



Environmental Protection Inspection

环境监察

# The Environmental Policies and Sustainable Development of the Manganese Industry of China

State Environmental Protection Administration

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July, 2006



## Contents

- **The Progress of Environmental Protection Cause of China**
- **The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment**
- **Environmental Protection Countermeasures in the 11th Five-Year Plan Period**
- **The Sustainable Development of Manganese Industry of China**



# I. The Progress of Environmental Protection Cause of China

The Chinese Government has highly valued environmental protection by laying down sustainable development as a national strategy and environmental protection as a basic national policy. While entering the new century, China has put forward the principles of implementing scientific view of development, making unified planning of the coordination between economic, social and environmental development as well as between man and nature and constructing socialist harmonious society in light of the people-first theory. By sticking to environmental protection during development, China has preliminary checked the worsening trend of pollution in the context of over 9% of annual economic growth rate during the last two decades. In addition, the overall situation of environmental quality remained stable, and the cap discharge volume of major pollutants have been brought under control. In specific, the discharge volume of major pollutants under national control all witnessed varied degree of reduction in 2004 except SO<sub>2</sub>, down by 9%, 7%, 22% and 39% for COD, soot, industrial dust and industrial solid wastes respectively than the 2000 level.



# 1. The Progress of Environmental Protection Cause of China

## Setting up a Relatively Matured Legislative System on Environmental Protection

National laws: based on the Law of the People's Republic of China on Environmental Protection, China has successively enacted 9 laws on environmental protection including the Law on the Prevention and Control of Water Pollution, Law on the Prevention and Control of Air Pollution, Law on the Prevention and Control of Noise Pollution, Law on Prevention and Control of Environmental Pollution Caused by Solid Waste, Marine Environmental Protection Law, Law on Environmental Impact Assessment, Law on the Promotion of Clean Production and the Law on the Prevention and Control of Radioactive Pollution. Besides, a total number of 13 laws on natural resources haven't been promulgated covering Mineral Resources Law, Water Law, Forest Law, etc.

National and departmental regulations: the State Council and relevant departments has laid down 34 administrative regulations on environmental protection such as the Regulations on the Administration of Construction Project on Environmental Protection and Regulations on the Usage and Administration of Collection of Pollution Discharge Fee as well as 160-plus departmental regulations and 1,020 local statutes.

National environmental standard system: this system can be broken down into five major categories of environmental quality standard, pollution discharge standard, local standard, standard sample and baseline standard covering 430 ones.

The amended Criminal Law has added two crimes of the crime of damaging environmental and resource protection and the crime of malpractice in environmental supervision.



# The Progress of Environmental Protection Cause of China

## Establishment of Relatively Matured Administrative System on Environmental Protection

- System of Environmental Protection Target Responsibility
- System of Environmental Impact Assessment
- System of “Three Simultaneity” on Pollution Prevention and Control
- System of Pollution Discharge Levy
- System on the Report and Registration of Pollutants Discharge
- System on Pollution Discharge Permit
- System on Pollution Treatment within a Prescribed Limit of Time
- System of Pollutants Discharge Cap Control
- System of Outdated Production Technologies and Equipment to be Forced to Phase out



## I. The Progress of Environmental Protection Cause of China

- Strengthened efforts in environmental law enforcement. An environmental supervision and law enforcement group numbering 49.6 thousand people covering the central, provincial, city and county level has taken its initial shape equipped with necessary vehicles and on-site law enforcement facilities. The priority on environmental protection law enforcement is to conduct on-the-site supervision and inspection over the implementation situation of various national environmental protection guidelines and policies, laws and regulations, standards and permit systems of enterprises and public institutions. In recent years, China has launched a series of special actions on the investigation and dealing of environmental law-breaking activities to safeguarding the health of its people.



# I. The Progress of Environmental Protection Cause of China

In 2004, China has enfolded an special overhaul over 8 leading heavily-polluting industries of iron & steel, cement, electrolyzed aluminum, ferroalloy, calcium carbide, coking plant, saponin and chromic salts. As a result, 7,057 environmental law-breaking enterprises were found out, among which 3,058 were put down and closed. The overhaul has eliminated a batch of outdated production capacities including 23.31 million tons of steel, 11.49 million tons of cement, 220 thousand tons of electrolyzed aluminum, 1.04 million tons of ferroalloy, 1.2 million tons of calcium carbide, 26.21 million tons of coke and 20 thousand tons of chromic salt.

In 2005, 1.32 million person · time of environmental law enforcement personnel were deployed nationwide with 560 thousand enterprises being investigated and 27 thousand environmental law-breaking cases being put on record and dealt with. Among all such cases, 2,609 illegal pollution-discharging enterprises were put down and closed, 2,170 enterprises were ordered to halt production for treatment, 4,302 were ordered to conduct treatment within a set limit of time, 9,468 ones were punished by administrative penalties, and 311 responsible personnel were dealt with according to relevant laws and regulations.



