THE PEOPLE'S REPUBLIC OF CHINA NATIONAL REPORT

ON SUSTAINABLE DEVELOPMENT

中华人民共和国可持续发展国家报告

FOREWORD

For the purpose of preparing for the United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil, on June 20-22, 2012, the Chinese government established a Preparatory Committee in April 2011. This Committee consists of 29 organizations including five core ones—the National Development and Reform Commission, Ministry of Foreign Affairs, Ministry of Science and Technology, Ministry of Finance and the Ministry of Environmental Protection. In July 2011, the Preparatory Committee set up a team to compile " the People's Republic of China National Report on Sustainable Development " (hereinafter referred to as " the National Report "), symbolizing the full launch of the preparation of the National Report.

Given that the Chinese government compiled similar reports on two earlier occasions—the 19th Special Session of the United Nations General Assembly in 1997 and the World Summit on Sustainable Development in 2002, this National Report focuses on the efforts and progress China has made since 2001 in implementing the strategy of sustainable development, analyzing existing gaps and challenges, putting forward future strategic initiatives, and clarifying China's positions on the issues in the forthcoming 2012 United Nations Conference on Sustainable Development.

In terms of its content, " the National Report " consists of eight chapters. The first chapter provides an overview of the progress, challenges and strategic plans in the implementation of sustainable development strategies. The second to the fifth

chapters elaborate on the efforts and progress China has made in promoting integration of three pillars of sustainable development: economic growth, social development and environmental protection, covering economic restructuring, transformation of the mode of development, human development, social progress, sustainable use of resources, as well as ecological and environmental protection and related actions for addressing climate change. Chapters six and seven introduce the progress made by China in capacity building for sustainable development, international cooperation, and compliance with international conventions on the environment and development. The eighth chapter offers the Chinese government's basic positions on the objectives and themes of the United Nations Conference on Sustainable Development as well as its basic views on a number of key issues.

During the preparation of " the National Report " , hundreds of people from 40 organizations and research institutions participated, with several rounds of comments and recommendations solicited from government departments, NGOs and the general public. This National Report on a broad public basis fully reflects China's progress in sustainable development over the past decade. This Report has been approved by the Government of the People's Republic of China. It is hoped that this report will provide useful support and contribute to the 2012 United Nations Conference on Sustainable Development.

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Chapter I

Overview

Since the 1992 United Nations Conference on Environment and Development, global sustainable development has undergone profound changes. Sustainable development has gradually become an international consensus, with deeper international and regional cooperation. Countries throughout the world have made huge progress in promoting sustainable development and achieving the Millennium Development Goals. At the same time, global sustainable development is also faced with serious challenges such as rapid population growth, increasing poverty, North-South uneven development, severe environmental pollution, reduction of biodiversity, desertification and global climate change. The 2012 United Nations Conference on Sustainable Development, treating "green economy within the context of sustainable development and poverty eradication" and "institutional framework for sustainable development" as its two themes, and regarding "assessing the progress and implementation gaps in meeting already agreed commitments" ,"addressing new and emerging challenges" and "securing renewed political commitment to sustainable development" as its objectives, will help concerned parties reach a consensus, further promoting sustainable development at the global, regional and national levels.

Over the past two decades, China, based on its national conditions of being in the accelerated industrialization and urbanization processes, has enriched the connotations of sustainable development, actively responded to the complex changes in the environment at home and abroad and a series of major challenges, and achieved steady and rapid economic development, higher people's living standards, and remarkable progress in population control, population quality improvement, resources conservation and environmental protection. On the other hand, as a developing country with a large population, China is confronted with ecological fragility and inadequate per capita resources. Its per capita gross domestic product (GDP) is still ranked about 100th in the world and there are still 122 million people living in poverty. Moreover, given the severe resources and environmental constraints on economic development, pronounced uneven development among regions, and weak scientific and technological innovation capacities, China still faces an arduous task of improving people's livelihood. Therefore, China will further transform its development mindset, innovate new modes of development, solve the problems of imbalanced, uncoordinated and unsustainable development, and improve the capacity of sustainable development and the level of ecological civilization, so as to make greater contributions to global sustainable development.

Section 1

Overall Progress of China's Sustainable Development

1.1.1 Connotations of sustainable development constantly enriched and developed by China

The idea of harmony between man and nature is an important component of the traditional values of Chinese civilization. The Chinese government has participated in three milestone conferences, i.e. the United Nations Conference on the Human Environment (also known as the Stockholm Conference), United Nations Conference on Environment and Development (also referred to as the Rio Conference) and the Johannesburg World Summit on Sustainable Development (also known as the Johannesburg Summit), which are vital for the formation and development of the concept of sustainable development, and China is one of the first few countries to propose and implement sustainable development strategies. After the 1992 United Nations Conference on Environment and Development, the Chinese government issued " China's Agenda 21 — White Paper on China's Population, Environment and Development in the 21st Century " in March 1994 and then in 1996, incorporated sustainable development into national strategies and began its full implementation.

Since the turn to a new century, China has further deepened its understanding of the connotations of sustainable development. In 2003, China proposed the scientific outlook on development with people-oriented, comprehensive, coordinated and sustainable features. The scientific outlook on development is a major theory put forward by China that, based on its own realities, summarizes development practices, draws on foreign experience as well as adapts to new development situations at home and abroad. It is the theoretical wisdom of the Chinese people, and the guiding principle of the country's economic and social development. Since 2003, China has proposed advanced concepts such as a resource-saving and environment-friendly society, an innovation-oriented country, ecological civilization and green development, and continuously put them into practice.

Box 1-1 Basic connotations of the Scientific Outlook on Development

The scientific outlook on development takes development as its top priority, putting people first as its core, comprehensive, balanced and sustainable development as its basic requirement, and overall consideration as its fundamental approach. Its methods are to integrate the urban and rural development, regional development, economic and social development, harmonious development between man and nature, domestic development and opening to the outside world. Its important goals are to make sure that the aims and outcomes of all the work of the Party and the state are to realize, safeguard and expand the fundamental interests of the overwhelming majority of the people, respect the principal position of the people, give play to their creativity, protect their rights and interests, and promote their all-round development and social progress.

