standard, while 8.6% failed to meet Grade I or Grade II standard.

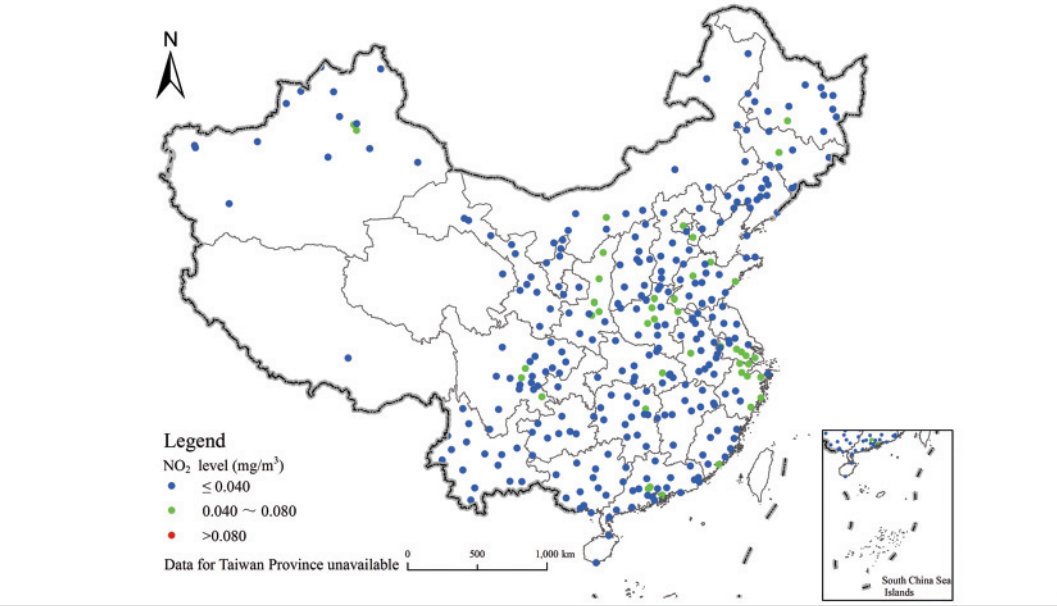
In 2012, 98.8% of the cities at or above prefectural level recorded the annual average level of SO_2 at or better than Grade II standard, and no cities recorded it worse than Grade III standard. The annual average level of SO_2 ranged between 0.004 mg/m^3 and 0.087 mg/m^3, mainly from 0.020 mg/m^3 to 0.050 mg/m^3.

The annual average level of NO_2 met Grade I or Grade II standard in all of the cities at or above prefectural level; and 86.8% of them met Grade I standard this year. The annual average level of NO_2 ranged between 0.005 mg/m^3 and 0.068 mg/m^3, mainly from 0.015 mg/m^3 to 0.045 mg/m^3.

* According to validity, Ambient Air Quality Standard (GB3095-1996) was still valid in 2012 and the evaluations were carried out accordingly, except otherwise specified.

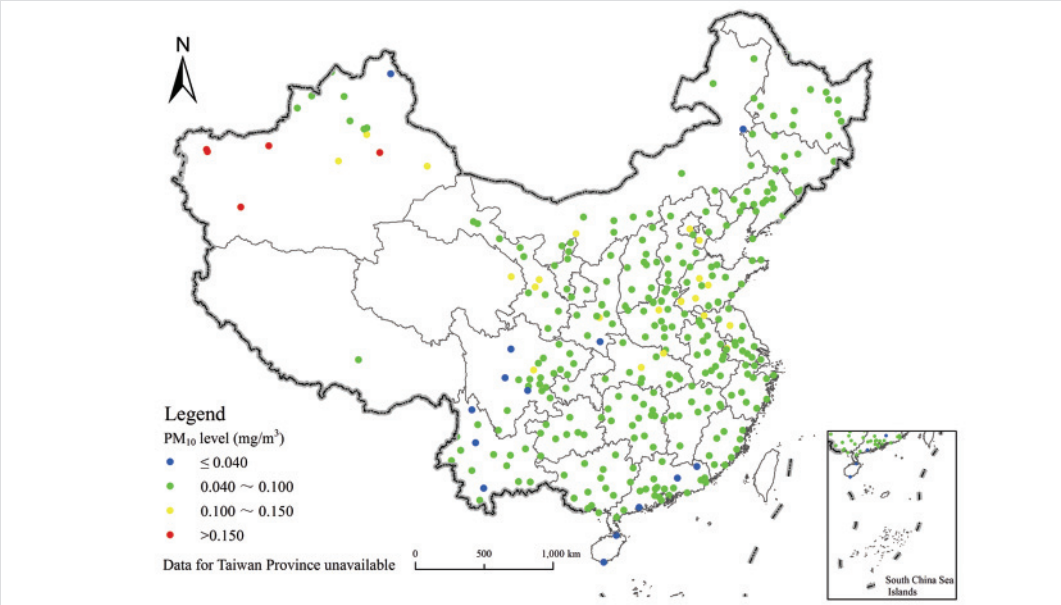


Annual average level of SO_2 in cities at or above prefectural level in 2012



Annual average level of NO_2 in cities at or above prefectural level in 2012

The annual average level of PM_{10} met or was better than Grade II standard in 92.0% of the cities at or above prefectural level, and was worse than Grade III standard in 1.5% of them. The annual average level of PM_{10} ranged between 0.021mg/m^3 and 0.262 mg/m^3, mainly from 0.060 mg/m^3 to 0.100 mg/m^3.



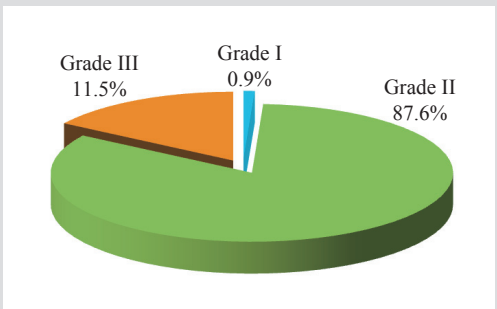
Annual average level of PM_{10} in cities at or above prefectural level in 2012

National major cities tasked with environmental protection 88.5% of the national major cities tasked with environmental protection met ambient air quality standards this year, up 4.4 percentage points from a year earlier.

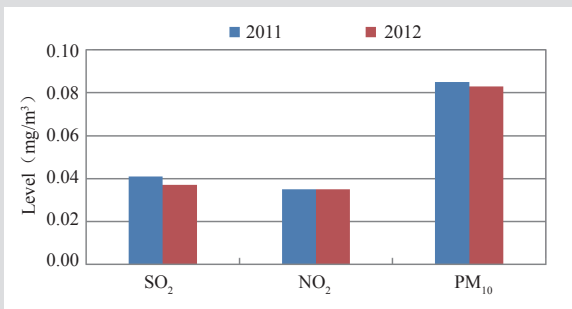
The annual average level of SO_2, NO_2, and PM_{10} in the ambient air of major cities tasked with environmental protection was 0.037, 0.035, and 0.083 mg/m^3 respectively. The annual average level of SO_2 declined by 9.8% and PM_{10} by 2.4% from a year earlier, and NO_2 was at the same level with last year.

Note: Ambient Air Quality Standard (GB 3095-2012) was officially released in February 2012 and set to be enforced throughout the country as of January 1, 2016. Seventy-four cities had established the monitoring network conforming to new ambient air quality standard and begun monitoring accordingly by the end of this year. Those cities included cities in key regions-Beijing-Tianjin-Hebei region, Yangtze River Delta, and Pearl River Delta; municipalities directly under the Central Government; provincial capital cities; and cities specifically designated in the State plans. The evaluation results of SO_2, NO_2, and PM_{10} in accordance with the new standard indicated 40.9% of cities at or above prefectural level met air quality standards, down 50.5 percentage points; and 23.9% of major cities tasked with environmental protection met standards, down 64.6 percentage points.

Among cities at or above prefectural level, the annual

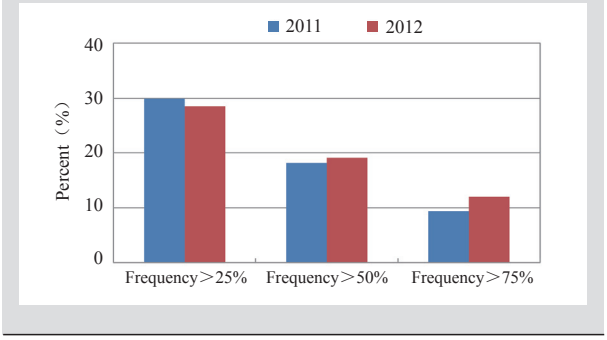


Percentage of graded air quality in national major cities tasked with environmental protection in 2012

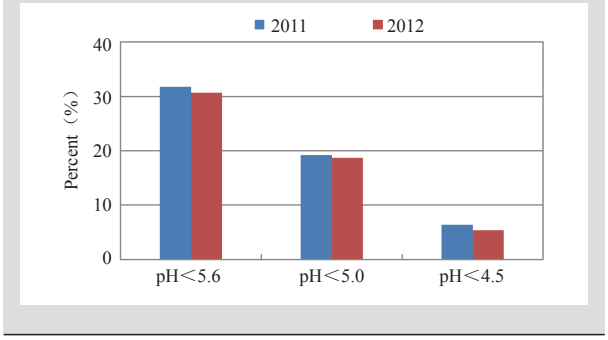


Year–on–year change of air pollutants in major cities tasked with environmental protection

average level of SO_2 exceeded standards in four cities, accounting for 1.2%; the annual average level of NO_2 was higher than the upper limit set by the standards in 43 cities, accounting for 13.2%; and the annual average level of PM_{10} was beyond the upper limit of the standards in 186 cities, accounting for 57.2%. Among the major cities tasked with environmental protection, two cities recorded the annual average level of SO_2 to be higher than the standards, accounting for 1.8%; 31 cities observed the annual average level of NO_2 to be higher than the standards, accounting for 27.4%; and 83 cities recorded the annual average level of PM_{10} to be higher than the standards, accounting for 73.4%.



Year–on–year change of the percentage of cities (counties) with varied acid rain frequencies

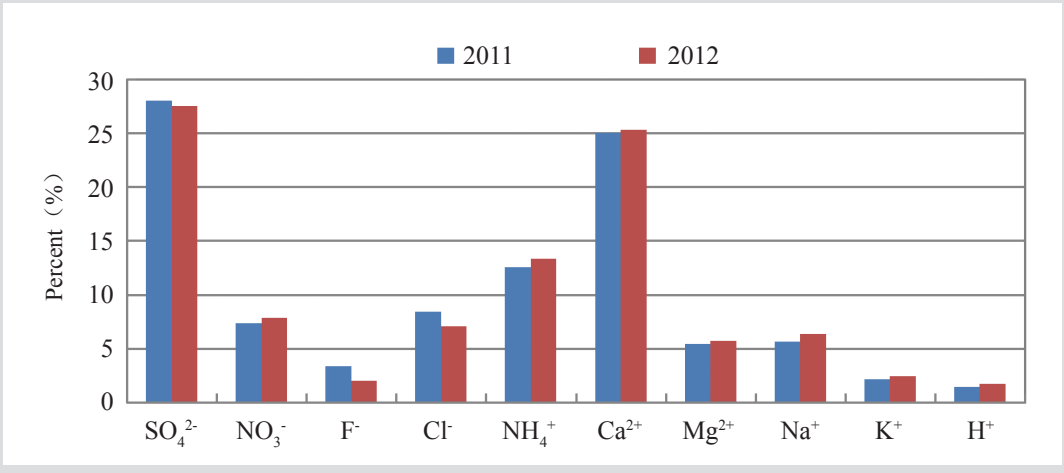


Year–on–year change of the percentage of cities (counties) with varied annual average pH values

Acid Rain

Acid rain frequency 215 out of the 466 monitored cities (counties) had acid rain records, taking up 46.1%. The acid rain frequency of 133 cities was over 25%, accounting for 28.5% of the monitored cities (counties); and the acid rain frequency of 56 cities was over 75%, accounting for 12.0%.

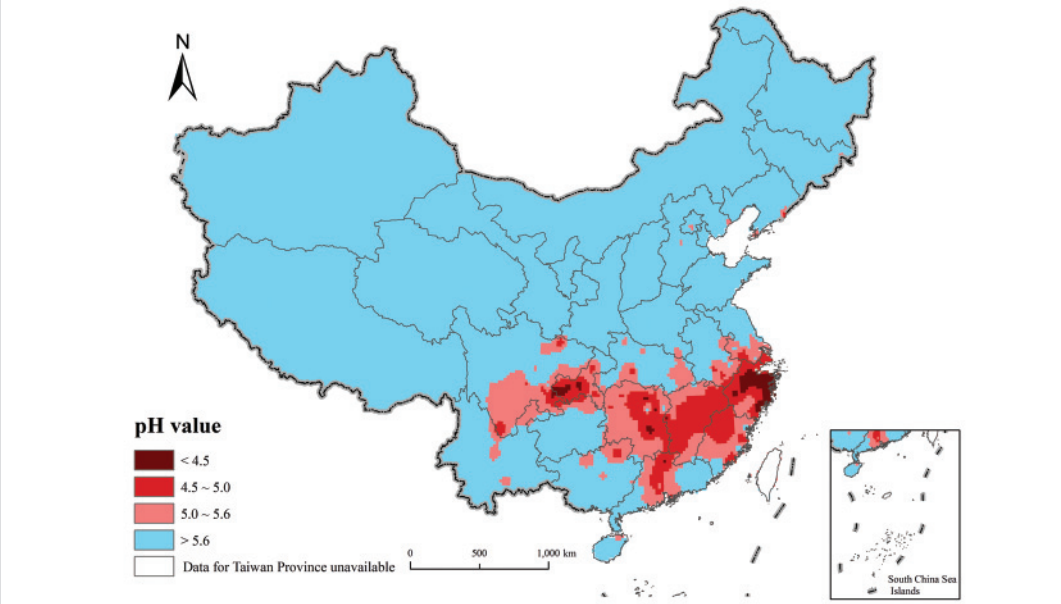
Acidity of precipitation The annual average pH value of rainfalls was below 5.6 (acid rain) in 30.7% of the cities (counties), below 5.0 (relatively serious acid rain) in 18.7% of the cities, and below 4.5 (serious acid rain) in 5.4% of the cities. The percentage of cities (counties) experiencing acid rain, relatively serious acid rain, and serious acid rain this year



Year–on–year change of the normality of major ions in precipitation

was down 1.1 percentage points, 0.5 percentage point, and 1.0 percentage point respectively from the previous year.

Chemical composition The major positive ions in the precipitation were Ca^{2+} and NH_4^+, which accounted for 25.4% and 13.4% respectively of the total ion equivalent. The major negative ion was SO_4^{2-}, accounting for 27.6% of the total ion equivalent, while NO_3^- took up 7.9%. Sulphate was the primary acid-causing substance.



Isoline of the annual average pH value of rainfalls in China in 2012

Geographical distribution of acid rain In 2012, the acid rain in China mainly covered the region along and south of the mainstream of Yangtze River and east of Qinghai-Tibet Plateau. The coverage included Zhejiang Province, Jiangxi Province, Fujian Province, Hunan Province, and the majority of Chongqing Municipality, as well as Yangtze River Delta, Pearl River Delta, southeast of Sichuan Province, and northern Guangxi Autonomous Region. It was around 12.2% of the national land area.