# 1. The Progress of Environmental Protection Cause of China

China has held fast to laying equal emphasis on both ecological conservation and construction. In specific, it has initiated large-scale construction projects of converting farmland to forest, grassland and lake, protection of natural forest and nature reserves. Consequently, the green coverage of China has reached 18%, and the area of nature reserves registers 14.8% of the total territory of the nation.



# 1. The Progress of Environmental Protection Cause of China

China has amplified its investment in environmental protection. It has preliminary established a pollution prevention and control mechanism featuring governmental guidance, enterprises implementation, social participation and market-based operation. With the input on pollution control being elevated by a big margin, the last 7 years has witnessed an accumulation of 800 billion yuan of investment on pollution control alone, taking up as high as 1.4% of the nation's total GDP.



# 1. The Progress of Environmental Protection Cause of China

China has actively explored viable means leading to sustainable development. It has vigorously promoted clean production in enterprises in a bid to take full advantages of resources from the source of production as well as through its whole process, enable the minimization, recycling and decontamination of wastes throughout the whole production process in each enterprise and stimulate the eco-friendly design of products. In accumulation, over 5000 enterprises across the nation have passed the examination of clean production. China has also upgraded the design of 17 ecological industrial parks in line with the concept of circular economy and the theory of industrial ecology. By doing so, the wastes produced by enterprises in the upper stream of the production chain can be used as raw material for downstream enterprises based on the implementation of clean production in enterprises. The production chain has been extended, the resources enjoyed within a region or by a group of enterprises can be used to its utmost extent with the minimum or even “zero” discharge of wastes.



## II. The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment

- Acute conflict between the attainment of building a well-off society in full scale and the backup of environment and resources
- Outstanding conflict between environmental demand by the public and the increasingly deteriorating environmental situation
- Apparent conflict between ever-growing environmental protection tasks and the backward environmental management level