1.1.2 Progress made by China in key areas

Progress achieved in economic restructuring and transformation of development patterns. China has always attached great importance to food security, regarding developing agriculture, benefiting rural areas and enriching farmers as its top priorities, and carrying out a series of major actions. Since 2004, grain output has continued to grow, registering a steady annual yield of over 500 million tons from 2007 onwards. Efforts have also been made to explore a new path to industrialization, and shift the mode of economic development by adjusting industrial structure, developing a circular economy, promoting the development of strategic and emerging industries, and upgrading traditional industries. China also uses information technology to promote industrialization, which in turn drives the development of information technology, in a bid to enhance core competitiveness of the manufacturing sector. China has been accelerating the development of modern service industry, vigorously advocating green consumption, and gradually improving the quality of development. Moreover, China has made efforts to carry out overall regional development strategies such as the development of western regions, basically reversing the trend of a widening economic gap between regions. The strategy of building development priority zones is being promoted vigorously to set the national spatial development toward a coordinated and orderly direction. Urbanization is being steadily advanced, further enhancing the coordination between urban and rural areas. Continuous efforts have been made to beef up poverty alleviation efforts to change the backward socioeconomic situation in poverty-stricken areas, and gradually build up the self-development capacity of the poor, thereby enabling China to become the first country to achieve the Millennium Development Goals of halving the number of people living in poverty, and speeding up the process of global poverty reduction.

The process of building a harmonious society quickened. China firmly pursues its national policy of family planning, which has kept the population growth rate at a relatively low level, thus making a significant contribution to slowing down global population growth and reducing the population pressure on resources and the environment. Efforts have been made in China to realize free compulsory education, improve healthcare capabilities and service levels, accelerate the construction of a social security system covering both urban and rural residents, further protect the rights and interests of women and children, enhance people's overall quality and bring into shape the quality human resources that can support sustainable development. China has prioritized the promotion of employment and put in place a public employment service system. Top priorities have been given to a coordinated urban and rural development in building a harmonious society and the urban-rural disparity has been narrowed through such measures as the abolition of agricultural tax, the reform of household registration system, and the establishment of a long-term mechanism for "industry promoting agriculture while urban development driving rural growth." Moreover, great importance has been attached to the improvement of the urban and rural environment. With unremitting efforts, urban and rural living conditions, greening area coverage, environmental quality, and drinking water conditions have been greatly improved, and the Millennium Development Goal of "halving the number of people without sustainable access to safe drinking water" has been achieved six years ahead of schedule.

Substantive results achieved in resource conservation and environmental protection. By eliminating backward production capacity, strengthening energy conservation in key areas, developing new and renewable energies, China has put in unremitting efforts to improve energy security. Over the past decade, energy self-sufficiency rate has always remained at over 90%, and China has become the world's largest producer in terms of hydropower, wind power installed capacities and solar water heater collector area. Based on the development and utilization of domestic mineral resources, China strives to improve the comprehensive development and utilization of resources. China implements the strictest arable land and water resources protection system, to ensure the basic stability of the arable land area and the water needs of the national economy and social development. The water consumption per 10,000 yuan GDP dropped from 554 cubic meters in 2000 to 225 cubic meters in 2010. China has attached great importance to the protection of marine environment while rationally developing and utilizing marine resources; as a result, a system for marine protected areas has been basically formed. The large-scale ecological restoration drive has been under way with the principle of "overall progress and breakthroughs in key points" ,which increased forest coverage from 16.55% in 2000 to 20.36% in 2010. The national trend of ecological deterioration has been brought under control with regional ecological environmental quality improved significantly. China has also set binding targets for energy-saving and emission reduction, and intensified water pollution control in key river valleys, air pollution control and comprehensive industrial waste management. As a result, in 2010, the total emissions of sulfur dioxide and chemical oxygen demand dropped by 14.29% and 12.45%, respectively from that of 2005. Urban air quality and surface water quality have seen noticeable improvements compared to a decade ago. Moreover, China has prioritized its work for addressing climate change, made an important contribution to the establishment of a fair and reasonable international regime to respond to climate change, and made significant commitments of emission reduction based on its own national conditions. At present, China is trying to explore a rapid path for industrialization and urbanization that features efficient use of natural resources, protection of ecological environment, and coordination between socioeconomic development and the environment and natural resources.

1.1.3 Measures China has adopted to promote the implementation of sustainable development strategies

Maintaining a government-led and market-regulating policy. The Chinese government has intensified coordination of planning, organizational and institutional arrangements, policies and measures, and project implementation. China has set up top-down energy-saving, eco-environmental regulatory agencies, established an energy-saving management system, and introduced such measures as an accountability system for energy conservation and emission reduction and one-ballot veto for environmental protection in a bid to strengthen the implementation of relevant policies. Through continuous improvement to the market economic system and a full play to the basic role of market in allocating resources, China has been encouraging the industrial circles to develop a circular economy and launch clean production. A vivid situation driven by projects has emerged, featuring major breakthroughs and overall progress.

Continuing to improve policies and regulations and strengthen capacity building. In accordance with the requirements of sustainable development strategy, the Chinese government has promulgated, implemented and amended a series of related laws and regulations. In terms of environmental legislation, China has basically formed a management system of reduction at the source, process control and end governance by emphasizing prevention as the main principle. Relying on the support of science and technology for sustainable development, China has continuously increased investment in science and technology and human resources development. Through media promotion, education and training, China has been raising the awareness of sustainable development nationwide and encouraging active participation from social groups and the public. Media monitoring mechanisms have been improved to ensure that sustainable development can achieve desired results.

Conducting pilot demonstration programs and exploring sustainable development models. The Chinese government has carried out pilot projects concerning China's Agenda 21, national sustainable development experimental zones, a circular economy, a resource-saving and environment-friendly society, and ecological demonstration zones, to form a series of innovative sustainable development models that are in line with regional characteristics.