Total Load of Major Pollutants in Waste Gas

The total load of SO_2 emitted this year amounted to 21.176 million tons, down 4.52% from a year earlier; and the total load of NO_x 23.378 million tons, down 2.77% from a year earlier.

Total load of major pollutants in waste gas in China in 2012

SO_2 (10,000 t)				NO_x (10,000 t)				
Total	Industry	Domestic	Centralized	Total	Industry	Domestic	Vehicle	Centralized
2117.6	1911.7	205.6	0.3	2337.8	1658.1	39.3	640.0	0.4

Measures and Actions

【Twelfth Five-Year Plan for Prevention and Control of Atmospheric Pollution in Key Regions officially adopted and enforced】 The Twelfth Five-Year Plan for Prevention and Control of Atmospheric Pollution in Key Regions (hereinafter referred to as the Plan) was officially adopted in September 2012, which involves 13 key regions including Beijing-Tianjin-Hebei region, Yangtze River Delta, and Pearl River Delta, covering 117 cities at or above prefectural level in 19 local provinces. The Plan identifies the targets of cutting down the annual average level of PM_{10}, SO_2, NO_2, and $PM_{2.5}$ in the ambient air by 10%, 10%, 7%, and 5% respectively by the year 2015. The Plan also specifies the road map and major tasks for $PM_{2.5}$ control, and enhances the regional cooperation on atmospheric environment management. It is the first comprehensive plan for air pollution control, which marks the change of China's air pollution control model from aiming at total pollutant load control to improvement of environmental quality. The Plan is of great significance to implementing the guidelines of 18th National Congress of the CPC, substantially promoting ecological progress, accelerating the development of a beautiful country, and improving the atmospheric environmental quality.

【Stalk burning ban in the summer and autumn】 MEP monitored the stalk burning situation in the entire country as well as in major regions (major crop farming areas) through remote sensing technology using environment satellites and meteorological satellites at intervals every day between May 20 and July 20, and between September 20 and November 20. The monitoring became more frequent during the high peak period, and monitoring reports were released on the Ministry's official website on a daily basis. Standards were set for removing the flame sites misjudged as stalk burning sites from the monitoring list. Information was shared with local provincial environmental protection departments in a timely fashion, and the rewards and punishment measures were also specified. To tighten the stalk burning ban helped promote the comprehensive utilization of stalk and improve the air quality.

【Announcement of relevant environmental standards】 MEP announced Ambient Air Quality Standards (GB 3095-2012) and its matching document Technical Regulation on Ambient Air Quality Index (on trial) (HJ 633-2012) this year, for the purpose of further identifying the national ambient air management goals. MEP also introduced eight emission standards for the iron and steel and coking industry, as well as matching specifications concerning environmental monitoring and management, for the purpose of setting tougher requirements for the control of air pollutants in key industries and sectors. The eight standards included Emission Standard of Pollutants for Mining and Mineral Processing Industry (GB 28661-2012), Emission Standard of Pollutants for Sintering and Pelletizing of Iron and Steel (GB 28662-2012), Emission Standard of Air Pollutants for Iron Smelt Industry (GB 28663-2012), Emission Standard of Air Pollutants for Steel Smelt Industry (GB 28664-2012), Emission Standard of Air Pollutants for Steel Rolling Industry (GB 28665-2012), Emission Standard of Pollutants for Ferroalloy Smelt Industry (GB 28666-2012), Discharge Standard of Water Pollutants for Iron and Steel Industry (GB 13456-2012), and Emission Standard of Pollutants for Coking Chemical Industry (GB 16171-2012).

【Thorough and comprehensive treatment of coal-fired boiler pollution】 In 2012, the Central Government offered 1.09 billion yuan of subsidies to support the projects on comprehensive treatment of coal-fired boilers in 15 major cities specified in the Twelfth Five-Year Plan for Prevention and Control of Atmospheric Pollution in Key Regions. The combined capacity of upgraded coal-fired boilers amounted to 28,997 steam tons; among them, 15,406 steam tons were through upgrading dust removal facilities and 13,591 steam tons through replacing coals with clean energy. The ambient air quality has been substantially improved in cities concerned since the projects were implemented.

【Substantial improvement of vehicle emission control system】 Regulatory documents were drafted and circulated, including guidelines on strengthening vehicle emission control and facilitating $PM_{2.5}$ treatment process. Management measures were enhanced in such fields as new-vehicle checks and in-service vehicle inspections to address bottleneck issues, and to guide and promote local efforts in this regard.

Enforcement of New Ambient Air Quality Standards

The State Council executive meeting deliberated and released Ambient Air Quality Standard (GB 3095-2012) on February 29, 2012. The new standard sets the limit for the annual average $PM_{2.5}$ level and 24-hour average $PM_{2.5}$ level, and the limit for 8-hour average O_3 level, and lowers the limit for PM_{10} and NO_2 levels, and Benzo [a] pyrene concentration. It also specifies tougher requirements for the validity of monitoring data, tightens the control of lead and proposes the reference limits for the concentration of some heavy metals. Premier Wen Jiabao made explicit requirements to implement the new ambient air quality standard in his report on the work of the government. MEP paid great attention on these requirements and organized meticulously to carry out the three-step plan for enforcement of ambient air quality standards. The three-step plan is: in 2012, environmental monitoring shall be conducted in accordance with the new standards in key regions such as Beijing-Tianjin-Hebei region, Yangtze River Delta, Pearl River Delta, municipalities directly under the Central Government and provincial capital cities; in 2013, monitoring work shall be conducted in accordance with the new standards in 113 major cities tasked with environmental protection and national environmental protection model cities; and by the year 2015, monitoring work shall be conducted in accordance with the new standards in all cities at or above prefectural level. As a top priority of environmental protection work of this year, $PM_{2.5}$ and other items had been monitored by the end of the year in 496 monitoring sites under the national ambient air monitoring network in 74 cities, including cities in key areas like Beijing-Tianjin-Hebei region, Yangtze River Delta, and Pearl River Delta, municipalities directly under the Central Government, provincial capital cities, and cities specifically designated in the State Plan. The monitoring and releasing of real-time data of the 6 basic items such as SO_2, NO_2, PM_{10}, O_3, CO, and $PM_{2.5}$ as well as AQI based on Ambient Air Quality Standards (GB 3095-2012) will start as of January 1, 2013. This signals the successful conclusion of the first stage of the monitoring work based on the new ambient air quality standard.

2012 Annual General Meeting of China Council for International Cooperation on Environment and Development (CCICED) & CCICED 20th Anniversary Side Events

On the afternoon of June 21, 2012, Premier Wen Jiabao hosted a theme side event of China Council for International Cooperation on Environment and Development (CCICED) on the sidelines of the United Nations Conference on Sustainable Development in China Pavilion of Athletes' Village in Rio de Janeiro, Brazil. This event took place in a seminar form with the theme "20 Years of Rio, 20 Years of CCICED". Premier Wen discussed with delegates problems regarding the sustainable development issues of China and the world. They came up with many profound ideas and views concerning the sustainable development and these propositions were: 1.To protect the environment during the development course and in turn promote development through environmental protection effort. 2. The essence of ecological civilization is the harmonious coexistence between man and nature. 3. To achieve green development and sustainable development, we must solve these unbalanced, uncoordinated and unsustainable problems occurred in the process of development. 4. There are great potentials for development of solar energy and wind energy.

The 2012 Annual General Meeting of CCICED was held in Beijing from December 12 to 14, 2012. Premier Wen Jiabao and Vice Premier Li Keqiang attended related activities. Premier Wen Jiabao met with international Council Members and delegates at Ziguang Pavilion, Zhongnanhai on December 14. Premier Wen pointed out that since its establishment twenty years ago, CCICED has conducted profound studies both in theory and in practice in terms of major issues concerning China's economic development and environmental protection and provided many valuable recommendations to Chinese government. On December 12, 2012, Li Keqiang, Chairman of CCICED and Vice Premier attended the opening ceremony and delivered an important speech. He gave guidelines on building a modernized China with ecological civilization. He pointed out that it is vital to keep developing industrial civilization as well as promoting ecological civilization. Li said that we shall integrate ecological civilization into the whole process of modernization drive to achieve the win-win of economic development, improvement of people's wellbeing as well as ecological protection. Li pointed out that environmental protection is the main platform for developing ecological civilization and he hoped that the objectives and measures of promotion be set and framed and related mechanism and policies be improved as soon as possible through joint efforts from MEP and other State departments. Zhou Shengxian, Minister of MEP and Executive Vice President of CCICED, delivered a special speech "Promote Ecological Civilization to Build a Beautiful China" at the meeting.

Acoustic Environment

General Situation

The area-wide and road traffic acoustic environment quality was basically stable in urban areas in China this year. A higher percentage of Type 3 functional zones met noise standard compared with other types of functional zones. Types 0 and 4 functional zones seriously violated noise standards at night.

Area-wide acoustic environment Among the 316 monitored cities, 3.5% met Grade I area-wide environmental quality standard for noise, down 1.3 percentage points from a year earlier; 75.9% met Grade II standard, up 2.8 percentage points; 20.3% met Grade III standard, down 1.2 percentage points; and 0.3% met Grade IV standard, down 0.3 percentage point from a year earlier.

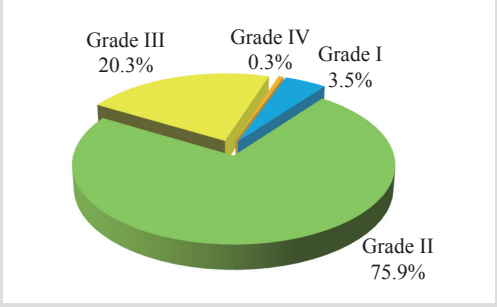
The area-wide equivalent sound level ranged between 47.6 and 57.4 dB(A) in major cities tasked with environmental protection, and the area-weighted average equivalent sound level was 54.3 dB(A). 77.9% of those cities met Grade I or II noise standard, and 22.1% met Grade III standard.

Road traffic acoustic environment Among the 316 monitored cities, 75.0% recorded Grade I road traffic noise intensity, the same as last year; 23.1% recorded Grade II noise intensity, also the same as last year; and 1.9% recorded Grade III noise intensity, up 0.6 percentage point; the percentage of cities which observed Grade IV noise intensity was the same as last year; and that of cities which observed Grade V was down 0.6 percentage point.

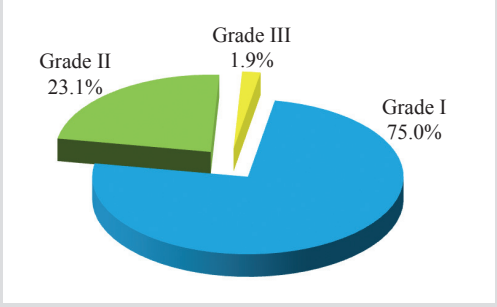
The road traffic equivalent noise level ranged between 61.9 and 71.3 dB(A) in major cities tasked with environmental protection. 63.7% of those cities recorded Grade I road traffic noise intensity, 34.5% recorded Grade II, and 1.8% recorded Grade III.

Acoustic environment of urban functional zones The monitoring of all types of functional zones across the country amounted to 16,856 site•times, 8,428 at daytime and 8,428 at nighttime. 7,668 monitoring site•times met noise standard at day, accounting for 91.0% of the total during daytime; while 5,865 site•times met noise standard at night, taking up 69.6% of the total at nighttime. 90.6% of the functional zones met noise standard at day in major cities tasked with environmental protection, and 65.4% of those functional zones met noise standard at night.

In general, a higher percentage of monitoring sites met noise standard at day than at night in all types of functional zones. A higher percentage of monitoring sites met noise standard in Type 3 functional zones compared with other types. A lower percentage of monitoring sites met noise standard at night in Types 0 and 4 functional zones than in other types of functional zones.



Percentage of graded area–wide environmental quality for noise in urban areas in China in 2012



Percentage of graded road traffic environmental quality for noise in urban areas in China in 2012

Noise level in urban functional zones in China in 2012

Type of functional zones	0		1		2		3		4	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Up-to-standard site•times	83	56	1725	1376	2406	2100	1628	1457	1826	876
Monitored site•times	114	114	1975	1975	2654	2654	1667	1667	2018	2018
Up-to-standard percent (%)	72.8	49.1	87.3	69.7	90.7	79.1	97.7	87.4	90.5	43.4

Measures and Actions

【Annual Report on Noise Pollution Control announced】 The Annual Report on Noise Pollution Control, the first of its kind, was announced this year. The report analyzed the ambient noise pollution situations and changing trends in China during the 11th Five-Year Plan period, and summarized China's essential measures against ambient noise pollution.

Promoting Transition of Economic Growth Patterns from All Aspects

In-depth environmental check of key industries was carried out. The notice about carrying out in-depth environmental check of key industries and further strengthening prevention and control of industrial pollution was circulated; the environmental check system for key industries was established. The environmental check was carried out continuously on industries like rare earths, citric acid, leather, starch, and starch sugar, and started on the lead-acid battery and renewable lead enterprises.

The environmental check system for listed companies was consummated. The notice on the further optimization and adjustments of the environmental check system for listed companies was circulated. Great efforts were made to shorten the checklist and duration and regulate the management of environmental check. Substantial efforts were also made in the sharing of checked information and social supervision. Efforts continued to make public the environmental check system, the check process, and results, to strengthen social supervision, and urge the listed companies to upgrade their environmental protection levels. By the end of November, applications of 89 listed companies for environmental check had been processed and 57 companies had passed the check. About 5.02 billion yuan was newly invested in environmental protection by the related companies.

Cleaner production of key enterprises was comprehensively promoted. The notification of the 5th batch of national key enterprises of cleaner production was circulated, announcing the list of 8,775 enterprises which have completed the evaluation and acceptance check. In-depth investigation was organized and completed on the progress in cleaner production promotion; the countermeasures for promoting cleaner production were being worked out.

Supervision and inspection were carefully organized on the enforcement status of the policy measures on environmental protection and pollution reduction. The intensive inspection on accelerating the transition of economic development mode was carried out carefully in cooperation with the Central Commission for Discipline Inspection and the Ministry of Supervision. The bottom line check and comprehensive inspection were organized and carried out on the enforcement status of policy measures taken for environmental protection and pollution reduction. The correction of problems identified by the inspection was under supervision, which helped local regions to transform the economic development mode.

Solid Waste

General Situation

3,290.46 million tons of industrial solid wastes were generated throughout the country in 2012, and 2,023.84 million tons (including waste generated in previous years) were comprehensively utilized, which accounted for 60.9% of the total.

Industrial solid wastes generated and utilized in China in 2012

Generated (10,000 t)	Comprehensively utilized (10,000 t)	Stored (10,000 t)	Disposed (10,000 t)
329046	202384	70826	59787

Measures and Actions

【Progress of projects specified by National Plan for Development of Hazardous Waste and Medical Waste Disposal Facilities】 36 out of the 57 construction projects on hazardous waste centralized disposal facilities specified by National Plan for Development of Hazardous Waste and Medical Waste Disposal Facilities had been basically completed by the end of the year, with the combined disposal capacity of 1.43 million tons/year. 231 out of the 271 construction projects on medical waste centralized disposal facilities had been basically concluded, with the combined disposal capacity up to 428,000 tons/year.