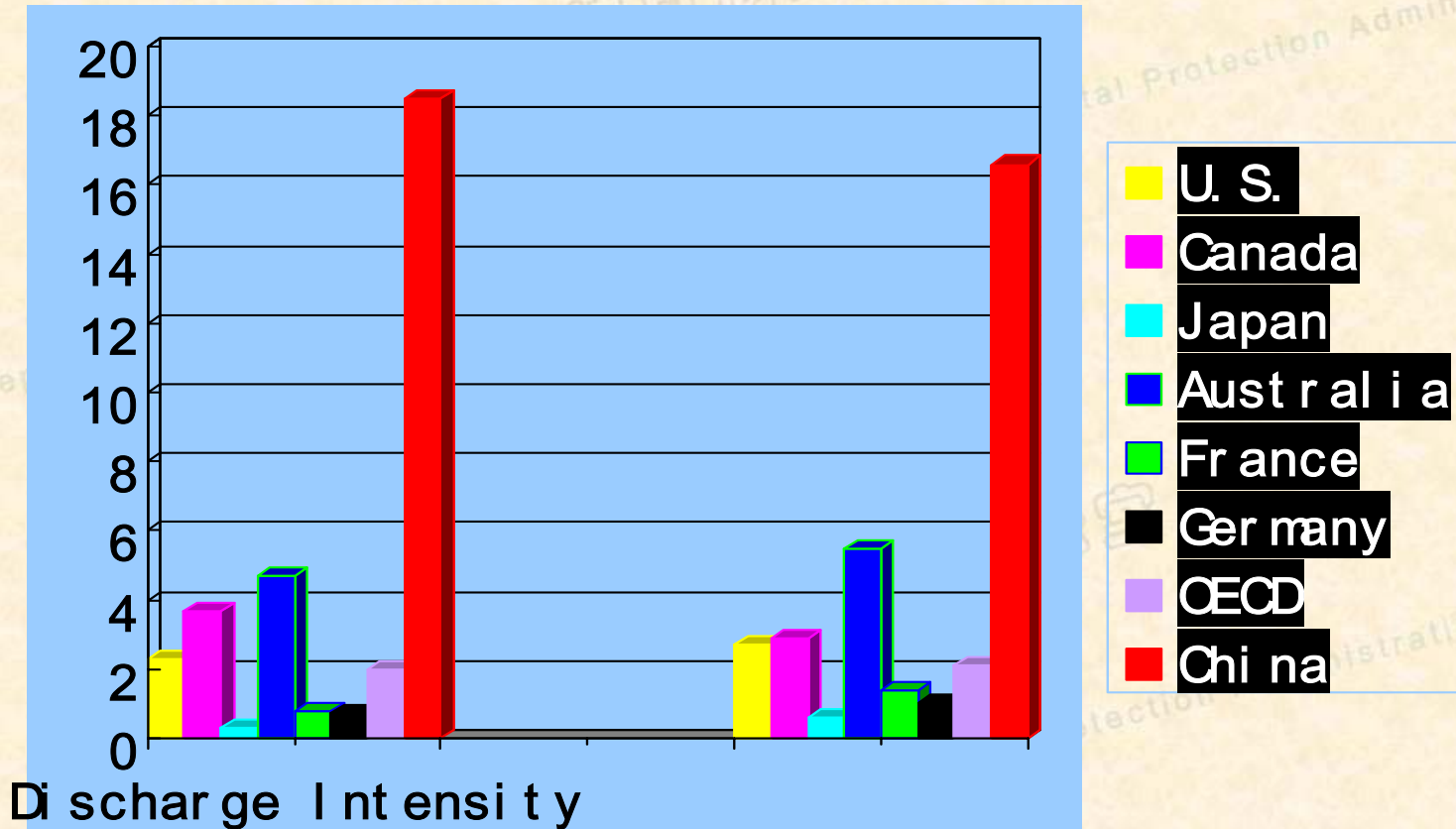


## II. The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment

With the resource productivity equaling merely to 1/10 of that of the U.S., 1/20 of Japan and 1/6 of Germany, China remarkably outruns international advanced level in terms of energy and resource intensity: 22.5% higher in coal consumption for thermal power generation, 21% higher in comparable energy consumption per ton steel in large and medium-sized steel enterprises and 45% higher in comprehensive energy consumption for cement production. The usage coefficient of agricultural irrigation water is one and a half time of that of international advanced level, while the water usage volume per 10 thousand yuan of industrial production value is 10 times of that of international advanced level. The over-consumption of resources has given rise to the corresponding growth of per GDP pollutant discharge volume, and the per GDP discharge volume of SO<sub>2</sub> and NO<sub>x</sub> of China is 7~8 times higher than that of developed countries. This indicates that the technological level, management capacity and environmental protection work of China stand at a relatively low end and would pay substantial resource and environmental cost for development.



## Comparison of SO<sub>2</sub> and NO<sub>x</sub> Discharge Intensity between China and Developed Countries

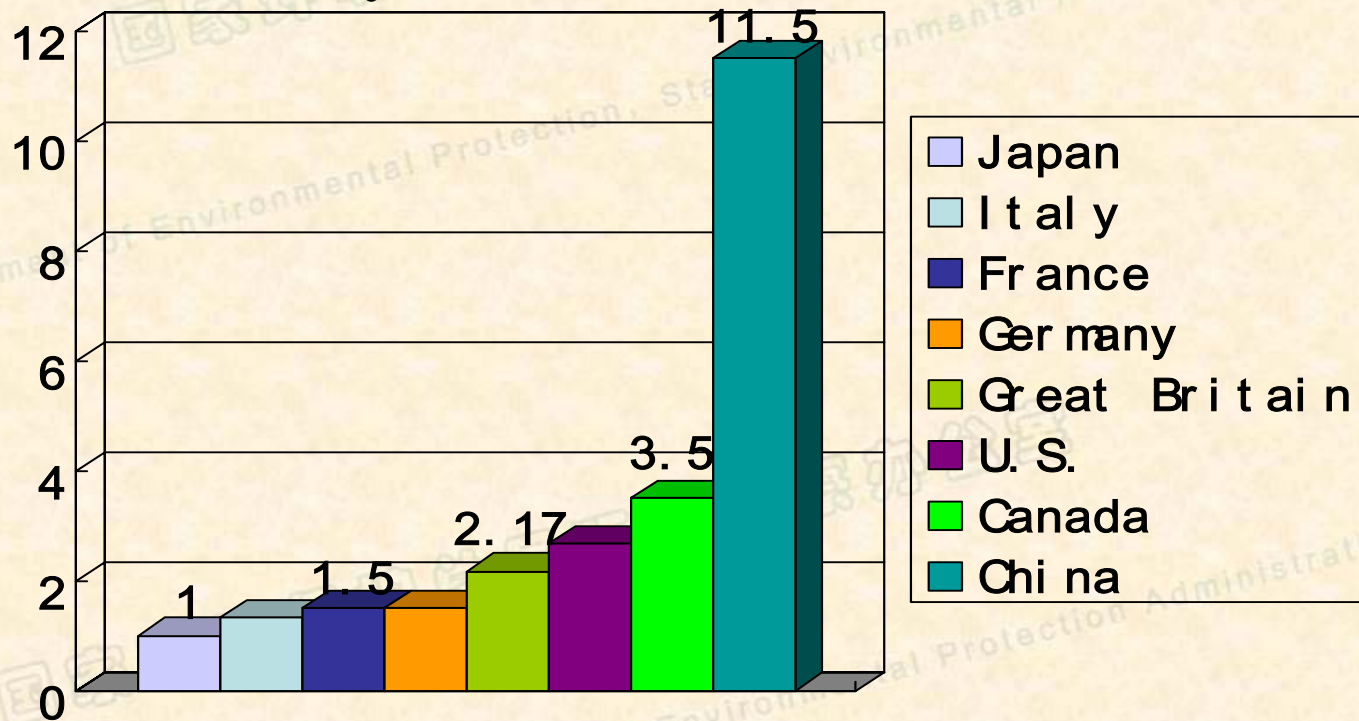


Discharge Intensity of SO<sub>2</sub> (kg/1000 US Dollar GDP)