Carrying out pragmatic cooperation and sharing sustainable development experience. China has conducted in-depth, wide-ranging, multi-formed exchanges and cooperation with foreign government agencies, international organizations, enterprises, and research and consulting institutions, and shared experiences and lessons, so as to improve international cooperation in the field of sustainable development.

Section 2

Situation and Challenges Facing Sustainable Development in China

1.2.1 Global sustainable development faced with many long-term pressures. Over the past 20 years, the world population has grown by more than 1.5 billion and total economic output nearly tripled. At the same time, there are more than 1 billion people living in poverty, nearly two-thirds of the countries yet to complete their industrialization and modernization processes, and the rigid demands for survival and development that continue to pose pressure on resources and the environment, thus leading to such prominent global issues as food security, security of energy resources, environmental risks, climate change, public health safety, major natural disasters. Developing countries, especially the Least Developed Countries, lack the ability to cope; developed countries are less willing to honor their commitments; and the global capacity for the implementation of sustainable development is being

undermined. All these factors have further exacerbated the long-term pressures.

1.2.2 Lack of equity remaining a huge challenge to global sustainable development. Massive wealth accumulated through rapid development of the global economy has not effectively brought equity to humanity. The gap between the developed and the poorest countries has continued to expand. The majority of developing countries have a serious shortage of funds, inadequate technical means, and a weak capacity, thus facing enormous challenges to achieve sustainable development. At the same time, all countries in the world are facing their own social issues caused by a widening wealth gap. Generally speaking, for the past 20 years, the trend of a widening gap in per capita income have remained the same, so have the uneven occupancy of resources and the unfair trade rules. The issue of equity has become the root cause of regional conflicts, ecological destruction and social unrest, and is still an enormous challenge to achieve the common goals of humanity.

1.2.3 China still facing tremendous development pressure. Apart from the eastern coastal areas, most regions of China are still in the mid- and even the early-stage of industrialization and urbanization. China has a large population living in poverty, and according to the country's new rural poverty line in 2011 (rural residents' per capita annual net income being 2,300 yuan), the number is 122 million. And most of these people live in the regions with harsh natural conditions, making the task of poverty alleviation extremely difficult. Due to the huge population base and the force of inertia, China's total population will continue to grow over a fairly long period of time. Meanwhile, the structural contradictions of China's labor supply and demand remain very severe with huge pressures on reemployment, youth employment, and job creation during rural labor force shifts. Moreover, the proportion of aging population is rising rapidly, enabling China to be the only country with senior citizens over 100 million. China's social security system with universal coverage has just been established, remaining at a relatively low level compared with other major developing countries.

1.2.4 The fragility of the natural ecological environment exerting tremendous pressure on sustainable development in China. China's geographical and geological environment is complex and diverse, with a high proportion of land unsuitable for human habitation that has poor natural ecological conditions. The arid and semi-arid regions account for 52% of the country's total land area; 90% of natural grasslands has varying degrees of degradation, and half of the grasslands have moderate or significant signs of desertification and salinization. The extremely fragile natural environment has posed an enormous challenge to China's ecological environment construction and protection. At the same time, China is one of the countries with most serious natural disasters, featuring many types, wide geographical distribution and high frequency of occurrence, thus posing a major threat to people's lives and property and economic and social development.

1.2.5 The resources constraints becoming the great challenges of sustainable development. China's per capita fresh water, arable land and forest resources account for 28%, 40% and 25% of the world average, respectively. The per capita recoverable reserves of oil, iron ore and copper are 7.7%, 17% and 17% of the world's average, respectively. Moreover, most of the natural resources and energy are mainly located in China's western regions with harsh geographical and ecological environment, so the costs of related exploitation, utilization and protection are high. The Chinese economy is still in the stage of development with a high proportion of heavy and chemical industries, so the economic development can hardly get rid of its dependence on the environment in the short term. Economic development and social progress have faced enormous challenges in complying with stringent requirements of saving resources and protecting the environment, conserving energy and cutting emissions, as well as achieving technological progress and realizing management innovation.

1.2.6 Economic and social structural problems are prominent in China. China's urbanization has lagged far behind its industrialization. Population migration and transfer have brought about huge pressure on social management. Uneven urban and rural development can be seen in the fact that rural production, living conditions and public services have lagged far behind the urban levels. The level of public services also differs among regions, with the poverty-stricken areas having the most prominent problems. The structure of different industries at the three stages is not sound; the domestic and external demand as well as investment and consumption are not balanced; economic growth is too dependent on investment and exports; and domestic consumer demand is obviously insufficient. All this makes it arduous to restructure China's economy.

Section 3

A General Way of Thinking for China's Sustainable Development

1.3.1 Guiding principles and overall objectives of China's sustainable development strategy

The guiding principles of China's sustainable development strategy are: regarding scientific development as the theme, the rapid transformation of economic development modes as the main line, economic development as the top priority, the improvement of people's living quality and development capacity as the fundamental starting point and aim, as well as the reform and opening up and scientific and technological innovation as the driving force, so as to comprehensively promote the green economic development and social harmony and progress.

The overall objectives of China's sustainable development are: the total population is effectively controlled; the population quality is considerably improved; the levels of science and technology development and education are significantly enhanced; people's living standards continue to improve; the use of resources and energy becomes more reasonable; the biological and environmental quality is obviously improved; the sustainable development ability is constantly upgraded; and the coordinated

development of economy, society, population, resources and environment is basically achieved.

1.3.2 An overall consideration for China's sustainable development

Economic restructuring being a major initiative to promote the sustainable development strategy. Efforts should be made to optimize the structure of demand and shift economic growth to rely on consumption, investment and exports; consolidate and strengthen the position of agriculture as the foundation, enhance the core competitiveness of the manufacturing industry, develop strategic emerging industries, accelerate the development of the service sector, and drive economic growth through the synergy of the three industries; and implement the overall regional development strategies and the strategy of development priority zones, actively and steadily promote urbanization to accelerate the construction of a new countryside, and promote regional and urban-rural coordinated development.