【Information disclosure by municipalities and cities on prevention and control of pollution by solid wastes】 266 Chinese municipalities and cities, the same number as last year, released their previous year's information on prevention and control of pollution by solid wastes. Four municipalities directly under the Central Government including Beijing, Tianjin, Shanghai, and Chongqing shared such information. Also, more cities took the initiative to do so in Shanxi, Inner Mongolia, Liaoning, Heilongjiang, Jiangsu, Zhejiang, Shandong, Henan, Hunan, Guangdong, Guangxi, Shaanxi, and Gansu compared with other provinces and autonomous regions. Five more cities of Sichuan Province voluntarily released such information this year.

【Twelfth Five-Year Plan for Prevention and Control of Pollution by Hazardous Waste promulgated】 The Twelfth Five-Year Plan for Prevention and Control of Pollution by Hazardous Waste was promulgated, proposing to figure out the basic situation concerning hazardous wastes, substantially improve the standardized management level of such wastes, and significantly reduce their environmental risks by the end of 2015.

【Issuance of hazardous waste business certificate】 Efforts continued to implement the Measures for the Administration of Hazardous Waste Business Certificate. Over 1,700 business certificates had been issued by the end of the year. More than 12 million tons of hazardous wastes were actually utilized and disposed by holders of such business certificates. 30 provinces (autonomous regions and municipalities) except Tibet, as well as Xinjiang Production and Construction Corps were supervised in terms of their efforts against pollution by hazardous wastes. More than 1,500 hazardous waste processing organizations were under spot check, which facilitated the standardization of hazardous waste management in local regions.

【Waste import】 13,566 solid waste import licenses were granted to 2,603 imported waste processors and users this year. 54.865 million tons of wastes were actually imported throughout the year, and the top four categories imported were waste paper, waste plastics, used hardware (including used electric appliances, waste wires and cables, and waste motors), and scrap iron and steel. The cooperation with relevant

countries was strengthened in terms of information sharing and joint investigation of the trans-boundary movement of wastes. Information was shared on 163 occasions, and 14 batches of solid wastes were prevented from being imported to China illegally.

【Hazardous waste export】 20 applications for export of hazardous wastes were processed this year. The concerned waste involved electroplating sludge, used batteries, PCB scraps, e-waste, waste organic solvents, stainless steel dust and zinc dust, among others, and amounted to 19,920 tons. The importers included Germany, Canada, Singapore, Japan, South Korea, France, Belgium, and Australia.

【E-waste management】 Measures on the Administration of the Pooling and Use of Waste Electric and Electronic Product Disposal Funds, and the Circular on Organizing the Review of the Dismantling and Disposal of Waste Electric and Electronic Products were announced, requiring strict review of the dismantling and disposal of waste electric and electronic products, and guaranteeing the safe use of disposal funds. Moreover, the Opinions on Strengthening the Prevention and Control of Pollution by Electronic Wastes was also released, setting out the objective to establish a sound system and long-term mechanism for e-waste pollution control, and recover and process over 50 million sets of waste electric and electronic products annually by the year 2015. There are around 120 planned e-waste processors, about 80 were in operation. A preliminary waste electric and electronic product processing industry was established.

【Environmental management of contaminated sites】 The Circular on Guaranteeing the Environmental Safety during Redevelopment and Reuse of Industrial Enterprise Sites was printed and distributed. The document identified the joint management mechanism and requirements by emphasizing on shutting down, relocating or planning relocation of polluting industrial enterprises, which substantially prevented the direct development and use of contaminated sites without any treatment.

【Environmentally sound destroy of IPR-violated commodities and fake and shoddy commodities】 The Circular on Doing Well in the Environmentally Sound Destroy of IPR-violated Commodities and Fake and Shoddy Commodities was printed and distributed. An inter-departmental joint regulation mechanism was established for the environmentally sound destroy of IPR-violated commodities and fake and shoddy commodities.

【Treatment of pollution by waste plastics】 The

Environmental Publicity and Education

Publicity of themes, achievements and typical caseswas influential and effective. The first session of National Committee on the Conservation of Biodiversity was successfully held on June 5-World Environment Day. Vice Premier Li Keqiang gave an important speech on the significance of observing World Environment Day and on promoting green development. A high level forum was held with the theme of "Protecting the Environment to Optimize Economic Growth and Celebrating World Environment Day", which was aimed to learnand spread the guidelines of 7th National Conference on Environmental Protection. An art gala"Green Consumption with You and Me" and a picture exhibition"Glorious Accomplishments of Scientific Outlook on Development" were also successfully held to advocate the idea and practice of ecological civilization. Seminar on Model Deed of MengXiangmin was held at Grand Hall of the People in Beijing and Vice Premier Li Keqiang warmly welcomed members of the seminar team.

Continued improvement of public opinion guiding capability. MEP organized and coordinated the media interviews and coverage of 262 important conferences and events and 57 press releases. During important times such as the "NPC & CPPCC Sessions", "June 5 World Environment Day" and "National Congress of the 18th Communist Party of China", MEP actively introduced to the public the developments, achievements and challenges in environment protection work and responded promptly to concerns of the media and net citizens on hot issues regarding environmental protection.

Nurturing environmental NGOs in an orderly manner. MEP organized a seminar on the work of environmental NGOs before April 22 the Earth Day. A deep communication was conducted between MEP and the 20 plusenvironmental NGOs such as Friends of Nature, and Institute of Public and Environmental Affairs. Moreover, MEP organized environmental NGOs to participate in United Nations' Conference on Sustainable Development, encouraging Chinese environmental NGOs to engage in international communications and cooperation.

Circular on Conducting Thematic Campaign on Treating Pollution by Waste Plastics Processing Industry, and Regulations on the Administration of Prevention and Control of Pollution by Waste Plastics Processing Industry were announced. Special campaigns were organized to treat pollution in 48 waste plastics distribution centers across the country, and a batch of illegal processing sites that were causing serious pollution and being strongly complained by the public were cracked down, with local environment remarkably improved.

【Comprehensive treatment of chromium residues】 There were around 6.7 million tons of chromium residues generated in previous years throughout the country, mostly generated one or two decades ago, even five decades ago. The clean-up work started at the end of the year 2005 and basically completed by the end of this year. About 2.3 million tons of chromium residues were disposed in a single year of 2012, three times of the annual average of the previous six years. In the meantime, a specific circular was distributed to lower administrative levels, requiring putting the chromium residue generators in the list of major pollution sources and under supervision; and conducting quarterly on-the-spot check of those generators to make sure the residues generated during the year were all disposed within the year.

Strengthening Hazardous Chemicals Management

Institutional development: In May 2012, MEP issued Opinions on Strengthening Environmental Protection at Chemical Industrial Parks/Zones, which provided measures regarding strengthening environmental protection at chemical industrial parks/zones, such as strengthening environmental impact assessment, daily supervision, and improving prevention and control system. In July 2012, MEP issued *Notice on the Distribution of the 12th Five-Year Plan for Prevention and Control of Pollution from Persistent Organic Pollutants in Major Industries*. It identified the objectives and tasks on the prevention and control of pollution from persistent organic pollutants during the 12th Five-Year period. In October 2012, MEP released the *Measures of Registration for Environmental Management of Hazardous Chemicals (on trial)*. A series of mechanisms were established, such as environmental management registration for the production and use of hazardous chemicals, environmental management registration for the importing/exporting of hazardous chemicals, environmental risk assessment of hazardous chemicals under special environmental management, and reporting of the release and transfer of hazardous chemicals under special environmental management as well as their feature pollutants.

Policy implementation: Environmental management registrationfor the import/export of new chemical substances and toxic chemicals was reviewed. In 2012 MEP approved a total of 51 registration certificates for new chemical substance and 3,402 registration certificates for simple declaration of new substances, and announced 633 applications for filing with scientific records. A total of 133 registration certificates for environmental management of toxic chemical import and 8,657 applications for clearance notifications for environmental management of imports (exports) of toxic chemicals were examined and approved. MEP organized the joint inspection on Shanxi Province's implementation of Guidelines on Strengthening Prevention and Control of Dioxin Pollution. MEP also launched an inspectionon the current state of mercury pollution control, targeting at calcium carbide process-based PVC producers and related industries. Accredited labs for chemicals testing were inspected, and 8 accredited labs for chemical testing were announced. Persistent Organic Pollutants (POPs) data collection and reporting system was continuously implemented. MEP launched a nationwide survey on the environment of chemicals production.

Publicity and training: The 1st National Work Conference on Environmental Management of Chemicals was held from October 31 to November 1. Problems and challenges were analyzed during this conference. Outline of work for the 12th Five-Year period was shaped and major tasks for the next stage were arranged. MEP organized five training sessions on environmental management of chemicals, with 600 person•times participated.

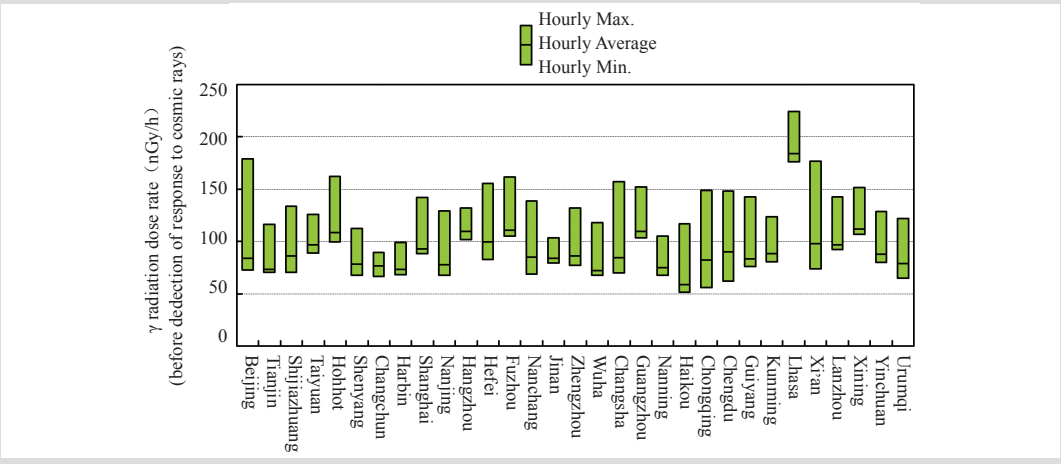
Radiation Environment

General Situation

In 2012, the overall radiation environmental quality was good in the country.

Environmental ionizing radiation The environmental γ radiation dose rate, the activity concentrations of gross α and gross β in aerosol and air sediment, and the activity concentration of airborne tritium were all within the normal range around the country. Compared with the previous years, there were no obvious changes in artificial radionuclide activity concentration in the Yangtze River, the Yellow River, the Pearl River, Songhua River, Huai River, Haihe River, Liaohe River, rivers in Zhejiang and Fujian region, rivers in Southwest and Northwest China, and key lakes (reservoirs). The activity concentration of natural radionuclides was on the same level with that in the 1983~1990 national survey on natural radioactivity level. The activity concentrations of gross α and gross β at 12 centralized drinking water sources were lower than the limits stipulated by the Standards for Drinking Water Quality(GB 5749-2006).The activity concentrations of artificial radionuclide Sr-90 and Cs-137 in coastal sea waters were both below the limits stipulated by the Sea Water Quality Standards (GB 3097-1997). The activity concentration of artificial radionuclides in the soil was not obviously different from that of the previous years; and activity concentration of natural radionuclides was on the same level with that of the 1983~1990 national survey on natural radioactivity level.

The environment ionizing radiation in the vicinity of the in-service nuclear power plants In the vicinity of nuclear power plants of Qinshan Nuclear Power Base, Dayawan/ Ling'ao Nuclear Power Plant and Tianwan Nuclear Power Plant, the annual average value of γ radiation dose rates observed at real-time continuous radiation monitoring stations (before deduction of the response to the cosmic rays) were 101.1 nGy/h, 124.8 nGy/h and 100.1 nGy/h respectively, which were all within the fluctuation range of natural baselines. The activity concentrations of tritium in the air, rainfalls, surface water, and part of the biological samples taken from key residential areas in the vicinity of Qinshan Nuclear Power Base were higher than the baseline levels before the Base was put into operation, so did the tritium activity concentration in coastal seawaters near the outlets of Guangdong Dayawan/Ling'ao Nuclear Power Plant and Tianwan Nuclear Power Plant. But the public exposure to



The γ radiation dose rates at radiation environment automatic monitoring stations in municipalities directly under the Central Government and provincial capital cities in 2012

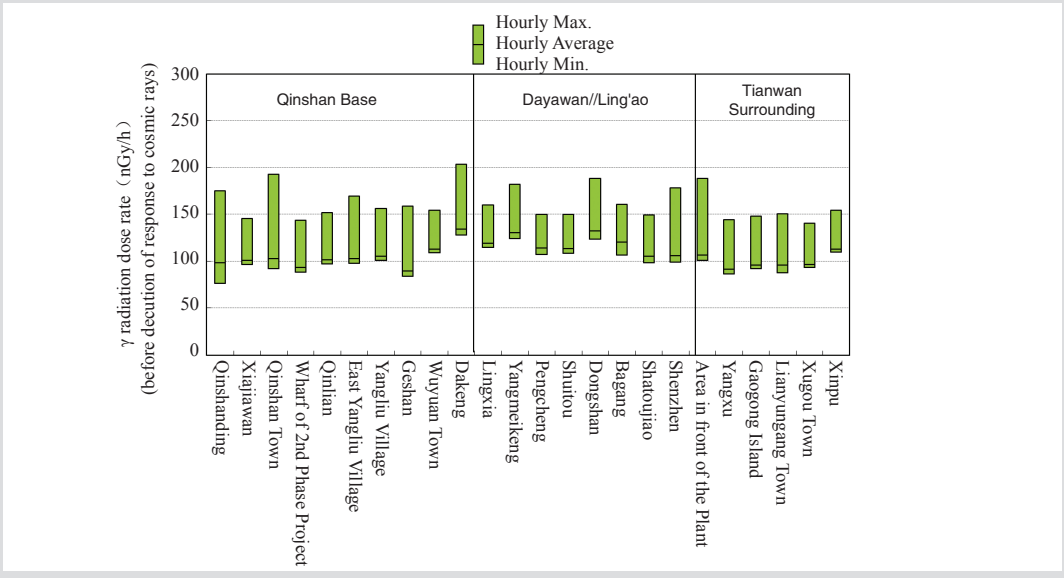
radiation was far below the dose limits in national standards. Among the various environmental mediums in the vicinity of the in-service nuclear power plants, radionuclide activity concentrations, except for tritium, were not obviously different compared with the previous years.

Environment ionizing radiation in the vicinity of other reactors In the vicinity of China Institute of Atomic Energy Science, Institute of Nuclear and New Energy Technology of Tsinghua University, Nuclear Power Institute of China and other research facilities, the environmental γ radiation dose rate, and activity concentrations of radionuclides in aerosols, air sediment, surface water, groundwater, soil and biological samples were not obviously different compared with the previous years; activity concentrations of gross α and gross β in ground drinking water sources were lower than the limits stipulated by the Standards for Drinking Water Quality.