Discharge Intensity of NO<sub>x</sub> (kg/1000 US Dollar GDP)



## High Energy Consumption of Products, Large Pollution Discharge Volume of per Unit GDP and Heavy Environmental Pollution



Comparison of Energy Consumption Level between China and Developed Countries (Taking Japan as the base number of 1.00)

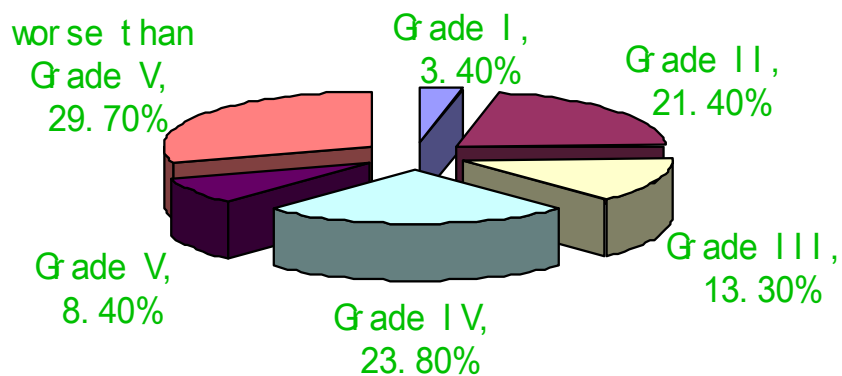


## II. The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment

The environmental situation is very grave. The total discharge volume of major pollutants has exceeded environmental capacity, leading to serious environmental pollution. Monitoring of the 7 major water bodies in 2004 indicated that only 42% sections had relatively good water quality (above Grade III); 1/5 of all the cities suffered from severe air pollution and 1/3 of the land territory was affected by acid rain with deteriorating trend. New environmental problems loom large such as vehicle emission, electronic wastes and POPs. As a result, the ecology was seriously damaged accompanied by worsening soil erosion in wider range of area, intensified stone desertification, acute grassland degradation, biodiversity losses and functional degradation of the eco-system.



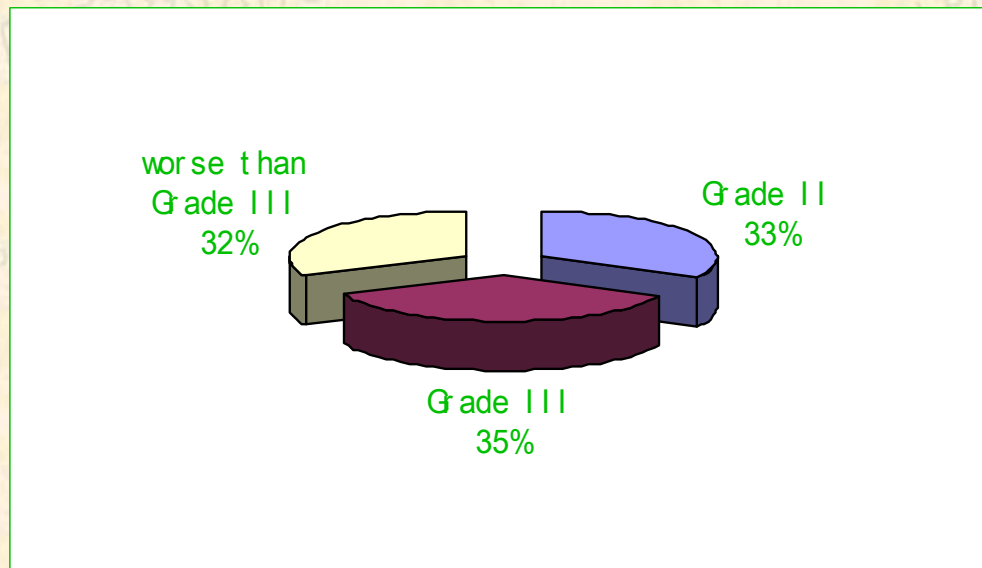
## II. The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment



Water Quality of the 7 Major Water Bodies



**Air pollution is serious in most cities with key areas plagued by pollution from acid rain. A worsening trend of acid rain has emerged in some cities.**