Guaranteeing and improving people's livelihood being the main purposes of promoting sustainable development. China has aimed to control the total population, improve the quality of population, advance a long-term and balanced development of population, promote employment, accelerate the development of various social undertakings, improve various systems for the protection and improvement of people's livelihood, and promote the equalization of basic public services, so that the fruits of development can be shared by all.

Speeding up poverty eradication becoming an urgent task in promoting sustainable development. With an aim to increase the poor's income and quality of life, China has relied on special projects, industries, society to beef up poverty alleviation efforts. Efforts have also been made to draw on special policies concerning fiscal and tax support, preferential investment, financial services, industry support and land use, to carry out ecological construction, develop human resources, cultivate leading eco-friendly industries and enhance the development capacity, in a bid to improve the quality and capacity of the poor population and comprehensively promote poverty alleviation and development process.

Building a resource-saving and environment-friendly society as an important highlight for advancing sustainable development. Efforts have been made to implement the most stringent land and water resources management system, develop a circular economy, encourage clean production, promote the conservation of energy, water, land and other types of resources, further improve energy efficiency, and accelerate the upgrading of energy production and consumption modes. Outstanding environmental problems, such as unsafe drinking water and air and soil pollution, are the focus in enhancing environmental protection. China also builds a land and ecological security system by regarding forest vegetation as the core and combining both forests and grasslands. Special attention has been given to the protection and management of key ecological function areas, enhance water conservation, preserve soil and water, and protect biodiversity. China has carried out comprehensive low-carbon pilot demonstration projects, improved institutional mechanisms and policy systems, optimized industrial structure and energy mix, reduced greenhouse gas emissions and tackled climate change through such means as conserving energy and increasing energy efficiency and carbon sinks.

Enhancing the capacity for sustainable development being a basic guarantee for promoting sustainable development. Efforts should be made to establish a long-term hi-tech input mechanism, train and introduce relevant talent, establish a sound policy support system for innovation and entrepreneurship, promote the transformation and distribution of scientific and technological achievements that contribute to sustainable development, and enhance the national green technological innovation. Environmental protection, resource management, population management are key areas in terms of improving the legal system of sustainable development. China should also establish and improve a public information platform, give full play to the role of civil society and NGOs, promote pilot projects and demonstrations of sustainable development, and encourage public and community participation. Disaster prevention and mitigation capacities should be strengthened to improve the ability to withstand natural disasters. It is also necessary to be actively involved in bilateral and multilateral international cooperation and exchanges in the fields of global environment, resources and population, and to encourage the international community to take new actions for sustainable development.

Section 4

China's Principled Stance on Promoting Global Sustainable Development

1.4.1 The principle of coordinating the three pillars of economic growth, social development and environmental protection. The international community should focus on the goals of sustainable development, coordinate economic, social, and environmental factors and strive to achieve comprehensive, balanced, coordinated and sustainable development. Each country shall focus on its economic development and make a change to its unsustainable patterns of production and consumption. The principles of social equity and justice should be maintained to ensure that the results of development can benefit all countries and regions. It is necessary to put people first and maintain the sustainability of resources and the environment.

1.4.2 The principle of diversifying development models. As countries are in different development stages, with various development levels and specific conditions, there is no universal model for sustainable development. Therefore, we must respect each nation's autonomy in promoting sustainable development, and allow each country to choose a suitable development model and path and to ensure adequate policy-making freedom. In the process of promoting sustainable development, the government's role is irreplaceable, but it is also necessary to have broad participation of civil society, the private sector, business communities and other major groups.

1.4.3 Adhering to the principle of "common but differentiated responsibilities" and other principles developed in the United Nations Conference on Environment and Development in Rio de Janeiro. Achieving sustainable development is the common responsibility and mission of the international community, and international cooperation is the only way leading to it. International cooperation should be based on equality and mutual respect, give full consideration to the different stages and levels of development between developing and developed countries, as well as the difficulties and problems faced by developing countries. Developed countries should honor their commitments to help developing countries achieve sustainable development. As a developing country, China is willing to strengthen cooperation and join hands with other parties to promote global sustainable development, so as to make due contribution to achieving sustainable development worldwide.

Chapter II

Adjustment of Economic Structure and Transformation of Development Mode

China continues to strengthen the fundamental position of agriculture, adheres to a new path to industrialization, speeds up the development of the service sector, promotes balanced regional development, advocates green consumption and advances a strategic transition of economic structure, in an effort to ensure the sustained, stable and healthy economic development.

Section 1

Improving Sustainable Agricultural Productivity

2.1.1 Background. China's arable land per capita is only 40% of the world's average while its water resources per capita are only 28%. Land and water shortages are more prominent in the face of rapid industrialization and urbanization. To ensure safe supply of food and other agricultural products to a population of more than 1.3 billion becomes the primary goal for China's agricultural development.

2.1.2 Overall agricultural production capacity enhanced. Since 2004, China has seen eight consecutive years of increase in its grain yields, harvesting more than 500 million tons for five consecutive years. The layout of advantageous zones of agricultural products has taken shape. Farmland's output has seen a steady increase through the implementation of several actions, including the building of large-scale commercial grain production bases, quality grain projects, 50-million-ton new grain production capacity planning, and the construction of cotton, oil and sugar production bases. The formation of a national superior seed breeding and promotion system has been accelerated through superior seed breeding projects in the growing sector. The abilities to fight against disasters and harness climate resources have

seen improvement in agricultural production through water conservancy facilities as well as disaster prevention and mitigation capacity building. The acreage covered by water-saving irrigation projects has reached 410 million mu (27 million hectares). Disease and pest prevention and control capabilities have been greatly improved thanks to animal and plant protection projects, and the acreage of specialized and integrated prevention and control of crop diseases and pests has reached 510 million mu (34 million hectares). A large number of advanced and applicable agricultural technologies have been widely used. In 2010, advances in agricultural science and technology contributed 52% to productivity. The coverage rate of superior seeds in the main crops reached 96%. The coefficient of efficient utilization of irrigation water reached 0.5.