Environmental ionizing radiation in the vicinity of nuclear fuel cycle facilities and waste disposal facilities The γ radiation dose rate was within the normal range in the vicinity of nuclear cycle facilities like Lanzhou Uranium Enrichment Co., Ltd, Shaanxi Uranium Enrichment Co., Ltd, Baotou Nuclear Fuel Components Plant, and Jianzhong Nuclear Fuel Components Plant and the 404 Limited Company of CNNC as well as Northwest Disposal Site for Low- and Medium-level Radioactive Solid Wastes, Beilong Disposal Site for Low- and Medium-level Radioactive Solid Wastes. There was no rising activity concentration of radionuclide observed in environmental media due to the production, processing, storage, treatment and transportation activities of these companies.

Environment ionizing radiation in the vicinity of uranium mines and metallurgical plants In the vicinity of uranium mines and smelting facilities, there was no abnormality of the activity concentration of radon in the ambient air observed. Abnormality of gross α and gross β activity concentrations in aerosol and sediment was not observed neither, and so did the activity concentrations of radionuclide Uranium and Radium-226 in the ground water and in biological samples.

Environment electromagnetic radiation in the vicinity of electromagnetic radiation sources The environment electromagnetic radiation was good in general. The electromagnetic radiation levels in environmentally sensitive sites around the antennas of mobile communication stations that were under monitoring program were lower than the limits specified by the Regulations for Electromagnetic Radiation Protection (GB 8702-88) for public exposure. The power frequency field strength and magnetic induction intensity in the environmentally sensitive sites near the power transmission lines and transformers under monitoring program were lower than the power frequency evaluation standard for residential areas and the all-weather public exposure limits specified by the Technical Specifications for Environmental Impact Assessment of Electromagnetic Radiation by the 500 kV Ultra-high Pressure Power Transmission and Transformation Projects (HJ/T 24-1998).



γ radiation dose rates at the automatic environmental monitoring stations in the vicinity of the in-service nuclear plants in 2012

Measures and Actions

【Radiation environment monitoring】 The 12th Five-Year Plan for Development of National Radiation Environment Monitoring System was formulated, to coordinate various tasks of radiation environment monitoring during the 12th Five-Year Plan period; long- and medium-term development strategies were planned for radiation environment monitoring; the objectives and focuses in the development process were identified. Criteria for Development of On-site Supervisory Monitoring System for Radiation Environment of the Nuclear Power Plant (on trial) were released. The development of the Supervisory Monitoring Systems in newly-built nuclear power plants will be supervised and regulated according to the Criteria. The capacity building of the national radiation environment automatic monitoring system was pushed forward. In November 2012, 100 newly-built radiation environment automatic monitoring stations nationwide passed the overall acceptance check, and were officially put into operation.

【Special campaign for comprehensive inspection on nuclear and radiation safety】 A special campaign for comprehensive inspection on radiation safety was carried out on national scale in nuclear technology adoption, uranium mining and smelting as well as radioactive materials transportation. Through this special campaign, the goal of "thoroughly investigating safety vulnerabilities, strengthening supervision, significantly improving the level of nuclear and radiation safety management in such areas as nuclear technology adoption, uranium mining and smelting, radioactive materials transport" was achieved.

【Nuclear base survey】 The Overall Program for Survey and Assessment of Radiation Environment Status-quo of National Nuclear Bases and Facilities was issued.A status-quo survey and assessment of the radiation environment in nuclear bases and facilities in China are planned to be completed in 10 years during the 12th and 13th Five-Year Plan periods, to establish a comprehensive, systematic and scientific understanding of the radiation environment status in China's nuclear bases and facilities, so as to improve the treatment and control of radiation pollution by nuclear bases and facilities, and to upgrade the radiation safety level in nuclear bases and facilities. In 2012, the on-site investigation started in Qinshan Nuclear Power Base, China Institute of Atomic Energy (CIAE) and the 404 Limited Company of CNNC.

12th Five–Year Plan for Nuclear Safety and Prevention and Control of Radioactive Pollution & Long–range Objectives for 2020

In October 2012, the 12th Five-Year Plan for Nuclear Safety and Prevention and Control of Radioactive Pollution & Long-range Objectives for 2020 was approved by the State Council, proposing the overall objective to "further improve the safety of nuclear facilities and nuclear technology applying devices, significantly reduce the safety risk of radiation environment, basically form the capacities for incident defense, pollution control, technological innovation, emergency response and safety regulation, protect nuclear safety, environment safety and public health, and improve the quality of radiation environment". Specific objectives were set to "improve the safety of nuclear facilities and nuclear technology applying devices, significantly reduce safety risk of radiation environment, and basically form the capacities for incident defense, pollution control, technological innovation, emergency response and safety regulation".The blueprint was drawn for medium- and long-term development of nuclear safety areas. Long-range objectives were also set for the year 2020, aiming to continuously improve the safe operation and construction nuclear facilities, and to eliminate at the design process the possibility of massive release of radioactive substances from new nuclear power generation units to be set up during the 13th Five-Year Plan period (2016-2020) and beyond. By 2020, nuclear safety will have been maintained at the international advanced level, the nuclear safety and radioactive pollution control will have been comprehensively improved, and the radiation environment will have been in good quality.

Environmental Planning and Investment

Environmental planning and zoning The 10 specific plans to be drafted under the leadership of the Ministry of Environmental Protection and submitted to the State Council for approval during the 12th Five-Year Plan period were basically completed and approved. The General Office of the State Council promulgated the notice on releasing the job division plan among the State departments concerning the major tasks identified by the 12th Five-Year Plan for national environmental protection. The outlines of national environmental functional zoning plan were prepared. Pilot projects were carried out in Jilin, Zhejiang, and Xinjiang on preparations of provincial-level environmental functional zoning plans. Preparation of urban environment master planning was pushed forward. The fundamental documents such as the technical requirements for the preparation of urban environment master planning (on trial) were released; 12 cities were selected for trial implementation.

Promoting balanced regional development. Steady progress was made in the environment protection during revitalizing northeast China, the rise of the central region and the development of the western region. Initiative was taken to participate in the poverty-alleviating program of 11 contiguous, extraordinarily poor regions. The connotations of the important documents of the State Council were implemented. MEP signed ministry-province strategic cooperation agreements with the People's Governments in 10 provinces (autonomous regions) such as Yunnan, Gansu, and Inner Mongolia. Opinions of MEP were released on implementation of the State Council opinions concerning the revitalization and development of the previous Central Soviet Areas such as southern Jiangxi Province. Stage-based progress was made in partner assistance to Xinjiang and Tibet offered by national environmental protection departments during the 12th Five-Year Plan period.

Securing environmental investments. All localities focused on the central tasks and implemented large projects and strategies, and the securing of environmental investments was upgraded to a new level. In rural environmental protection, 5.5 billion yuan was allocated by the Central Government, and there were 23 provinces (autonomous regions and municipalities) engaged in the model projects on improvement of rural environment. Regarding heavy metals control, 3.2 billion Yuan was allocated with an emphasis on supporting 2 model provinces including Hunan and Henan as well as 20 model regions. In lake conservation, 1.5 billion yuan was allocated by the Central Government, 29 crucial lakes and reservoirs were included in the trial implementation zones of the national sound lake ecological environmental protection. In water pollution control in key basins, 5 billion yuan was allocated by the Central Government with a focus on supporting Liaohe River to get rid of the label of "a highly polluted river". Regarding integrated pollution control, 2.5 billion yuan environmental protection special fund was allocated by the Central Government, with an emphasis on supporting 15 cities to cope with flue dust from coal-fired boilers.

Environmental regulatory capacity-building The 12th Five-Year Plan for the national environmental regulatory capacity-building was drafted. The opinions about strengthening the capacity-building of ambient air quality monitoring were released, to support the capacity-building of fine particles monitoring capacity-building in 109 cities with 625 monitoring sites. The standardized construction of 163 monitoring stations, capacity-building of 170 supervision and enforcement agencies concerning mobile law enforcement, and capacity-building of 57 nuclear and radiation emergency monitoring and scheduling platforms for quick response were enhanced, as well as the establishment of 11 atmospheric radiation sub-stations. 249 companies were selected to carry out automatic monitoring of working conditions on a trial basis; the biological (ecological) monitoring pilot was carried out in 7 provinces. The standardization of environmental emergency response capacity was carried out; each of the 59 organizations involved in the standardization project were equipped with a high-performance emergency monitoring van; the 59 organizations were located in 27 provinces (autonomous regions and municipalities), the 3 cities specifically designated by the State plan (Dalian, Xiamen, and Qingdao) and the Xinjiang Production and Construction Corps.

The supervision on projects funded by special funds was enhanced. The oversight and inspection were carried out on the housing program for the community-level environmental monitoring and enforcement services, and on the construction projects of hazardous waste and medical waste disposal facilities, in order to urge all localities to accelerate construction progress. Intermediary institutions were delegated to carry out the supervision and inspection of the projects funded by the special funds of the Central Government for environmental protection and for heavy metal remediation. The notices on rectification before certain deadlines and on supervising the rectification actions were released. Pilot projects were carried out in Shandong and Sichuan Province on the performance evaluation of local pollution control projects funded by the special funds of the Central Government for environmental protection. Supervision and inspection were carried out on projects funded by the special funds for lake ecological environmental protection for the water pollution prevention and treatment in "Three Rivers", "Three Lakes" and Songhua River Basin.

Nature and Ecology

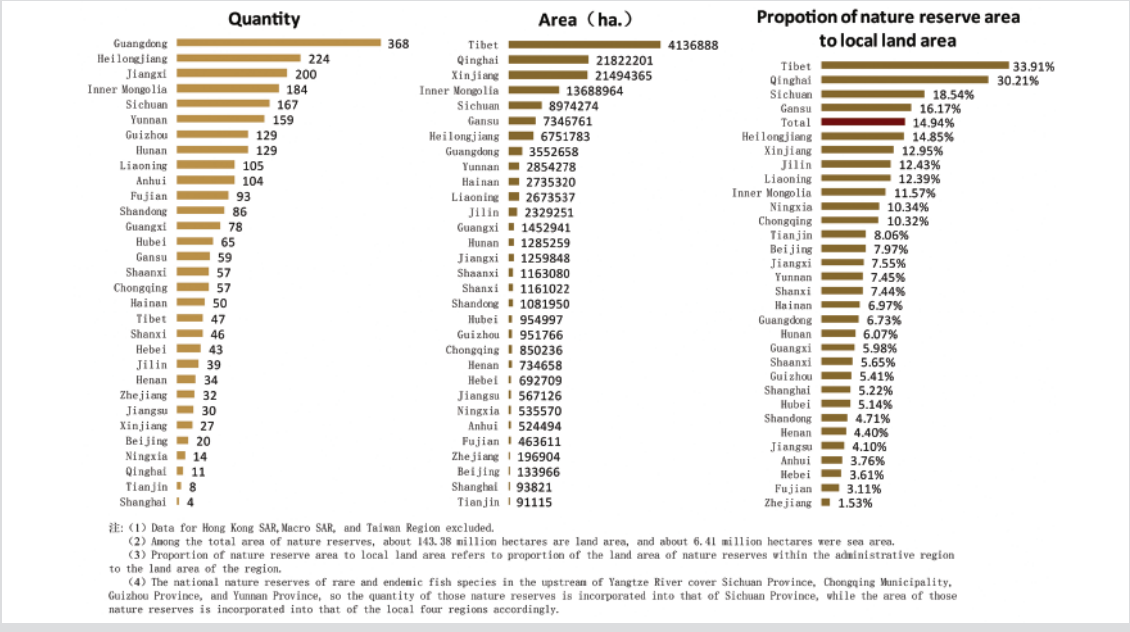
General Situation

Biological Diversity

In terms of ecosystem diversity, China boasts various types of terrestrial ecosystems, with 212 types of forests, 36 types of bamboo woods, 113 types of brushwood, 77 types of meadows and 52 types of deserts. China's freshwater aquatic ecosystems are complex.There are 4 types of natural wetlands found in China altogether, that is, the swamp wetlands, coastal and near-shore wetlands, riverside wetlands, and lake wetlands. China has four large marine ecosystems in coastal waters of the Yellow Sea, the East China Sea, the South China Sea and Kuroshio Current Basin. Many typical marine ecosystems can be found in China's coastal seas, such as coastal wetlands, mangroves, coral reefs, estuaries, bays, lagoons, islands, upwelling currents and seaweed beds, along with many natural sceneries and natural monuments such as under-sea ancient forest, marine abrasion and marine accumulation physiognomy. In terms of artificial ecological systems, there are farmland ecosystem, planted forest ecosystem, artificial wetland ecosystem, artificial grassland ecosystem, urban ecosystem, etc.

In terms of species diversity, China has 34,792 species of higher plants, including 2,572 species of Bryophytes, 2,273 species of Pteridophyta, 244 species of Gymnosperms, and 29,703 species of Angiosperms. In addition, China has almost all woody plant species in temperate zone. China also boasts about 7,516 species of vertebrate animals, including 562 species of mammals, 1,269 species of birds, 403 species of reptiles, 346 species of amphibians and 4,936 species of fish. A total of 420 species of rare and endangered wild animals are in the Catalog of Wildlife under Key State Protection. Hundreds of species such as giant panda, crested ibis, golden monkey, South China tiger, and Chinese alligator are endemic species in China. The identified fungi amount to above 10,000 species.

In terms of genetic resources diversity, China has



Nature reserves in local provinces (autonomous regions and municipalities directly under the Central Government) in 2012

cultivated crops of 1,339 cultivars in 528 classes, and boasts more than 1,000 species of economic trees, more than 7,000 species of ornamental plants which are of Chinese origin, and 576 species of domestic animals.

Nature reserves of various types in China in 2012

Type	Quantity		Area	
	Total quantity	Percentage of the total quantity (%)	Total area (10,000 hectares)	Proportion to the total area (%)
Natural Ecosystems	1882	70.51	10373.66	69.26
Forest ecosystem	1397	52.34	3062.57	20.45
Grassland and meadow ecosystem	43	1.61	215.83	1.44
Desert ecosystem	33	1.24	4092.42	27.32
Inland wetlands and aquatic ecosystems	335	12.55	2926.21	19.54
Marine and coastal ecosystems	74	2.77	76.63	0.51
Wildlife	664	24.88	4434.49	29.61
Wild animals	523	19.60	4248.17	28.36
Wild plants	141	5.28	186.33	1.24
Natural relics	123	4.61	170.59	1.14
Geological relics	91	3.41	115.55	0.77
Paleontology relics	32	1.20	55.04	0.37
Total	2669	100	14978.73	100

Nature Reserves

By the end of 2012, a total of 2,669 nature reserves of various types and levels had been established nationwide, with overall coverage of about 149.79 million hectares (of which land area took up approximately 143.38 million hectares). The land area of nature reserves covered 14.94% of China's land area. There were 363 national nature reserves with coverage of about 94.15 million hectares, accounting for 62.85% of the total area of nature reserves nationwide and 9.8% of the total land area of national territory.

Nature reserves of forestry system In 2012, 24 new nature reserves of forestry system were established, with 2.1747 million hectares of incremental coverage; 23 new national nature reserves were established. By the end of 2012, there had been 2,150 nature reserves of forestry system altogether (including 286 national nature reserves approved by the State Council), with 124.865 million hectares of coverage, which was about 13% of the national territory.