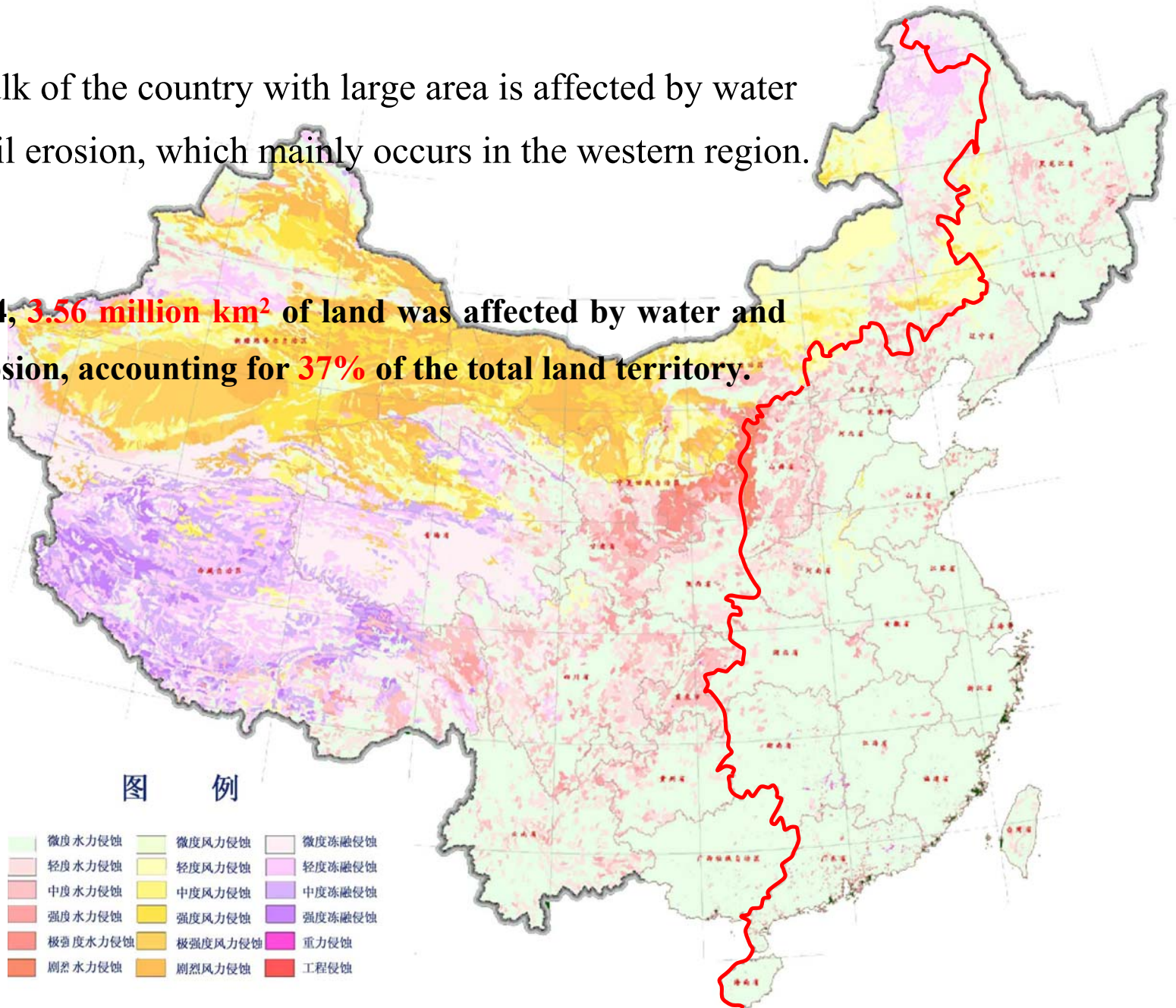


**Proportion of cities graded by air quality in 2000**

**East China, South China and the central part of China suffer from serious pollution from acid rain. Among the 106 cities within the acid rain control area, the annual average pH value of precipitation is between 3.67 and 7.30. There are 95 cities affected by acid rain, making up 89.6% of the total. 53.7% of the cities experienced frequent acid rain with incidence rate exceeding 40%.**

➤ A bulk of the country with large area is affected by water and soil erosion, which mainly occurs in the western region.

In 2004, **3.56 million km<sup>2</sup>** of land was affected by water and soil erosion, accounting for **37%** of the total land territory.





## II. The Conflict between Rapid Economic Growth and the Constraint of Resources and Environment

In 2005, environmental protection departments at all levels dealt with 498,836 environmental complaint cases filed by the public, of which 423 cases were handled by Bureau of Environmental Supervision under SEPA. Environment problems have become a hot issue in China. According to the Annual Report of China's Public Environmental Index 2005, from 1999 to 2005, environmental protection has steadily ranked the top five hot issues catching public attention in 10 big cities including Beijing, Shanghai, Guangzhou and Wuhan. Its ranking was respectively No. 1 (rate of attention: 49.20%) and No. 2 (rate of attention: 41.30%) in 2000 and 2001 respectively.



### III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

The 11th National Five-Year Development Guidelines for Economic and Social Progress of People's Republic of China defines the building of resource-efficient and environment-friendly society with accelerated pace as an important task of strategic significance and essential part for national development. The Chinese government made this strategic deployment out of the consideration of China's national conditions and future development as well as the advanced concept of sustainable development learned from the international community.