Figure 2-1 China's grain production over the past decade

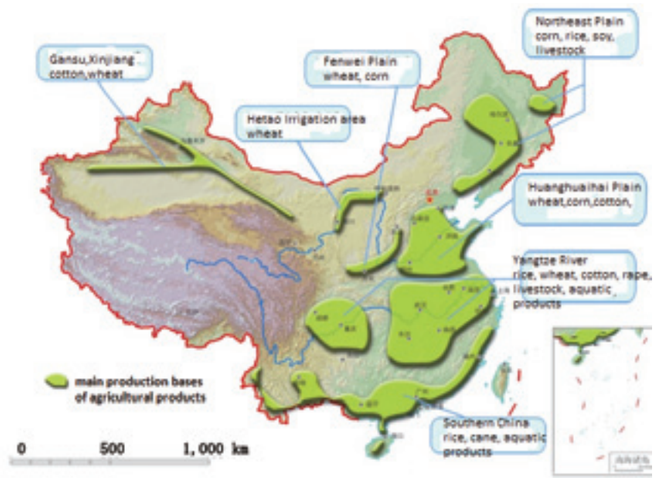


Figure 2-2 Strategic agricultural layout of "7 areas and 23 strips"

2.1.3 Rapid development of green agriculture. Since 2005, the Chinese government has implemented a soil testing and fertilizer subsidy program to promote scientific fertilization technology. As of 2010, the subsidy program had covered 2,498 counties (districts) and an area of 1.1 billion mu (73 million hectares). Since 2006, the Chinese government has implemented a soil organic-matter enrichment

project, covering more than 30 million mu (2 million hectares) of land in the past five years. Measures such as returning straw to fields, planting green manure and applying commercial organic fertilizer have improved the organic-matter contents in the soil and enhanced the basic fertility of cropland. China has also established an organic agricultural products certification system in line with international standards. A total of over 6,000 organic product certificates have been issued. By the year 2010, China had 6,391 green food production enterprises, producing a total of 16,748 products.

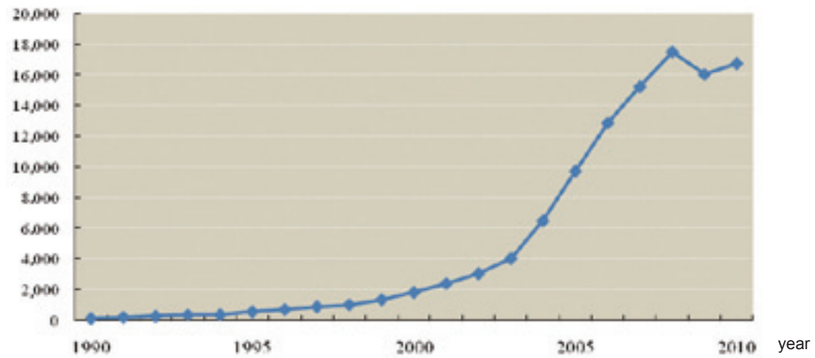


Figure 2-3 Number of products with effective green food logos from 1990 to 2010

2.1.4 The emerging of polyfunctionality of the agricultural sector. As agriculture further enhances its functions in food security, raw materials supply, employment and income increase, there emerge agricultural functionalities of biomass energy, ecological protection, tourism and cultural continuity. Leisure agriculture saw more than 400 million tourists in 2010 and a total income of over 120 billion yuan. The transfer of part of surplus rural labor to non-agricultural sector has been realized. New changes have been witnessed in the forestry sector. Special industries, such as the woody oil-bearing crops, under-forest economy, forest tourism, biomass energy, domestication of wild animals and breeding of wild plants, have enjoyed rapid growth. Among them, the number of tourists visiting forest parks in 2010 reached 396 million person-times, bringing a direct income of 29.494 billion yuan, and creating over 240-billion-yuan comprehensive social output value. The outputs of timber and flowers rank among the world's top list. In 2010, China's forestry output value reached 2.28 trillion yuan, 5.4 times of that in 2000.

Section 2

Adhering to a New Path to Industrialization

2.2.1 Background. Industry occupies an important position in China's national economic system. In 2010, the total industry realized the added value of 16.1 trillion yuan, accounting for 40.1% of GDP. Of the 500-odd major industrial products in the world, 220, the world's largest number, went to China. China deems the adjustment of industrial structure, the development of strategic emerging industries, the transformation and upgrading of traditional industries as main approaches to achieving sustainable industrial development.

2.2.2 Constant optimization of industrial structure and layout. China has implemented a number of adjustment and revitalization plans for key industries, supporting technological upgrading of enterprises, quickening the elimination of backward industrial capacity and corporate mergers and restructuring, increasing the proportion of the advanced industrial capacity, and improving efficient use of energy resources. In 2010, the proportion of new-type dry-process cement reached 81%. The proportions of float glass, high concentration of phosphorus fertilizer, and ionic membrane caustic soda were 87%, 76% and 55%, respectively. A large number of enterprise consortiums have grown rapidly, a sign of improved industrial concentration. In 2010, the output of China's top ten steel companies accounted for 48.6% of the country's total; the output of the top ten in the auto industry was 86%; and the output of the top 20 cement companies made up 45%. What's more, the industrial layout has been optimized. A variety of industrial clustering zones have become important carriers for industrial development. The output of eastern provincial (or municipal) industrial parks has realized more than 50% of the industrial output value. A number of characteristic industrial parks have emerged in central and western regions. The establishment of 128 new-type national industrialization model bases is being pushed forward in an orderly manner.

2.2.3 Rapid development of basic industries. China is strengthening its energy-related infrastructure construction vigorously. A total of 13 major coal bases have been built, with an annual raw coal output of 3.235 billion tons, a net increase of 2.237 billion tons over the past decade. The total length of crude oil and processed oil pipelines has reached 37,000 km and that of gas pipelines 40,000 km. China has highlighted the development of transportation. As of 2010, the length of various transport networks had grown to 4.32 million km, enabling China's mileage of railway and highway to rank second in the world. The tension in transport capacity has been generally relieved. China has built the world's largest telecommunications network. As of 2010, the number of telephone subscribers had reached 1.15 billion and Internet users hit 460 million, with a penetration rate of 86.5 % (per hundred persons) and 34.3%, respectively.