Marine nature reserves In 2012, among the coastal national marine nature reserves, Changli Golden Coast National Nature Reserve of Hebei Province in north China recorded slight increase in the population density of lancelet, but the lancelet habitat degraded because of the change in sand proportion and sediment ingredients, and the lancelet distribution area extended to deep waters. The shell dyke was newly formed in Shell-Dyke Island and Wetland National Nature Reserve of Binzhou City, Shandong Province in east China, with 345,500 m^2 coverage, a decrease of 13% compared with that of year 2009. In Jiushan Islands National Nature Reserve of Xiangshan County in Zhejiang Province in east China, 450 adult black-tailed gulls and over 200 fledglings were identified, and black-tailed gulls bred successfully in Jiushan Islands. In the Nanji Islands National Nature Reserve of Zhejiang Province, a great amount of wild daffodils sprouted in mid-October. In the Guangdong Xuwen Coral Reef National Nature Reserve, coverage rate of live corals amounted to 5~44%, with an average rate of 19%; stony coral mortality rate significantly dropped compared with the data of the previous year; In Guangxi Shankou Mangrove

National Nature Reserve, mangrove density declined. In Guangxi Beilun Estuary National Nature Reserve, mangrove spread 1,274 hectares. In Hainan Sanya Coral Reef National Nature Reserve, 47 species of corals were identified. Among the national marine nature reserves for ancient organism monuments, the oyster reefs and shell dykes in Tianjin Ancient Coast and Wetland National Nature Reserve were all buried underground.There was no sign of theft or excavation, and the status remained stable. 52 species of birds were identified in the Reserve. In Shenhu Bay Submarine Ancient Forest Monument National Nature Reserve, 16 ancient tree trunks that have been buried for 7,000 to 8,000 years were identified in the seabed, the length of the main trunks along with their major upright roots was 20 to 25 meters, and the status remained stable. Among the wildlife national marine nature reserves, in Xiamen Rare Marine Species National Nature Reserve, lancelet population density and biomass showed a rising trend, and the population of Chinese White Dolphin remained stable between 2010 and 2012. In Hainan Wanning Dazhou Island National Nature Reserve, 43 coral species were identified.

Wetland Protection

In 2012, 125 wetland conservation projects were carried out, and some of them were subsidized by the Central Government. Approximately 20,000 hectares of wetlands were restored. 85 pilot programs of national wetland parks were launched, with an increase of approximately 90,000 hectares of wetland conservation areas. Currently, the total number of national wetland parks amounts to 298.

Important coastal wetlands In 2012, among important estuaries, Shuangtaizi estuary, Yangtze River estuary and Pearl River estuary suffered serious eutrophication. In Luan River estuary-Beidai River waters, the biomass density of large benthic organisms were relatively low, and phytoplankton abundance was relatively high. At Yellow River estuary, the density and biomass of large benthic organisms were relatively low, and the phytoplankton abundance was relatively high. At Yangtze River estuary, the biomass of large benthic organisms was relatively low, and phytoplankton abundance was abnormally high. The overall density of fish roes and larva was low at the above mentioned estuaries. Among mangrove forests, the mangrove forest ecosystem in Guangxi Beihai remained healthy; the mangrove forest ecosystem was in a sub-healthy condition in Beilun Estuary Mangrove National Nature Reserve, but the habitats there were in good conditions, and the coverage of mangrove forest remained stable. Among the mudflat and wetland areas, North Jiangsu mudflat and wetland ecosystems were in a sub-healthy condition.

Invasion of Alien Species

Until now, 524 invasive alien species have been identified. Among the Top 100 threatening alien species on the earth announced by the International Union for Conservation of Nature and Natural Resources (IUCN), China currently has 51. In the recent decade, more than 20 ruinous alien species have invaded China. Over 100 alien species wrecked perennial damage on a large scale. The damage covered 31 provinces (autonomous regions and municipalities directly under the Central Government) in China and has caused severe economic losses.

At present, there are 36 alien forest pests invading China and causing severe damage; annual average occurrence area is more than 2.8 million hectares. Pine nematode disease occurrence area was 40,800 hectares, county-level epidemic areas dropped from 185 to 179, achieving the objective of decrease in county-level epidemic area, occurrence area and quantity of dead trees for consecutive years, but the spread and proliferation have not been fundamentally curbed, and it continues to show a tendency of spreading westward and northward. The American white moth occurrence area was 682,000 hectares, with more than 9% decline on year-on-year basis, but along the vicinity of Bohai Bay, it continues to show a jump diffusion tendency northward and southward, so prevention and control situation is grim. The occurrence area of the Red Turpentine Beetle in four provinces including Shanxi, Shaanxi, Hebei, Henan was 54,700 hectares, with an increase of 17.14% on year-on-year basis, and in some regions, the damage worsened. Mikania micrantha outbreak occurred in 76 counties (county-level cities, districts) of 25 cities at or above prefectural level in four provinces (autonomous regions), that is, Guangdong, Yunnan, Hainan and Guangxi; the occurrence area covered 46,600 hectares, the epidemic situation was stable on the whole.

Water Loss and Soil Erosion

The area suffering from water loss and soil erosion amounted to 2,949,100 km^2, accounting for 31.12% of the total survey area. Among others, water erosion area was 1,293,200 km^2; wind erosion area was 1,655,900 km^2.

Measures and Actions

【Comprehensive management of national nature reserves】 Review and assessment on national nature reserves have been carried out, 28 new national nature reserves were established, and the scopes of fournational nature reserves were adjusted. In 2012, the Central Government allocated 180 million yuan as special fund for national nature reserve development, to support 61 national nature reserves in carrying out standardization attainment work, and selected Hubei Elaphurus Davidianus National Nature Reserve, Sichuan Changning Bamboo Forest National Nature Reserve, Guizhou Chishui Alsophila Spinulosa National Nature Reserve, Yunnan Xishuangbanna Naban River Basin National Nature Reserve, Ningxia Zhongwei Shapotou National Nature Reserve for carrying out biodiversity conservation pilot programs. The management of 72 national nature reserves in 9 provinces (autonomous regions and municipalities directly under the Central Government) such as Beijing, Tianjin, Hebei, Shanxi, Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang was evaluated. The environment satellite HJ-1 was applied for remote sensing monitoring of human activities in 363 national nature reserves, followed by field check. Based on the remote sensing monitoring results as well as the law enforcement and supervision findings, some problems were tackled, such as the illegal tourism and resource exploitation in Liaoning Shuangtaizi Estuary National Nature Reserve, and the illegal development activities in Shandong Mashan National Nature Reserve.Their business licenses were suspended and the correction actions were supervised.

【Biodiversity conservation work】 On January 10, 2012, the sixth session of the Inter-Ministerial Joint Conference for Conservation of Biological Species Resources was held in Beijing. The session considered and adopted its work report, the document on implementation of Strategy and Action Plan for Biodiversity Conservation in China, and United Nations Decade on Biodiversity (2011-2020) China Action Plan (including 2012 Annual Plan). On June 4, 2012, Li Keqiang, Vice Premier of China State Council and Chairman of China National Committee for Biodiversity Conservation, presided over the first meeting of China National Committee for Biodiversity Conservation. The meeting announced the member list of China National Committee for Biodiversity Conservation, and deliberated and adopted the "Division of Tasks on the Implementation of Strategy and Action Plan for Biodiversity Conservation in China (2011-2030)" and United Nations Decade on Biodiversity (2011-2020) China Action Plan, and made arrangements for the next stage of the work. The preparation of the National Biodiversity Background Assessment Report was completed, which analyzed the macro-structure of China's ecosystems, the geographical distribution of species diversity and the biodiversity conservation status and inadequacies.

【Implementation of international environmental conventions】 China participated in the 16th meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the Convention on Biological Diversity (CBD), the 4th Meeting of the Working Group on the Review of Implementation (WGRI 4)of the Convention on Biological Diversity, the 2nd meeting of the Open-ended Ad Hoc Intergovernmental Committee for the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, and the 11th Conference of the Parties to the Convention on Biological Diversity. The "Division of Tasks on the Implementation of Strategy and Action Plan for Biodiversity Conservation in China (2011-2030)" and United Nations Decade on Biodiversity (2011-2020) China Action Plan were issued, to promote the implementation of the strategy and action plan.

【Prevention of invasive alien species】 The List of Invasive Alien Species under State Key Management (the first batch) was released, including 52 invasive species already or potentially causing major harm to the China's ecology, agricultural production and public health. In Jiangxi, Hubei, Jilin and other places, eradication actions on major agricultural invasive species like Solanum rostratum, Alternanthera philoxeroides (Mart.) Griseb, water hyacinth and so on were carried out, and the spread and damage of major invasive species were effectively controlled; 14 comprehensive demonstration areas have been established for eradication of invasive species such as Pomacea canaliculata, Solidago canadensis, Ambrosia artemisiifolia, Alternanther aphiloxeroides (Mart.) Griseb, and Solenopsis invicta. The coverage of the demonstration areas was about 66.7 km^2; more than 60 invasive alien species prevention, control and elimination demonstration sites were established.

【Strengthening conservation on agricultural wild plants】 25 provinces (autonomous regions and municipalities directly under the Central Government) were mobilized to carry out surveys on key wild plant resources like Nostoc commune var. flagelliforme, Glycine soja, Cordyceps sinensis, etc. GPS technology was used to position 1,214 distribution sites and collect information about them, more than 2,900 samples were prepared, and more than 10,000 images were captured. Thirteen in situ conservation areas (sites)for agricultural wild plants were established this year to conduct in situ conservation of endangered species such as wild fruits, wild vegetables, wild tea and wild soybean that have important agricultural application

value. Supervision, inspection and dynamic monitoring programs were carried out on the 86 in situ conservation sites already established. Seven technical standards were formulated to provide a technical basis for standardizing the development and operation of conservation sites.

【Carrying out aquatic species proliferation and release programs】 Ten major aquatic species release programs and 1,579 small scale programs were carried out. A special fund of 306 million yuan was secured by the Central Government to promote aquatic species release programs, pooling a total of more than 970 million yuan nationwide to support those programs. 30.77 billion important or rare aquatic fries were released, which effectively promoted the restoration of fishery resources, and achieved the goal of increasing income of fishermen.

【Strengthening the conservation of fishery resources】 The fishing moratorium system during summer season was further adjusted for Yellow Sea and Bohai Sea and the East China Sea, and gillnet fishing boats were banned from fishing for two months. There were 46,680 fishing boats in Yellow Sea-Bohai Sea, 53,726 in the East China Sea, and 25,820 in the South China Sea staying docked in ports during moratorium period. The Yangtze River close season regulations was innovated and improved on the basis of wrap-up of previous work, Pearl River close season system was further enhanced and continuously improved, and substantial progress was made in the management of fishing gears and fishing methods. Law enforcement inspections on construction projects of national and provincial conservation areas for aquatic wildlife were carried out, and more than 1,300 cases were investigated. The Notice on Strengthening the Administration of Yangtze Finless Porpoise Conservation was issued, which required the provincial fishery authorities in lower reaches of Yangtze River to take effective measures to strengthen the protection of the Yangtze finless porpoise. Publicity programs on aquatic wildlife conservation were actively carried out. 86 national aquatic germplasm conservation areas were reviewed and announced. Up to now, there are 368 national aquatic germplasm conservation areas, forming a protection system with wider range and better effects.

【Marine nature reserve】 Standardization and ecological conservation of marine nature reserves were actively carried out. The projects, which are funded by the Central Government's share of the charge for using sea area, were carried out to support the standardization capacity building programs of national marine nature reserves including Sanya Coral Reef National Nature Reserve and Shuangtaizi Estuary National Nature Reserve, as well as the local ecological restoration efforts.The effectiveness of standardized development of marine nature reserves was improved. The review process for nature reserve supervision, management and exploration activities was tougher. Some applications for nature reserve development were approved, such as the application for tourism activities in Hainan Sanya Coral Reef National Nature Reserve.

【Coastal wetland conservation】 A sound planning and policy-making system for coastal wetland conservation and development was developed; MEP actively participated in preparing National Plan for Implementation of Wetland Conservation Projects (2011-2015); the National Plan for Marine Ecological Conservation and Development was complied, putting coastal wetland protection and restoration on important agenda. Coastal wetland biodiversity investigation, monitoring and evaluation was carried out, focusing on the monitoring and evaluation programs on important coastal wetlands, such as North Jiangsu shoal, and the Yellow River estuary. Efforts were made in enhanced monitoring and evaluation of water quality, sediments, benthos and birds of coastal wetlands. A full understanding of the status, problems and dynamic changes of intertidal wetlands was obtained. A sound coastal wetland protection network was established, and major coastal wetlands were selected for building marine nature reserves and marine special reserves. Coastal wetland ecological rehabilitation and reconstruction projects were implemented actively.

【Water loss and soil erosion】 In 2012, the Central Government spent 5.466 billion yuan in major programs for soil and water conservation, which nearly doubled the amount of last year. Local governments, companies and public institutions invested 8.766 billion yuan, a significant increase compared with the annual average investment during 11th Five-Year Plan period. The completed water loss and soil erosion programs covered a total of 79,000 km^2 area nationwide; 3,400 small watersheds were treated; more than 340 medium- and large-sized soil-retaining dams were newly built; more than 2,100 slope collapses were managed and treated. There were 1,250 counties in the country which introduced the enclosure policy. The major areas for national soil and water conservation were enclosed for conservation, and those areas reached 750,000 km^2, of which 470,000 km^2 saw preliminary ecological restoration, and continuous decrease in the affected area and severity of water loss and soil erosion. A total of 301 ecological clean small watersheds were established nationwide.

Monitoring, Evaluation and Assessment of Countywide Ecological Environment Quality in National Key Ecological Functional Zones

To evaluate the effects of transfer payment from Central Government on the improvement and protection of countywide ecological environment quality in national key ecological functional zones, Ministry of Environmental Protection and Ministry of Finance initiated the assessment work on countywide ecological environment quality in national key ecological functional zones in 2009. Based on the experimental evaluation work in 2011, the status and changes of ecological environment quality in 452 counties within national key ecological functional zones were monitored, evaluated and assessed comprehensively in the year 2012.

Status of ecological environment quality: among the 452 counties, 101 counties are in "fragile" ecological environment condition, accounting for 22.3% of the total.Most of the 101 counties are located in key ecological functional zones intended for windbreak and sand fixation (34.7%) or soil and water conservation (32.7%). 155 counties are in "barely acceptable" ecological environment condition, accounting for 34.3%, and distributed throughout the key ecological functional zones; 196 counties are in "good" ecological environment condition, accounting for 43.4%, and most of them are concentrated in ecological functional zones targeted at water conservation (53.1%) and biodiversity protection (38.8%).

Changes of ecological environment quality: among the 452 counties, 58 are in "better" ecological environment condition, accounting for 12.8%; 380 counties are in "stable" ecological environment condition, accounting for 84.1%; and 14 counties are in "worsening" ecological environment condition, accounting for 3.1%. Among the 58 counties with "better" ecological environment, 26 have been "slightly improved", 23 are "moderately improved", and 9 are "significantly improved". Among the 14 counties with "worsening" ecological environment, 12 of them are "slightly worse", 1 is "moderately worse", 1 is "significantly worse".