The State Council issued the Decision on the Implementation of the Outlook on Scientific Development and Strengthening Environmental Protection, which is a programmatic document for building a harmonious socialist society and guiding coordinated development among economy, society and the environment.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

### Basic Principles:

- Coordinated development and mutual benefit. Economic development and social progress must coordinate with the efforts of environmental protection. Environmental protection should be implemented in the course of development and it will also in turn promote development. Development should be approached in a resource-saving, safe and clean manner to seek sustainable and scientific development.
- Strengthening rule of law and carrying out comprehensive treatment. We should stick to administration by law, constantly improve environmental laws and regulations and enforce them strictly. Comprehensive decision-making and scientific planning is needed by taking account of environmental protection and development. Prevention should be taken as the primary measure to practice source control of pollution and eco-destruction. Environmental problems should be solved by adopting various means including legal, economic, technical and necessary administrative instruments.
- Working out solutions to new problems in a timely manner and making more efforts to solve old problems. Total discharge of pollutants should be put under strict control. All newly built (expanded and renovated) constructions must comply with environmental requirements, trying to maintain pollutant discharge at a stable level or to reduce pollution in spite of increased production. Active measures should be taken to solve environmental problems left over by history.
- Relying on technology and innovating mechanism. Boost the development of environment science and technology to facilitate the settlement of environmental problems. Diversified investment mechanism involving government, enterprises and the social entities should be established and commercialization be introduced in the operation of some pollution control facilities. Environmental supervision system should be improved to achieve unity, synergy and efficiency.
- Giving different guidance according to real conditions and prioritizing important issues. We should coordinate the development of rural and urban areas and solve environmental problems step by step, especially those restricting economic development and arousing strong public response. We should also improve environmental quality of key river basins, area, sea area and cities.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

### Objectives of Environmental Protection

- By 2010, environmental quality of key regions and cities will be improved and the deteriorating trend of eco-degradation be basically checked. Total discharge volume of major pollutants will be controlled effectively and discharge intensity of key industries will drop remarkably. Improvement will be made in air quality of key cities and water quality of urban drinking water sources, rural drinking water, surface water and offshore seawater. The trend of grassland degradation will be curbed and more land will be treated to control water and soil erosion and to rehabilitate ecology. Environment in mining area will be ameliorated and overexploitation and pollution of groundwater will be slowed down. Eco-functions of important eco-function reserves and nature reserves will be kept stable. and environmental quality of towns and villages improved. Safety of nuclear and radiation environment should be ensured.
- Environmental quality and eco-conditions will see dramatic improvement by 2020.



### III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

#### 7 Tasks for Environmental Protection

- Strengthening water pollution control with priority given to drinking water safety and pollution control in key river basins.
- Strengthening protection of urban environment by focusing on prevention and control of pollution.
- Facilitating prevention and control of air pollution with more attention paid to reducing the total discharge volume of SO<sub>2</sub>.
- Reinforcing protection of rural environment by taking prevention and control measures on soil pollution as the focus.
- Intensifying eco-protection through promoting harmony between man and nature.
- Ensuring safety of nuclear and radiation environment by enhancing supervision of nuclear facilities and radiation sources.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

**Active measures will be taken to promote transformation from economic growth at the expense of environment to economic growth stimulated by environment.**

First, we will establish a decision-making system in favor of environmental protection. Explorations will be made in green accounting system with indicators and statistical method reflecting the real condition of economic development and well-being of our citizens. Environmental indicators will be incorporated into performance assessment of officials. Environmental information will be made public in a direct manner to promote public participation. Voices of the public will be heard on policies, legislation suggestions, planning and construction projects concerning public environmental rights and interests. Second, an economic development pattern featuring circular economy will be established. Boosting the development of circular economy is regarded as the guiding principle for the preparation of various development programs. Plans for promoting circular economy will be formulated and implemented. We shall speed up the establishment of policy structure, standards and assessment systems for circular economy. More efforts are needed to encourage technological development and system innovation. Clean production will be promoted according to the principle of “reduce, reuse and recycle”. Industrial parks will be renovated with environmental considerations taken into account. We will develop industries making use of renewable resources and continue the campaign of building eco-province (city), eco-demonstration park, NMCEP, environmentally beautiful towns and green communities and green schools.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

**Making overall planning to promote coordinated development between regional economy and the environment.** Local authorities should identify the functions and direction of future development according to resource endowment, environmental capacity, eco conditions, population and national development guidelines and industrial policies so as to combine regional economic plans with environmental protection objectives. Development should be optimized in developed areas with limited environmental capacity and insufficient natural resources. Reduce total discharge of pollutants through technology advance and upgraded industrial structure. Development priority will be given to areas where there is adequate environmental capacity with great potential and abundant resources. Environmental capacity should be used rationally by strictly abiding by environmental laws and regulations. Limited development should be practiced in areas where ecology is vulnerable and areas with important eco function zones. We should choose a mode of development that has little damage to environment and facilitates eco rehabilitation. Development is prohibited in nature reserves and areas with special value for protection. Mandatory protection will be implemented according to law.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