2.2.4 Steady increase in technological innovation capability. As of 2010, China had set up 127 national engineering research centers, 729 national-level corporate technology centers and 5,532 provincial-level corporate technology centers; and 53% of the country's applications for invention patents came from enterprises. The technical parameters of 700,000 kilowatts hydropower generator units have led the world. The reliability of 1-million-kilowatt ultra-supercritical thermal power units has almost reached the level of imported ones of the same categories. The self-made wind power equipment has taken up a market share of over 70%.

2.2.5 The cultivation and development of strategic emerging industries. In October 2010, China issued " the State Council's Decision on Speeding up the Cultivation and Development of Strategic Emerging Industries " , in which seven industries such as the energy saving and environment-friendly industry were identified as the strategic emerging sectors. China has launched an entrepreneurship program to invest in the emerging industries, and initiated the establishment of 61 venture capital funds to support the growth of innovative enterprises in such fields as energy saving and alternative energy.

Box 2-1 Seven strategic emerging industries and their development direction

Energy-saving and environment-friendly industry. China strives to develop new and efficient energy-saving as well as advanced environment-friendly industries and resources recycling.
Next-generation IT. China focuses on the development of next-generation IT networks, core and basic industries in electronics, high-end software, and emerging information service.
Bioindustry. China accelerates the development of biomedicine, biomedical engineering products, bioagriculture, and biomanufacturing.
High-end equipment manufacturing. China highlights the development of equipment in aviation, rail transportation, marine engineering and intelligent manufacturing, as well as of satellites and their applications.
New energy sources. China actively develops new-generation nuclear power, and solar, wind, and biomass energy sources.
New materials. China strives to develop new-type functional materials, advanced structural materials and high-performance composite materials.
New-energy automobiles. China focuses on the development of plug-in hybrid and pure-electric vehicles.

2.2.6 Speeding up the development of a circular economy. In 2005, China released " the State Council's Opinions on Speeding up the Development of Circular Economy ". A batch of relevant fiscal, taxation, investment and financing policies have been promulgated to effectively guide and support the development of a circular economy. In 2006, key technologies for circular economy were listed in " the Outline of the National Medium- and Long-term Plan for the Development of Science and Technology ". In 2008, China issued its " Circular Economy Promotion Law ", the world's third law dedicating to circular economy after Germany and Japan. Since 2005, two groups of pilot units, totaling 178, for practicing a circular economy at the national level have been identified. A total of 28 provinces

(municipalities, autonomous regions) have launched their pilot programs and a total of 133 cities (districts and counties), 256 industrial parks, and 1,352 enterprises were identified for pilot programs. Sixty representative cases for circular economy with Chinese characteristics have been summarized. In 2010, the output value of resources recycling industry exceeded 1 trillion yuan and the number of employees exceeded 20 million. Now one-fifth to one-third of raw materials for steel, nonferrous metals and paper pulp come from renewable resources; 20% of raw materials for cement originate from solid waste; and the overall utilization rate of industrial solid waste has reached 69%.

Box 2-2 Pilot programs on circular economy

Comprehensive utilization of resources. 70% of the varieties of paragenetic and associated metals have been comprehensively exploited, and oil shale, kaolin clay and other minerals associated with coal seams have been utilized in large scale. From 2006 to 2010, about 1 billion tons of fly ash, 1.1 billion tons of coal gangue, and 500 million tons of smelting slag have been comprehensively utilized.

Industrialization of remanufacturing. In 2008, 14 enterprises were chosen as pilot programs for remanufacturing automobile parts. As of the end of 2010, China had formed a remanufacturing capacity of auto engines, gearboxes, steering machines and generators, totaling 250,000 sets. In 2009, 33 enterprises and two industrial clusters were launched as pilot projects for electromechanical products remanufacturing.

Recycling system of renewable resources. A total of 90 pilot cities in three batches and 11 distribution markets have been identified as pilot programs for renewable resource recycling system building. An urban renewable resource recycling system, based on recycling stations and the sorting, processing and gathering areas (bases), and supported by an information management platform, has gradually been formed. Since 2009, 110 end-of-life vehicle recycling and dismantling enterprises have been selected for pilot projects for retrofitting and upgrading, in an effort to improve the level of resource utilization. The construction of "urban minerals" model bases is being carried out in order to promote the large-scale and high-value recycling of renewable resources.

Section 3

Striving to Develop Modern Service Industry

2.3.1 Background. Since the beginning of the 21st century, China has issued a series of laws, stipulations and policies related to the support and regulation of the development of the service sector, to promote its sustained and rapid development, continuously expanding its scale, and steadily increasing its share in the

economy and opening to the outside world to a degree that closes to the level of developed countries. The development of the service industry has broadened employment channels and lessened the consumption of land, water, minerals and other natural resources on economic development.

2.3.2 Marked increase in the contribution of the service sector to economic and social development. In 2010, the service industry realized the added value of 17.4 trillion yuan, accounting for 43.2% of GDP and contributing 38.5% to the overall economic growth, up 4.2 percentage points and 3.7 percentage points from that of 2000, respectively. The service sector accounted for 34.6% of the total employment, 7.1 percentage points higher than that of 2000. A total of 65 million new jobs have been created. The high-tech service industry has become an important engine in the service industry. The numbers of mobile communication subscribers and Internet users in China have ranked first in the world.

2.3.3 Rapid growth of trade in services. In 2010, the import and export volume of China's trade in services was 362.4 billion U.S. dollars, accounting for 5.1% of the world's total, compared to 2.2% in 2000. The export and import of services ranked 4th and 3rd, respectively, compared to the 12th and 10th in 2000. The advantages of scale of the high value-added emerging services such as computer and information as well as consultation have gradually emerged, with their profitability gradually increased. The share of exports of traditional services dominated by tourism and transportation were reduced from more than 68% in 2000 to 55.5% in 2010. To build a new development path for China's service trade and a new platform for global economic and trade cooperation, the Chinese government has begun to host an annual China (Beijing) International Fair on Trade in Services starting from 2012.