Based on the comprehensive evaluation and assessment, ecological environment quality in 452 counties has showed sign as "generally stable, steadily improving". It indicated that transfer payment from Central Government has played a crucial role in guiding local governments to strengthen ecological environment protection and improve the environment quality.

This effort adopted multiple technical methods based on satellite and ground devices, such as the daily environment quality monitoring, satellite remote sensing technology, technical inspection, on-site verifications, and spot check by high-resolution remote sensing technology using unmanned aircraft. The evaluation and assessment results fundamentally reflected the status of countywide ecological environment quality and achievements in their protection; hence this effort can evaluate the performance of transfer payment from Central Government in the protection of countywide ecological environment in the national key ecological functional zones. It is a vivid case of strategic transition in environment management, which is targeted at improving the environmental quality and taking the changes of eco-environmental quality as yardstick measuring the protection effects.

Rural Environmental Protection

General Situation

With the advancing industrialization, urbanization, and agricultural modernization process, rural environmental situation remains grim. It is reflected by the growing industrial and mining pollution, aggravated domestic pollution in some areas, the worsening livestock pollution.

Rural environmental quality pilot monitoring results In 2012, rural environmental quality pilot monitoring results of 798 villages nationwide indicated that in the pilot villages air quality was good in general, rural drinking water sources and surface water were subject to different degrees of contamination, and the rural environmental protection situation remains grim.

In 2012, the air quality in 781 pilot villages was monitored, 729 villages met air quality standards, which accounted for 93.3%. There were 7,832 monitored days, and among them, the air quality of 7,280 days met related standards, accounting for 93.0%. According to the monitoring results, SO_2 level met standards in all days, NO_2 level met standards in 99.9% of those days, and PM_{10} level met standards during 92.1% of those days.

In 1,370 monitored water sections (sites) of drinking water sources in pilot villages, 77.2% met standards. Among them, 86.6% of the monitored water sections (sites) of the surface drinking water sources and 70.3% of underground drinking water sources met standards. The main nonattainment pollution indicators in surface drinking water sources were ammonia nitrogen, total phosphor, BOD_5, permanganate index, and dissolved oxygen; total nitrogen was the top nonattainment indicator of lake (reservoir) drinking water sources. Main nonattainment indicators for the water quality of underground drinking water sources were total coliform, ammonia nitrogen, fluoride, manganese, and total hardness.

Among the 984 monitored water sections (sites) of surface waters in pilot villages, 64.7% was between Grade I and Grade III, 23.2% was at Grade IV or Grade V, and 12.1% was worse than Grade V in terms of the water quality. The major nonattainment indicators were BOD_5, ammonia nitrogen, total phosphor, permanganate index, and petroleum pollutants; the major nonattainment indicator for lakes (reservoirs) was total nitrogen. In a few pilot villages, indicators of heavy metals exceeded standards in surface waters. The fecal coliform in waters was evaluated separately, Grade I to Grade III water quality accounted for 80.0%, Grade IV or Grade V accounted for 15.0%, and 5.0% was worse than Grade V.

Measures and Actions

【Cultivated land conservation】 In 2012, the Circular on Upgrading Conservation Level and Strengthening Quality Management of Cultivated Lands was released, and the Implementation Measures for Land Reclamation Regulations was issued, in order to improve cultivated land quality management and ecological conservation. In March, the State Council approved the National Plan for Land Management and Remediation (2011-2015), planning to develop 267,000 km^2 high-standard basic farmlands that can ensure stable yields despite droughts and floods. The Central Government allocated 27.3 billion yuan in the whole year, started the projects on development of 500 demonstration counties for high-standard basic farmlands, and completed the cultivation of 67,000 km^2 such farmlands.

【Drinking water safety in rural areas】 In 2012, the funds forprograms to ensure drinking water safety in rural areas were allocated in four packages and amounted to 43.16 billion yuan, of which 28 billion yuan was from the Central Government, and 15.16 billion yuan from local regions. The funds were to resolve the drinking water safety problems for over 77 million rural residents and 9.5 million rural teachers and students. By the end of 2012, drinking water safety problems for more than 70 million rural residents, school faculties and students were resolved. The domestic wastewater discharge and water source area conservation situations were investigated and assessed in rural areas of some provinces (autonomous regions and municipalities), investigating the status of the conservation of rural drinking water source area, the management of drinking water sources, and the discharge and treatment of rural domestic wastewater.The training

programs on conservation of rural area drinking water sources was conducted; publicity programs was carried out to raise villagers' awareness of water sources protection; in regions with better conditions, great efforts were made in promoting urban and rural water supply integration.

【Rural watercourse dredging】 In 2012, rural watercourse dredging programs were carried out in neighboring rural areas; efforts were intensified in enhancing the flood drainage capacity of rural watercourses; and the living environment of rural residents was improved. Pilot projects on integrated management of small- and medium-sized rivers were started in major counties, using the one billion yuan special fund allocated by Central Government, and selecting 25 pilot counties.The Central Government also established a special fund to support the construction of small-scale farmland water conservancy facilities, aiming at financing the dredging of rural watercourses with catchment below 50 km^2 and rural ponds with a capacity under 100,000 m^3. In 2012, the Central Government allocated a total of 700 million yuan to 140 counties, each county granted a subsidy of 5 million yuan.

【Integrated rural environment management】 The 12th Five Year Plan for National Integrated Rural Environment Management was released, identifying the overall objectives, major tasks and matching measures for integrated rural environment management during the 12th Five Year Plan period. The policy of "providing incentives to promote rural pollution control" was thoroughly implemented; and intensified efforts were made in the rural environment improvement. In 2012, the Central Government allocated 5.5 billion yuan as special funds for rural environmental protection, to support localities in integrated rural environment management programs. A large number of prominent rural environmental problems were effectively resolved.

【Rural environmental sanitation monitoring】 In 2012, the Central Government supported the rural environmental sanitation monitoring programs in 14,000 monitoring sites of 700 counties. The monitoring list included rural sewage, garbage, fecal waste detoxification, soil sanitation, pest control operations, and rural school sanitation. Through on-site investigations, a full understanding of the operation and management status of garbage and wastewater treatment plants was obtained; 12,119 soil samples were collected for lab testing, testing and analyzing the Ascarid eggs and the content of lead and cadmium in the soil; a survey on 5,877 primary and secondary schools was conducted, having an understanding of the status of drinking water and environmental sanitation of rural schools. Through the rural environmental sanitation monitoring programs, the fundamental status of rural sanitation were clarified, which served as a basis for controlling and eliminating environmental health hazards and for taking further public health intervention measures.

【Implementation of rural toilet improvement projects】 In 2012, the Central Government allocated 1.325 billion yuan to build 2,946,000 environmentally sound, sanitary toilets in rural households. By the end of 2012, a total of 3,346,000 sanitary toilets were completed in the country, exceeding the projected annual target. Through the rural toilet improvement projects, more and more villagers got access to sanitary toilets, the occurrence of diseases was effectively prevented and reduced, the rural environmental sanitation was improved, the healthy behaviors and habits were promoted, and the strive for promoting ideological progress and building a new socialist countryside was pushed forward.

【Special law enforcement and supervision campaigns on livestock and poultry breeding industry were carried out nationwide】 In June, 2012, in 12 provinces (autonomous region, municipality) including Shanxi, Inner Mongolia, Liaoning, Jilin, Zhejiang, Shandong, Guangdong, Guangxi, Chongqing, Guizhou, Shaanxi and Gansu, special law enforcement and supervision campaigns on livestock and poultry breeding industry were carried out, and 120 large-scale livestock farms were spot-checked on their enforcement of environmental laws and regulations. In conjunction with the field inspections, the status of the law enforcement reporting system was verified and double-checked, laying a foundation for facilitating the promulgation and implementation of the Regulation on Prevention and Control of Pollution by Livestock and Poultry Breeding Farms, intensifying law enforcement, and upgrading the environmental enforcement system concerning livestock and poultry breeding farms (plots).

【Prevention and control of agricultural non-point source pollution】 In 2012, in terms of the control of agricultural non-point source pollution, there were more than 160 monitoring sites, and more than 1,200 monitoring plots under national monitoring program.A monitoring network under national monitoring program was newly built, consisting of more than 300 located pilot monitoring sites for control of pollution by field film residues. A preliminary framework of the monitoring network covering the entire nation was shaped. A batch of demonstration areas were initially built for fighting agricultural non-point source pollution at Taihu Lake Basin, Dianchi Lake Basin, Chaohu Lake Basin, and the Three Gorges Project area, so as to balance and integrate the agricultural production and rural life. In terms of policy support and technology application, practical measures were explored.

【Promoting cleaner agricultural production】 In

2012, technologies of cleaner agricultural production were demonstrated in northwest China, North China, Central China and southwest China, with a special focus on such areas as field film recycling, cleaner production of vegetables, livestock and poultry ecological farming, etc. 137 villages in 24 provinces (autonomous regions and municipalities directly under the Central Government) continued to implement pilot projects on rural clean-up projects. There were more than 1,500 pilot villages for clean-up projects throughout the country.More mature processes and matching equipment were developed for the treatment of domestic waste, wastewater, human and livestock fecal waste. The utilization rate of domestic waste, wastewater, crop straws, human and livestock fecal waste was more than 90% in pilot villages, and the amount of fertilizers and pesticides used in these villages decreased by more than 20%.

【Guidelines for National Ecological and Rural Environment Supervision and Inspection was released】 In December 2012, the Guidelines for National Ecological and Rural Environment Supervision and Inspection was released, clarifying the significance, focal areas, work description and matching measures for ecological and rural environment supervision and inspection, and setting standards and guidance for relevant work nationwide. Enhanced supervision and inspection on ecological and rural environment would help facilitate the ecological progress.

Work on Environmental Satellites

The environmental satellite HJ-1C was successfully launched in Taiyuan Satellite Launch Center on November 19, 2012. The first high resolution synthetic aperture radar image was captured by HJ-1C in its maiden imaging on December 9. After its launching, HJ-1C joined the operating network with HJ-1A and HJ-1B. This move has largely improved China's capability in environment and disaster monitoring and is also a sign of the completion of the "2+1" environmental satellite constellation, the first phase in constructing environmental satellite constellations. On-orbit application tests and environmental remote sensing applications have been actively conducted. A work plan on environmental remote sensing application of HJ-1C was compiled. In 2012, the environmental satellites HJ-1A and HJ-1B worked in a stable condition, capturing 890,000 images and 124 TB data and providing over 30,000 satellite images to more than 150 organizations for free. Based on multi-source remote sensing data from HJ-1A and HJ-1B, a series of environmental remote sensing applications have been conducted successfully regarding environmental monitoring, environmental enforcement, environmental emergency response, ecological conservation, nuclear safety regulation and environmental impact assessment, etc. In the straw burning case in Central China in June, 2012, remote sensing technology provided strong information support for decision making in the environmental management process, since it could provide information through a broad field of view, in a timely and objective manner and with continuous updates. The program of "Investigation and Assessment of Decade Changes of National Ecological Environment (2000-2010) through remote sensing technology" was comprehensively carried out.

Forest

General Situation

Overview of Forest Resources

According to the 7th National Intensive Inspection on Forest Resources (2004-2008), the national forest area is 195.4522 million hectares, the forest coverage is 20.36%, the total growing stock volume of stumpage is 14.913 billion m^3, and forest growing stock volume is 13.721 billion m^3. China ranks the 5th in the world in terms of forest area, the 6th in terms of forest growing stock volume and the 1st in terms of the area of artificial forests. Compared with the 6th National Intensive Inspection on Forest Resources (1999-2003), the forest area was up 20.543 million hectares; and the forest coverage up 2.15 persentage points.

Forest Biological Hazards

In 2012, as it had been for many years, there continued to be massive biological hazards in forests. The biological hazards caused disasters in some regions, and the occurrence area was 11.7687 million hectares, the same level as that of last year. The occurrence area of severe forest biological disasters was 987,300 hectares, an increase of 1.83 persentage points compared with the previous year. In 2012, 7,826,000 hectares of forest area was covered by the program for controlling major biological hazards, adding such forest area up to 1,7480,700 hectares. The occurrence rate of major biological disasters in national forests was controlled under 4.5‰, hazard-free rate was 87.03%, the monitoring and reporting accuracy rate was 85%, and the quarantine rate of seedlings bases reached 95%.The management objectives of year 2012 were fundamentally realized.

Forest Fire

In 2012, there were totally 3,966 forest fires across the country, down 29%; the stricken forest area amounted to 14,000 hectares, down 48%; and there were 21 casualties, down 77% compared with the previous year. The above said three figures went down for four consecutive years. 2012 was the year with the least loss (stricken forest area and casualties) incurred by forest fire since the founding of P.R.C.

Grassland

General Situation

Grassland Resources

In 2012, the national grassland area was nearly 400 million hectares, which is about 41.7 % of the national territory. There are 337 million hectares of grassland in 13 pasturing provinces (autonomous regions), that is, Inner Mongolia Autonomous Region, Xinjiang Uyghur Autonomous Region, Qinghai, Tibet Autonomous Region, Sichuan, Gansu, Yunnan, Ningxia, Hebei, Shanxi, Heilongjiang, Jilin and Liaoning, taking up 85.8% of the total grassland area of the country. Grassland in the remaining provinces is 56 million hectares, accounting for 14.2% of the total grassland area across the country.

Grassland Productivity

In 2012, the fresh grass output of natural grassland nationwide amounted to 1,049.6193 million tons, an increase of 4.7% from last year, and equivalent to 323.8746 million tons of dry hay. The livestock carrying capacity was about 254.5701 million sheep unit, a growth of 3.4% over the previous year. Among the 23 key provinces (autonomous regions and municipalities directly under the Central Government), the output of fresh grass reached 979.3092 million tons, accounting for 92.81% of the total output in China, and equivalent to 306.5435 million tons of dry hay.The livestock carrying capacity was about 240.9513 million sheep unit.

Grassland Disaster

In 2012, there were totally 110 grassland fires nationwide, the stricken grassland area was 127,133 hectares, two persons were killed and eight injured, 20,989 domestic animals were lost and the economic loss was 109.909 million yuan. Compared with 2011, the occurrence of grassland fire increased by 27, and the stricken area increased by 109,659.6 hectares. The occurrence of severe grassland fire was up by 4 compared with that of 2011. Grassland rat infestation area was 36.915 million hectares, or 9.2% of the total grassland in the country, a decrease of 4.7% compared with the previous year; a total of 17.396 million hectares of grasslands suffered from insect pests, accounting for 4.3% of the total grassland area in the country, a decrease of 1.5% compared with that of 2011.

Measures and Actions

【Implementing the subsidy and reward policy for grassland ecological conservation】 In 2012, efforts were made to extend the subsidy and reward policy for grassland ecological conservation to 36 pastoral and semi-pastoral counties in five provinces, that is, Hebei,Shanxi, Liaoning, Jilin and Heilongjiang, in addition to the regions that had already been covered by the policy, that is, Inner Mongolia, Xinjiang, Tibet, Qinghai, Gansu, Sichuan, Ningxia, Yunnan Province and the Xinjiang Production and Construction Corps. The Central Government allocated 15 billion yuan as rewards and subsidies for grassland ecological protection. 820,000 km^2 of grassland were covered by grazing ban programs, and 1.737 million km^2 achieved a grass-livestock balance. The subsidies for production materials were released to 2,840,000 herdsmen households; the subsidies for forage seeds covered 80,000 km^2; the subsidies to the follow-up industries amounted to 300 million yuan; and the performance incentive fund was 469.46 million yuan.