### **Perfecting environmental legislation and upgrading environmental supervision.**

China should intensify environmental legislation, expedite the formulation of supporting regulations, step up the punishment efforts on environmental law-breaking activities and effectively address the problems of “low cost for law violation and high cost for law observance” and difficulty in law enforcement. As per the request of constructing a government ruled by the law, we should strengthen the awareness of lawful administration, augment the supervision efforts on environmental law enforcement situation, take stern measures in investigating and dealing with environmental law-breaking activities, perform pollutants cap control system, strictly check the discharge cap of pollutants alongside with economic development in line with the environmental bearing capacity or control targets, spread the pollution discharge permit system and prohibit unlicensed or over-volume pollution discharge. In addition, we should also amplify the systems of environmental access, industrial elimination and treatment within a set limit of time.



## III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

### **Perfecting Environmental and Economic Policies and Advancing the Development of Pollution Treatment Market and Environmental Protection Industry.**

We should establish a system of policies on price, taxation, credit, trade, land and government procurement conducive to environmental protection, encourage economic activities highlighting resource saving and environmental protection and restrict economic activities wasting resource and damaging our environment. Governmental price-fixing must take full account of the resource scarcity and environmental cost, and such market-based prices should also be guided and supervised in favor of environmental protection. We should consolidate ecological compensation policies and promptly set up corresponding mechanism. We should also establish genetic resource benefit-sharing mechanism. We must observe the principle of “Polluters pay, and observers benefit”, raise the charging standard on urban sewage and refuse treatment fee, encourage non-governmental investment in the infrastructure construction and operation including wastewater and refuse and promote professional and centralized pollution treatment. We should also lift technological input on environmental protection and strive for the elevation of innovative capacity on environmental technology. By regarding environmental protection industry as a pillar industry for national economy, we should cultivate and standardize the industry as well as its market and try to build up an indigenous, standard and modern environmental protection industry system in an early date.



### III. Environmental Protection Countermeasures in the 11th Five-Year Plan Period

#### **Enhancing international cooperation in environment field.**

Efforts should be made to earnestly implement international conventions on environmental protection, to introduce international capitals, advanced technology and managerial experience, to promote the sustainable development of foreign trades and safeguard national environmental security by improving environmental standards of relevant products and techniques, exerting rigorous environmental access control and keeping away risks triggered by trades, such as hazardous alien invasive species and transfer of pollution.



## IV. The Sustainable Development of Manganese Industry of China

### Status quo of China's Manganese Industry

- China has relatively rich manganese mineral resources. Currently, there're more than 200 identified manganese mines with the reserves up to 560 million tons, of which nearly 240 million tons are available for exploitation. The mines are distributed in 19 provinces, municipalities and autonomous regions, mainly in Hunan and Guizhou province, Chongqing municipality, and Guangxi autonomous region.
- China has nearly 1,000 manganese mining enterprises, with a total annual output of 2.65 million tons dominated by small and medium-sized ones. Due to decentralized production and poor technical capacity, the manufactured manganese products reached only 5 million tons in 2004.
- At present, China is the world's largest manganese mineral importer. It is estimated that 3.7 million tons of imported manganese minerals are in need across China this year. The imported manganese minerals have constituted over 30% of the domestic consumption and will rise to more than 50% by 2007.



## IV. The Sustainable Development of Manganese Industry of China

- The electrolytic manganese industry in China has experienced rapid development in recent years. By the year 2004, 141 enterprises had been established and put into operation with a capacity of 935 thousand tons. The year 2005 saw 23 enterprises start construction with a potential capacity of 230 thousand tons. 30 enterprises have an annual output of more than 10,000 tons. At present, both the outputs and export of electrolytic manganese in China account for over 90% of the world total.
- With the development of iron and steel industry in China, the production capacity of manganese-series ferroalloy increases sharply with the annual turnout of nearly 8 million tons. The export in 2004 was close to 1 million tons.
- The annual turnouts of electrolytic  $\text{MnO}_2$  and  $\text{Mn}_3\text{O}_4$  rank among the first in the world, standing at 150 thousand tons and 65 thousand tons respectively.



## IV. The Sustainable Development of Manganese Industry of China

### Environmental Pollution in China's Manganese Industry

Taking the electrolytic manganese for example, with hydrometallurgy technology, China's electrolytic manganese industry turns out about 6 million tons of residues, 200 million tons of wastewater and 800 thousand tons of waste gas annually. However, substantial progress has been made in pollution control of electrolytic manganese industry. The technology in this sector and pollution control technology are relatively advanced. Some enterprises have adopted non-chromium passivation technology, and more have implemented environmental-friendly approaches to combat pollution.