Section 4

Promoting Balanced Regional Development and Poverty Alleviation

2.4.1 Background. As a result of the implementation of an overall strategy for regional development and a strategy of building development priority zones in China, regional development has seen continuously enhanced coordination, a more reasonable layout and deepening cooperation. China continues to implement a government-led poverty alleviation and development strategy, bringing down rural poverty rate from 10.2% in 2000 to 2.8% in 2010. This makes China become the first country to achieve the UN Millennium Development Goal of halving poverty.

2.4.2 Implementing an overall strategy for regional development. Over the past decade, China has put enormous efforts in the implementation of an overall strategy for regional development, including pushing forward the development of the country's western regions, revitalizing old industrial bases in northeastern China, promoting a rise of the central regions, and encouraging the eastern regions to lead

the development. These regions have maintained a good momentum of socioeconomic growth, with vitality being strengthened in the mid-western and northeastern regions, and an increase in the quality of the eastern regions' economic growth. In 2007, the western regions' economic growth rate reached 14.6%, exceeding the 14.4% for the eastern regions. Afterwards, mid-western and northeast regions have surpassed the eastern regions in terms of economic growth rate. A major shift in regional growth pattern has taken shape.

Box 2-3 Major progresses in the Development of Western Regions

Over the ten years, major breakthroughs have taken place in the western regions' infrastructure construction. Landmark projects such as the Qinghai-Tibet railway, the West-East natural gas pipeline and the West-East power transmission have been completed. Ecological improvement projects have been pushed forward steadily, with noteworthy improvement in people's livelihood. Industries with special advantages have developed rapidly; Reform and opening up has been further deepened. A regional economic layout centered round the Chengdu-Chongqing, Guanzhong-Tianshui and Beibu Gulf economic zones has basically emerged.

The western regions in China see concentrated communities of ethnic minority groups. The deepening implementation of the strategy of developing western regions and a series of plans and policies such as "supporting ethnic groups with small populations" ,the "program to revitalize border areas and enrich residents' lives", and "developing the cause of ethnic minorities", has ensured rapid socioeconomic growth of ethnic minority regions and brought significant changes to ethnic people's lives, thus helping promote leapfrog development and long-term stability in those areas.

Train running on the Qinghai-Tibet railway

2.4.3 Implementing a strategy of development priority zones. In 2006, China put forward a strategic vision of promoting the construction of development priority zones. In 2010, China released " the National Planning for Development Priority Zones". Based on different regions' resources and environment bearing capacities, their current development intensity and potential, the Chinese government is comprehensively planning corresponding population distribution, economic layout, land use and urbanization pattern for these regions. Land space is divided into four categories: optimized

development zones, key development zones, restricted development zones and prohibited development zones. The main functions of different regions have been determined, and accordingly, their development orientations have been specified, development policies improved, development intensity controlled, and development order regulated. The strategy strives to facilitate a new national land development pattern that accommodates population, economy, resources and the environment.

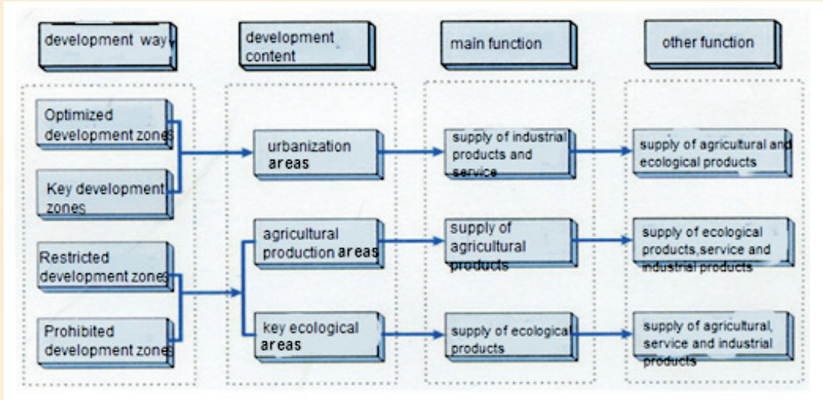
Box 2-4 Four development priority zones

Optimized development zones refer to the areas with developed economy, dense population, higher intensity of development, and more prominent problems between resources and environmental protection. These areas should be optimized for industrialization and urbanization.

Key development zones refer to the areas with some degree of economic foundation, relatively strong resources and environment bearing capacities, large development potential and good population concentration. These areas should be prioritized for industrialization and urbanization.

Restricted development zones are divided into two categories: one is agricultural production areas whose main function is to maintain and improve the comprehensive agricultural production capacity and ensure the safety of food supply, while the other is key ecological function areas, featuring a weak ecological system, significant ecological value and high risk of natural disasters, inadequacy for economic and population concentration, and impacts of ecological security on a wider region.

Prohibited development zones refer to a variety of natural and cultural resources protection areas established by laws, and other key ecological function zones where industrialization and urbanization are prohibited and special protection is needed.



Four development priority zones and their functions

2.4.4 Implementing a government-led poverty alleviation strategy. In 2001, the Chinese government issued "China's Outline for Rural Poverty Alleviation and Development Program (2001-2010)", in which the goal of poverty reduction by 2010 was clearly stated. That is, to solve the problem of food and clothing for a small number of poor people as soon as possible, to further improve the basic production and living conditions in poor areas, to consolidate the achievements in basic food and clothing problem,

to promote the development of poor areas in various ways, to improve living conditions and overall quality of the poor, to strengthen infrastructure of poor rural areas, to improve ecological system, to gradually change the backward economic, social, cultural situation in poverty-stricken areas, and to create conditions for achieving a well-off level. In 2007, the Chinese government promoted a minimum living standard security system in rural areas; in 2010, the percentage of households covered by the system in 592 state-level counties targeted on poverty alleviation and development (hereinafter referred to as the poverty-alleviation-focused counties) dropped to 9.9%.