【Projects on grassland protection and development】 In 2012, the Central Government invested 2 billion yuan to support the project of returning grazing land to grassland in Inner Mongolia, Sichuan, Gansu, Ningxia, Tibet, Qinghai, Xinjiang, Guizhou, Yunnan and Xinjiang Production and Construction Corps, which helped to build 4.404 million hectares grassland fence, reseed 1.461 million hectares seriously degraded grassland, establish 53,000 hectares artificial forage breeding land and build domestic animal sheds for 65,000 households. The grassland treatment projects for Beijing-Tianjin region were carried out in Beijing, Shanxi and Hebei Province, with an investment of 69 million yuan from Central Government budget. The project achieved treatment of 36,400 hectares grassland and construction of 0.2

million m^2 livestock sheds, and provided 4,630 sets of forage processing machines for herdsmen. A total of 4.4 billion yuan Central Government funds was spent in the settlement project for nomadic people in Inner Mongolia, Sichuan, Tibet, Yunnan, Gansu, Qinghai, Xinjiang and Xinjiang Production and Construction Corps and it helped 127,000 households to settle down. The pilot projects on comprehensive treatment of stony desertification in karst regions were implemented in Hubei, Hunan, Guangxi, Chongqing, Sichuan, Yunnan and Guizhou, which helped to treat 12,900 hectares grasslands, to construct 399,000 m^2 livestock sheds and 75,000 m^3 of silos and purchase 4,547 sets of forage processing machines.

【The strengthening of the oversight in grassland law enforcement】 In 2012, there were 18,651 law-violation cases concerning grassland, 18,060 of which were filed for investigation, and 17,670 settled, the settlement rate was 97.8%. Among them, 30 cases were filed for the administrative reconsideration or administrative proceedings, and 125 cases were transferred to judicial organs for handling. In 2012, grassland law-violation cases caused damage to 8,008.3 hectares grassland; 7,181.3 hectares grassland was illegally sold or transferred. Compared with 2011, the occurrence of grassland law-violation cases went up by 8.2% and the proportion of filed cases increased by 1.1 persentage points; the area of destroyed grassland was reduced by 4,108.8 hectares, down by 33.9%.

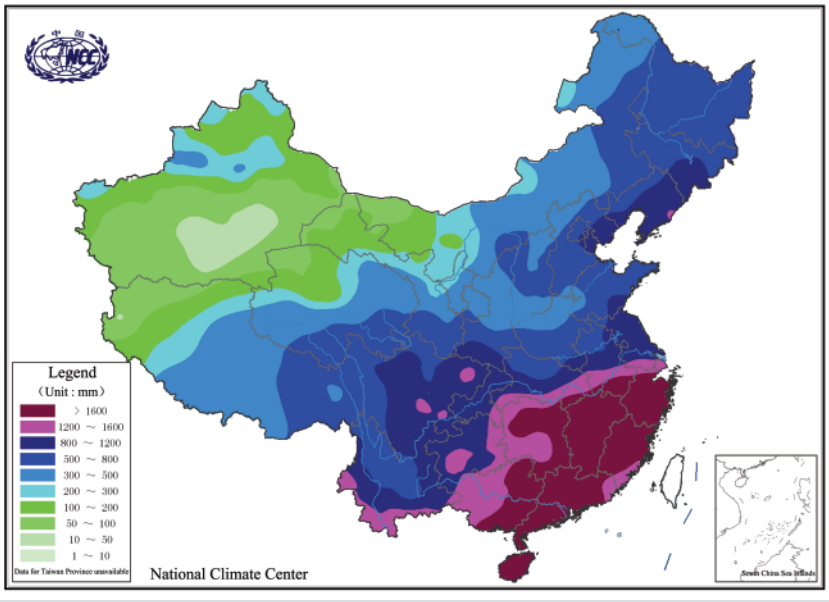
Climate and Natural Disasters

Climate Conditions

The climate was normal throughout 2012, with temperatures close to that of normal years and overall precipitation slightly higher than that of normal years.

Temperature distribution The average temperature in China in 2012 posted 9.4℃, close to the value of normal years at 9.6℃, 0.3℃ lower than that of 2011, and 0.2℃ higher than the average temperature of the years from 1971 to 2000. The temperature was a bit lower in the months from January to March, in November and in December. The temperature in other months was close to or slightly higher than that of normal years. In terms of geological distribution, temperature in southwest China was slightly higher, that in North China and northeast China was obviously lower than normal values, and other parts of China experienced a normal or slightly lower temperature. Specifically, central and southern parts of northeast China, central and eastern parts of Inner Mongolia, central and western parts of Xinjiang, northern part of Guizhou, among others, experienced a temperature 0.5-1℃ lower than that of normal years, and some particular areas had a 1-2℃ lower temperature. The temperature in Yunnan, southern part of Sichuan, southern part of Qinghai, and northeastern part of Heilongjiang, among others, was 0.5-1℃ higher than that of normal years, and some particular areas had a 1-2℃ higher temperature.

Precipitation distribution In 2012, the annual average precipitation in China was 669.3 mm, 6.3% higher than that of normal years at 629.9 mm, 6.4% higher than that of the years from 1971 to 2000, and 20.4% higher than the value of 2011. The precipitation in February, August and October was lower than that of the same periods of normal years, and other months had a higher value than normal years. In terms of geographical distribution, the middle and lower reaches of the Yangtze River, areas in the south of the Yangtze River, and the western and southern parts of Yunnan Province had a 1,200 mm to 2,000 mm rainfall;among others, central and eastern parts of Jiangxi, northern part of Fujian, southern part



Geographical distribution of rainfalls in China in 2012

of Zhejiang, southwestern part of Guangdong, southeastern part of Guangxi and northeastern part of Hainan had a rainfall of more than 2,000 mm. Most parts of northeast China, central and southern parts of North China, southeastern part of northwest China, eastern and southern parts of Huanghuai area, northern part of Jianghan area, most parts of southwest China and eastern part of Tibet had a 500 mm to 1,200 mm precipitation. Northwestern part of northeast China, northern part of North China, central part of northwest China, the majority of Inner Mongolia, northern part of Xinjiang, and central part of Tibet had a 100 mm to 500 mm rainfall. Southern part of Xinjiang and northwestern part of Tibet had a 50 mm to 100 mm precipitation, and some particular areas experienced a less than 50 mm precipitation.Fangcheng District, Fangchenggang City in Guangxi received 3,266.5 mm precipitation, which was the most in China; and Toksun County in Xinjiang received 14.2 mm, which was the least. Some regions, such as central and western parts of northeast China, central part of northwest China, central and eastern parts of Jiangnan area, most parts of Inner Mongolia, Beijing-Tianjin area, and southwestern part of Xinjiang had 20% to 50% more precipitation than that of normal years, some particular areas had 50% more rainfalls than that of normal years. Central and western parts of Huanghuai area, northern part of Jianghan area, central part of Yunnan, among others, had precipitation 20% to 50% less than that of normal years. The precipitation values in other parts of China are close to that of normal years.

Natural Disasters

Meteorological disasters In 2012, China saw many types of meteorological disasters, the situation of the disasters in some particular parts of China were serious.

Frequent rainstorms: There were 38 regional rainstorms striking China, and 21 of them happened in summer. On July 21 and 22, exceptionally severe regional rainstorms struck Beijing, Tianjin and Hebei. The daily precipitation brought by the rainstorms was rarely seen during a hundred years, with the average precipitation in Beijing reached 190.3 mm. Other areas, such as Zhouxi Town in Guizhou and Ningnan County in Liangshan Autonomous Prefecture of Sichuan, suffered mountain torrents and mud-rock flows caused by heavy precipitation concentrated in short time span.

Frequent and stronger typhoons: There were 25 tropical cyclones (maximum wind force near the tropical cyclone center≥8) in northwest Pacific and the South China Sea. Seven of them landed China, the same number as the same period in normal years. Among the 7 tropical cyclones which landed China, 5 happened in August with landing intensities reached or exceeded 12, the most violent of the same period in history. Form August 2 to 8, Damrey, Saola and Haikui landed China consecutively, which was the first time 3 typhoons landed China in such a short period of time since 1996. The landing positions extended from coastal areas in South China to coastlines in the northern part of China, covering wide latitude.

Frequent strong convection weather: From the evening of April 2 to the morning of April 3, force 7 to 9 gales struck the southern part of Jiangsu, the northern part of Zhejiang and Shanghai; many other areas such as Beijing, Urumqi, Nanjing and Qingyuan were also affected by gales. On April 5, the northern part of Guangdong suffered a thunderstorm accompanied by gales, with the maximum instantaneous wind speed reaching 45.5 m/s (wind force 14). From April 10 to 13, large-scale strong convection weather set in the southern part of China, 12 provinces (autonomous region and municipality) saw thunderstorms, gales, hailstorms and heavy rainfalls concentrated in short time spans, with the maximum instantaneous wind speed reaching the level of force 12. In some particular areas, the diameter of hails exceeded 30 mm.

Featured with periodical meteorological droughts: In 2012, continuous drought endured from winter to spring in southwest China. Southern part of North China, Huanghuai and Jianghuai regions saw early summer droughts. Hubei, Anhui, Henan and Chongqing experienced summer droughts featured with high temperature and low precipitation. From August to late October, eastern part of South China saw autumn droughts.

Regional, periodical and frequent low-temperature overcast and rainy weather: In the beginning of 2012, large-scale continuous low-temperature overcast and rainy (snowy) weather set in Jiangnan, South China and eastern part of southwest China, with little sunlight. During that period, the average number of rainy days in the 8 provinces (autonomous region and municipality directly under the Central Government) including Hunan, Jiangxi, Zhejiang, Fujian, Guangdong, Guangxi, Guizhou and Shanghai was 48.4, the most in past 62 years, and the average precipitation in these regions was the most in past 14 years. From late May to early June, Hunan and northwestern part of Jiangxi had a temperature 1-2℃ lower than that of normal years, some particular areas had a 2-4℃ lower temperature. From early to mid June, most parts of northeast China and eastern part of Inner Mongolia experienced continuous low temperature and rainy weather.

Cold currents accompanied by rain and snow hit many

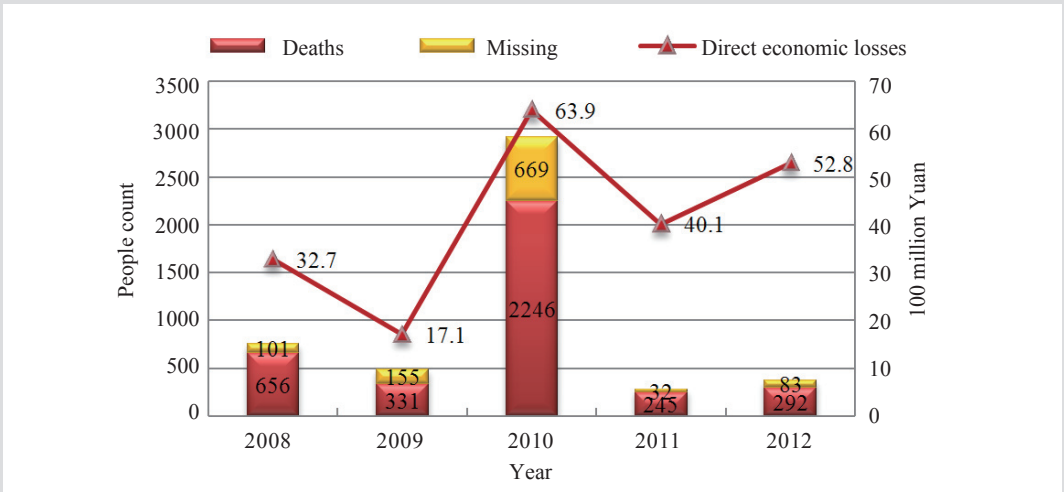
areas in northern part of China: From November 2 to 4, 2012, most parts of North China saw the first snow in this winter. Beijing, Hebei, central part of Inner Mongolia, northern and western parts of Shanxi, among others, had 10 mm to 50 mm precipitation in total, eastern part of Hebei had 60 mm to 143.6 mm precipitation, and the average precipitation in Beijing was 59.2 mm, nearly 4 times of the average rainfall in November in history. Tianjin, Hebei and Inner Mongolia saw extremely high precipitation in November, and 74 national weather stations recorded daily precipitation that exceeded historical records in November. In Yanqing County of Beijing, the maximum snow depth reached 47.8 cm, the figure in Fengning County of Hebei was 43 cm, and in Kalaqin Banner of Inner Mongolia 59 cm.

Frequent foggy and hazy days: In 2012, foggy and hazy days concentrated mostly in January, February, March, October, November and December. From January 16 to 19, series of traffic accidents caused by the fog occurred in the expressways, national highways and urban roads of Shandong, with 10 people killed and 14 injured. On January 13, 74 flights to or from Urumqi International Airport were delayed, cancelled or landed at alternate airports because of the fog. From January 14 to 15, the fog forced Qiongzhou Strait to be closed to vessels for 16 hours. On January 27, 111 flights to or from Haikou Meilan International Airport were cancelled because of the fog. On the evening of February 20, the fog induced a chain accident involving 14 vehicles on Guizhou section of Xiamen-Chengdu Expressway, with 7 people killed and 22 injured. On March 14, 21, 22 and 23, heavy fog caused comprehensive shipping and flight interruptions in Hainan, and in the same time, fog forced hundreds of vessels to be anchored or docked at harbors at Zhenjiang section of Yangtze River in Jiangsu. On April 11, at least 550 vessels were forced to be anchored or docked at harbors in the waters near the Three Gorges of Yangtze River. On April 15, 7 traffic accidents were induced by fog in Lianyungang section of Shenyang-Haikou Expressway, with 12 people killed and 26 injured.

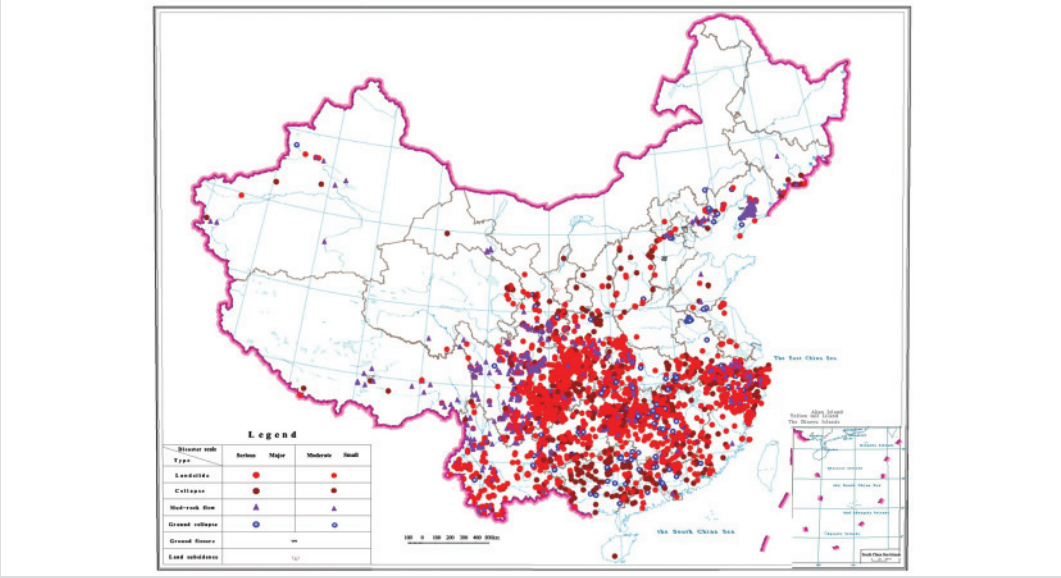
Geological disasters In 2012, 14,322 geological disasters of various types struck China, including 10,888 landslides, 2,088 collapses, 922 mud-rock flows, 347 ground collapses, 55 ground fissures and 22 cases of land subsidence,with 292 people killed, 83 missing and 259 injured. Direct economic losses totaled 5.28 billion yuan. Compared with 2011, the number of geological disasters dropped by 8.6%, the number of people killed or missing increased by 35.4%, and direct economic losses went up by 31.7%.