## IV. The Sustainable Development of Manganese Industry of China

- The rapid development of manganese industry in recent years has triggered certain environmental problems. For example, while electrolytic manganese industry has become the economic pillar of juncture area of Hunan, Guizhou Province and Chongqing Municipality in western China, a variety of pollutants arising from the production process, such as Chrome, Manganese, Selenium and ammonia nitrogen have damaged the local ecological environment and severely polluted the rivers.



## IV. The Sustainable Development of Manganese Industry of China



**Deteriorating regional aquatic environment with total manganese and ammonia nitrogen greatly exceeding the standards**



## IV. The Sustainable Development of Manganese Industry of China



Low managerial level in enterprises and the disordered environment in the factory



## IV. The Sustainable Development of Manganese Industry of China



**Low disposal capacity of enterprises due to rough facilities for pollution prevention and control**



## IV. The Sustainable Development of Manganese Industry of China



Randomly stacked and stored raw materials and wastes in enterprises



## IV. The Sustainable Development of Manganese Industry of China

- The environmental pollution caused by relatively concentrated enterprises engaged in the production of electrolytic manganese in the juncture of Hunan, Guizhou Province and Chongqing Municipality has aroused the attention of senior officials of China. Chinese Government is making efforts to organize the local governments to unfold comprehensive environmental treatment.



## IV. The Sustainable Development of Manganese Industry of China



The Inspection Team of SEPA holding a meeting on treating manganese pollution in the juncture of Hunan, Guizhou and Chongqing



## IV. The Sustainable Development of Manganese Industry of China

- Developing unified environmental treatment plans and unified requirements.
- Implementing measures to close down or suspend the operation of enterprises for rectification. There're 41 enterprises engaged in the production of electrolytic manganese with an annual output of 510 thousand tons. Up to now, 29 enterprises of them have been closed down or suspended for operation for rectification totaling the capacity of 340 thousand tons. The rest 12 enterprises are ordered to rectify within a limit time period. The small-scale and heavily-polluting enterprises with backward techniques are closed down.
- formulating unified standards for check and acceptance of environmental treatment. Enterprises are asked to go through the procedures for legitimate examination and approval, discharge wastewater up to standard, and install automatic on-line monitoring equipments. The residues must go through environmental-friendly treatment and subject to regular inspection, and the waste gas must be emitted up to standards.



## IV. The Sustainable Development of Manganese Industry of China

Chinese Government will assume measures to promote the **sustainable development of manganese industry.**

Efforts will be made to develop industrial policies in order to promote the sound development of electrolytic manganese industry, keep the disordered expansion of production capacity under control by enhancing the regulation of EIA examination and approval by environmental protection agencies and shaping corresponding environmental and economic policies. We will facilitate the benign development of the whole industry by formulating industrial policies and phase out manganese processing enterprises with outdated techniques, equipments and technologies within a limit time period.



## IV. The Sustainable Development of Manganese Industry of China

- National Development and Reform Committee will release the *Conditions of Enterprises' Access to Electrolytic Manganese Industry* in recent days.

Main contents:

- Techniques and equipments: the capacity of every single production line shall be up to 10,000 tons/year, the scale of the enterprise shall reach 30,000 tons/year, and the available volume of chemical combination groove shall exceed 250m<sup>3</sup>.
- Consumption of energy and resources: the overall electricity consumption of products at Level A and B shall be no more than 8,600 kwh/ton, and that of products at Level C and D shall be no more than 6,500 kwh/ton.



## IV. The Sustainable Development of Manganese Industry of China

- National Development and Reform Committee will release the *Conditions of Enterprises' Access to Electrolytic Manganese Industry* in recent days.
- Main contents:
- Environmental protection: wastewater must be discharged up to national standards, and the discharge outlets should be installed with automatic monitoring equipments on major pollutants. Waste gas and residues must be treated in accordance with relevant national standards and residues are to subject to environmental-friendly treatment.
- In addition, provisions shall be drawn up on safe production, etc.
- The central government will release the list of enterprises meeting the conditions for market access on a regular basis and enhance inspection on law enforcement as well.



## IV. The Sustainable Development of Manganese Industry of China

- Enhancing environmental regulation. Efforts should be made to develop plans for environmental treatment in manganese industry across the country, launch special campaign to regulate the orders of mines, organize the environmental system to enforce environmental regulation in manganese processing industry and exert more efforts in environmental law enforcement.
- Promoting clean production. We will implement *Law on Promotion of Clean Production*, improve the technical policies and production & environmental standards in manganese processing industry, develop working plans and define objectives for clean production in electrolytic manganese industry and strengthen the examination of clean production.
- Developing circular economy. We will adjust the product mix, promote the comprehensive utilization of waste, enhance regional planning for social, economic and environmental development and develop ecological industry and circular economy.



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Thanks

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