The geological disasters mostly concentrated in central and western parts of China, some particular part of southwest China, some particular parts of South China and some parts of East China.

Seismic disasters In 2012, mainland China suffered 16 earthquakes of magnitude 5.0 or above on the Richter Scale, and 11 of them can be classified as seismic disasters including a serious one and a major one. Throughout 2012, seismic disasters disrupted the normal lives of 1.79 million people in mainland China, with 86 people killed and 1,331 injured. The disasters affected 68,257 km^2 of territory, and destroyed 2,275,889 m^2 building areas including 651,454 m^2 serious damages, 12,639,627 m^2 moderate damages and 6,183,549 m^2 minor damages. The direct economic losses amounted to 8.288 billion yuan.



Deaths, missing populations, and direct economic losses caused by geological disasters in 2012



Geographical distribution of geological disasters in China in 2012

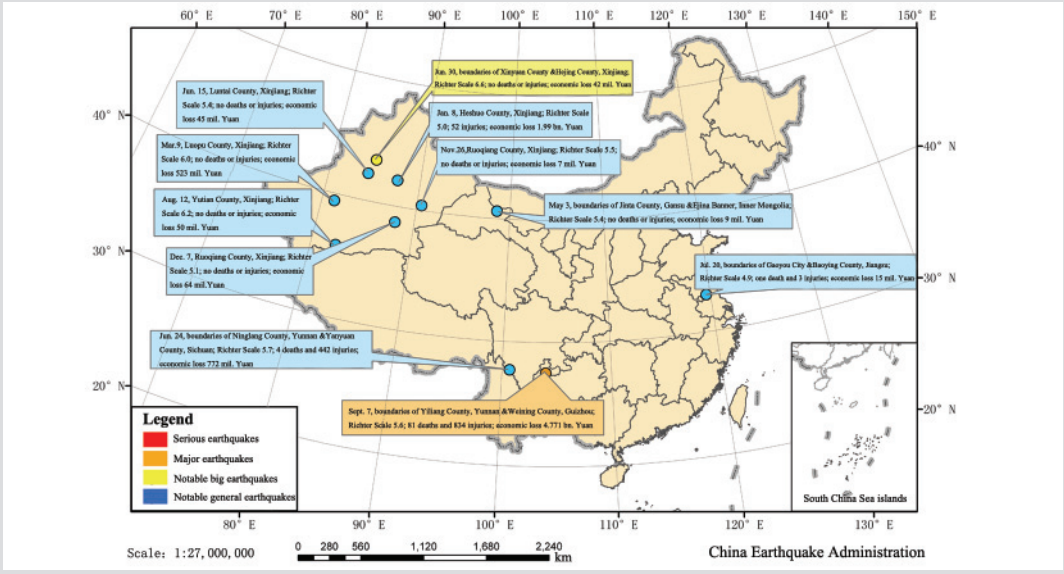
Factsheet of losses caused by seismic disasters in Mainland China in 2012

No.	Date		Place	Richter scale	Deaths and injuries			Damaged residential houses (m^2)*				Direct economic losses (100 million Yuan)
	Month & Date	Time			Deaths	Major injuries	Minor injuries	Destroyed	Serious	Moderate	Minor	
1	Jan. 8	14:20	Heshuo County, Xinjiang	5.0	0	0	0	431	11600	62531	185383	0.42
2	Mar. 9	06:50	Luopu County, Xinjiang	6.0	0	0	0	189144	0	2364102	0	5.23
3	May 3	18:19	Boundaries of Jinta County ,Gansu &Ejina Banner, Inner Mongolia	5.4	0	0	0	213	0	6102	0	0.09
4	Jun. 15	05:51	Luntai County,Xinjiang	5.4	0	0	0	6366	0	79777	0	0.45
5	Jun. 24	15:59	Boundaries of Ninglang County, Yunnan &Yanyuan County, Sichuan	5.7	4	28	414	251983	1007	1394860	12514	7.72
6	Jun. 30	05:07	Boundaries of Xinyuan County &Hejing County, Xinjiang	6.6	0	1	51	179176	512606	2150364	3788281	19.90
7	Jul. 20	20:11	Boundaries of Gaoyou City &Baoying County, Jiangsu	4.9	1	0	3	890	3071	48652	289764	0.15
8	Aug. 12	18:47	Yutian County,Xinjiang	6.2	0	0	0	22622	37549	65601	99079	0.50
9	Sept. 7	11:19	Boundaries of Yiliang County, Yunnan & Weining County,Guizhou	5.7	81	834		1625064	81250	6436355	1546496	47.71
		12:16	Yiliang County,Yunnan	5.6								
10	Nov. 26	13:33	Ruoqiang County,Xinjiang	5.5	0	0	0	0	269	900	46333	0.07
11	Dec. 7	22:08	Ruoqiang County,Xinjiang	5.1	0	0	0	0	4102	30383	215699	0.64
Total					86	1331		2275889	651454	12639627	6183549	82.88

* In the investigation into simple buildings damaged by earthquakes in rural areas, the buildings fall into three categories: destroyed (seriously damaged), damaged (moderate and minor), and basically intact.

Statistical data of major earthquakes between 2000 and 2012

Year	Disaster earthquakes (occurrence)	Deaths	Injuries	Direct economic losses (bn. Yuan)
2000	10	10	2977	1. 468
2001	12	9	741	1. 484
2002	5	2	360	0. 148
2003	21	319	7136	4. 660
2004	11	8	688	0. 950
2005	11	15	867	2. 628
2006	10	25	204	0. 800
2007	3	3	419	2. 019
2008	17	69283	377010	859. 496
2009	8	3	404	2. 738
2010	10	2705	11088	23. 567
2011	15	32	506	6. 011
2012	11	86	1331	8. 288



Geographical distribution of seismic disasters in Mainland China in 2012

The destructive earthquakes mostly concentrated in the western part of China, and 10 out of the 11 seismic disasters occurred in this region in 2012. The death toll and direct economic losses in this region accounted for 100% and 99.8% respectively of the national annual figures. Of all the affected regions, Yunnan, Xinjiang and Guizhou suffered the most, accounting for 96.5% of the national annual losses.

Oceanic disasters In 2012, China suffered 138 storm tides, storm waves and red tides. Various oceanic disasters (including sea ice and green tide) caused direct economic

Red tides in major Chinese seas in 2012

Sea	Reported occurrence	Accumulated area (km^2)
Bohai Sea	8	3869
Yellow Sea	11	1333
East China Sea	38	2028
South China Sea	16	741
Total	73	7971

losses 15.525 billion yuan and 68 people were killed (or missing) in the disasters.

Red tide: The entire territorial waters experienced 73 red tides, which covered 7,971 km^2 accumulatively. In terms of the occurrence, the East China Sea ranked the first with 38 red tides in 2012. In terms of affected area, Bohai Sea ranked the first, registering 3,869 km^2. The red tides mostly concentrated in May and June. In 2012, China has witnessed the most red tides since 2008, but the accumulated affected area was 2,585 km^2 less than the average value of the previous five years.

Green tide:From March to August, coastal waters in southern part of the Yellow Sea suffered from green tide caused by Enteromorpha prolifera. In late March, Enteromorpha prolifera was identified in coastal waters near Rudong of Jiangsu. On May 16, the distribution area of Enteromorpha prolifera in southern part of the Yellow Sea was recorded as 1,110 km^2, then the Enteromorpha prolifera tide moved northward, mainly to the central part and coastal areas of the Yellow Sea. On June 13, the distribution area and the coverage of Enteromorpha prolifera reached their maximum levels, and were recorded as 19,610 km^2 and 267 km^2 respectively. The affected area of Enteromorpha prolifera shrank gradually in July and the green tide disappeared on August 30. The Enteromorpha prolifera affected area along the coasts of Yellow Sea during 2012 was the smallest since 2008.

Seawater intrusion and soil salinization:In 2012, coastal plain of the Bohai Sea suffered from serious seawater intrusion and soil salinization, the status of some areas in this region was increasingly severe. The affected area in the Yellow Sea, East China Sea and South China Sea was small, but the chlorinity and salinity data recorded at some particular monitoring stations obviously increased. The erosion status in sandy coast and silty coast was serious, and the erosion in some particular areas accelerated.

Flood and drought During 2012, more than 420 rivers around China produced floods that exceeded warning levels. More than 70 rivers produced floods that exceeded guarantee levels. More than 40 rivers produced floods that exceeded historical records. In 2012, 7 typhoons landed China's coastal areas. Yangtze River experienced 5 flood peaks, and the upper reaches of Yangtze River suffered the most serious flood since 1981. The Yellow River experienced 4 flood peaks, and upper and middle reaches of the Yellow River suffered the most serious flood since 1989. The North Grand Canal in Haihe River Basin experienced floods which exceeded historical records; Juma River of Daqing River waters produced the most serious flood since 1963; Luanhe River waters experienced the most serious flood since 1995; and the mainstreams and tributaries of Huaihe River, Yihe River, Shuhe River, and Sishui River waters experienced floods in 2012, specifically, Yihe River and Shuhe River produced the most serious flood since 1993 and 1991 respectively.

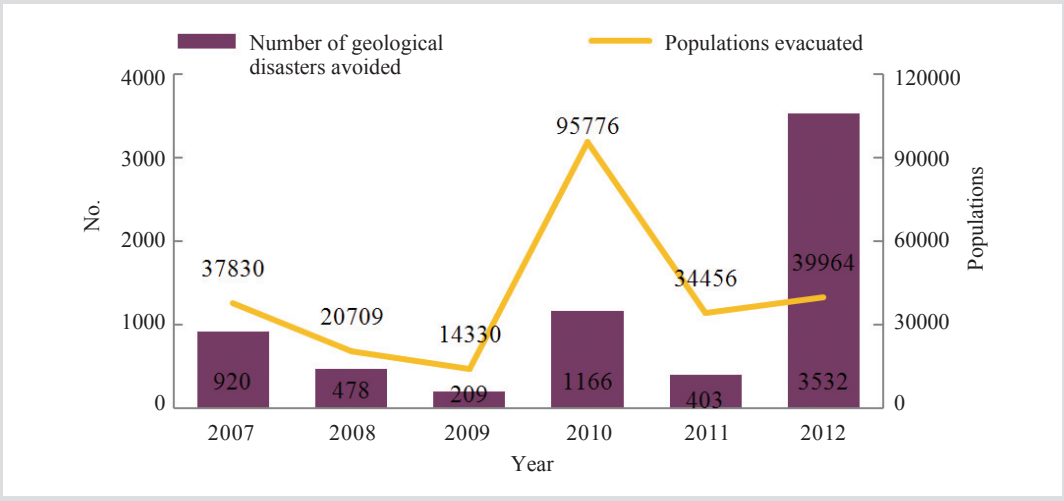
The floods and droughts affecting China in 2012 were not serious in general. A total of 2,263 counties (county-level cities, districts) were stricken by flood and waterlogging, with 11,218,090 hectares of farmland affected, 5,871,410 hectares were seriously stricken, and 1,384,390 hectares produced no harvest because of the disasters. The normal lives of 123.6711 million people were disrupted. 673 people were killed, and 159 missing. 586,000 houses collapsed, and the direct economic losses were 267.532 billion yuan. In 2012, 21 provinces(autonomous regions and municipalities directly under the Central Government) experienced droughts, 9,333,330 hectares of farmland were affected, 3,508,530 hectares were seriously stricken, 373,800 hectares produced no harvest because of the droughts. The reduction of grain yield was 11.612 billion kg, 16.371 million people and 8.4763 million large domestic animals suffered from a shortage of drinking water because of the drought, and the direct economist losses was 53.3 billion yuan.

Measures and Actions

【Prevention and control of geological disasters】 In 2012, China invested 3.5 billion yuan in the special fund for prevention and control of extremely huge geological disasters, successfully forecasted 3,532 geological disasters, avoiding 39,964 casualties and 810 million yuan direct economic losses.

【Establishment of earthquake monitoring, prevention and emergency rescue system】 In 2012, China Continental Tectonic Environment Monitoring Network Project and the Project on Meridian Chain of Comprehensive Ground-Based Space Environment Monitors in the Eastern Hemisphere were completed, which means China's continental tectonic movement and electromagnetic environment in space can be continuously monitored in a high-accuracy, high-resolution, and real-time manner. It takes only two minutes to do automatic quick reports of domestic earthquakes. The seismic station network has provided emergency response services, with over 40 emergency response products delivered. The earthquake resistance and prevention parameters of 5,300 important construction projects were examined and approved according to related regulations and laws. Near 30 active faults were probed. The reinforcement projects for buildings in middle schools and primary schools were mainly completed. The National Earthquake Emergency Response Plan was released and put into effect. 71 provincial-level professional earthquake rescue teams were set up around China.

【Progress in early warning information release system for public emergencies】 The first phase of the project on National Early Warning Information Release System for Public Emergencies was initially completed this year, and the second phase was included in the key construction project list of the national emergency response system in the 12th Five-Year Plan period. A total of 111 information release centers around China have been established, including emergency early warning information release center, meteorological hazard monitoring and early-warning information release center, etc. In 2012, 220 important meteorological guarantee tasks were accomplished, 517 reports on major emergencies were received, 18 emergency responses were made to handle meteorological disasters, and a total of 48 days were on emergency response.Throughout 2012, 0.467 million mobile phone messages were sent to release early warnings of meteorological disasters, 6.73 billion person•times of meteorological disaster early warning services were provided, and the service covered more than 90% of the general public.



Number of geological disasters avoided and populations evacuated between 2007 and 2012

Note: The national data involved in the report does not include that of Taiwan Province, Hong Kong SAR and Macao SAR except data on administrative zoning, territory and earthquake disasters.

Contributors to the 2012 Report on the State of the Environment in China

Leading Agency

Ministry of Environmental Protection

Contributing Agencies

National Development and Reform Commission

The Ministry of Land and Resources

The Ministry of Housing and Urban–Rural Development

The Ministry of Transport

The Ministry of Water Resources

The Ministry of Agriculture

National Health and Family Planning Commission

National Bureau of Statistics

State Forestry Administration

China Meteorological Administration

China Earthquake Administration

State Oceanic Administration