2.4.5 Living conditions of the rural poor improved significantly. From 2000 to 2010, according to the then poverty relief standards, China's poverty population decreased from 94.22 million to 26.88 million. The poverty rate dropped from 10.2% to 2.8%. In the poverty-alleviation-focused counties, the poverty rate declined from 24.3% in 2002 to 8.3% in 2010. By the end of 2010, villages in such counties with access to roads, electricity, phone and television signals had reached 88.1%, 98.0%, 92.9% and 95.6%, respectively. Rural households with access to safe drinking water had reached 86.0%; the rate of healthy population reached 93.1%. A total of 91.4% of rural population had access to timely medical treatment when they were sick. The school attendance rate among children aged between 7 and 15 had reached 98%, and the illiteracy and half-illiteracy rate among rural household labor force had fallen to 10.3%.

2.4.6 Social participation in poverty reduction. Since the beginning of this century, China has organized 272 central Party and government departments, the central committees of other democratic parties, social organizations and large state-owned enterprises to provide targeted poverty alleviation assistance to 481 poverty-alleviation-focused counties. Outstanding young and middle-aged cadres have been selected to work in poverty-alleviation-focused counties. The central government has also organized 15 eastern provinces (municipalities) to offer targeted aid to 11 western provinces (municipalities, autonomous regions). For special poverty groups including impoverished women and children, the disabled and ethnic minorities, the "Happiness Project" was launched to help poor mothers, the "Spring Bud Program" for drop-out girls in poverty-stricken regions to get back to their schools; the "Mother Cellar program "for women in the water-deficient western areas, and special poverty alleviation loans for rehabilitation of impoverished disabled people. China has also actively guided and supported the private sector, non-governmental forces, foreign governments, NGOs and international multilateral organizations to engage in poverty alleviation and development and to enhance the capacity building in poverty-stricken regions.

Box 2-5 The "Love of the Earth • Mother Cellar" project

This project is a large-scale public welfare project co-sponsored by the All-China Women's Federation, Beijing municipal government and CCTV, and organized and implemented by the China Women's Development Foundation. It aims to make women and their family members' access to drinking water in China's poor and arid areas, through a variety of safe drinking water engineering and non-engineering projects and measures, with the support of the government and mobilized social resources. Water cellars are constructed for all households, and small-scale centralized water supply systems are built in villages or schools. Poverty, sanitation, health education and women's rights are taken into overall consideration.

The project now has developed a "1 plus N" mode, which is centered by a mother cellar, accompanied by the construction of a solar cooker or biogas digester, a sanitary toilet, a shed of vegetables and fruits, a pen of poultry and livestock, and a beautified garden, etc. By the end of 2010, 125,000 Mother Cellars had been built, along with over 1,400 small-scale centralized water supply systems, benefiting over 1.7 million people.

Box 2-6 The "Rain and Dew" program

The "Rain and dew" program is a key project in "China's Outline for Rural Poverty Reduction and Development Program (2001-2010)". It is characterized by a government-led role and wide public participation, with an aim to improve the quality of the poor and build their capacity for employment and entrepreneurship. To meet this end, the poor labor force are provided with vocational education, entrepreneurship training and practical training on agricultural techniques; They are encouraged to seek new jobs or start their own businesses. Young farmers in poor areas are offered with assistance when they encounter difficulties in employment and entrepreneurship activities, with an ultimate goal of production growth, employment transfer, income increase and economic growth in poverty-stricken areas. From 2006 to 2010, 4.6 billion yuan of special poverty alleviation funds were invested and 6.4 million rural young labor was trained for the sake of employment transfer.

Section 5

Advocating Green Consumption

2.5.1 Background. Consumption is an important engine of economic growth. Advocating green

consumption can not only reduce waste, but also guide consumers to buy energy saving and environment-friendly products, thus promoting the optimization of industrial structure. To this end, China has adopted a series of measures to actively guide green, low-carbon and economical consumption. The concept of green consumption has gradually been recognized by the general public.

2.5.2 Advocating the concept of green consumption. Various campaigns have been organized and carried out by the government. These include energy-saving & emission reduction activities involving public participation, a national energy-saving publicity week, a national urban water-saving publicity week and World Environment Day, the Earth Day and World Meteorological Day. Education on national resources and environment conditions has been strengthened. Efforts have been made to raise the awareness for energy saving and environment protection, and create a favorable environment for the establishment of the concept "green consumption" .Ten specific measures such as "driving one day less per week", "setting air conditioners no less than 26 Celsius degrees in summer" and "reducing the use of throwaway products" are advocated to promote green consumption. For two consecutive years in 2010 and 2011, China issued "the Green Paper of China on Energy-Saving and Environmental Protection by Retail Industry", to promote the green development of the retail sector.

2.5.3 Role model of the government in energy-saving. From 2004 onwards, the Chinese government began to adopt a policy of preferential procurement of energy-saving products; By 2007, a compulsory system for government procurement of energy-saving products had been established. As of 2010, eight issues of energy-saving government procurement lists had been released, with a total of 26,671 types and 28 categories of products by 605 manufacturers. Guided and promoted by the government, the general public spontaneously choose energy-saving consumer goods when purchasing daily necessities. The purchasing behavior of both the government and the public boosts corporate production of energy-saving products. A virtuous cycle of "consumption guiding production while production keeping up with consumption" has taken shape, effectively propelling energy conservation in both production and consumption. In addition, the Chinese government has planned to nurture 1,000 retail enterprises nationwide as models for energy-saving and environmental protection over the next 3-5 years starting from 2012.

2.5.4 Implementing the systems of standards, certification and energy efficiency labeling. China continues to improve a system for mandatory national energy efficiency standards. China has promulgated and implemented 46 energy efficiency standards, covering home appliances and commercial equipment. Based on this, the systems for energy saving and environment-friendly product certification as well as energy efficiency labeling have been implemented, thus reinforcing consumers' willingness to buy energy-saving products. It is estimated that since the implementation of the energy efficiency labeling system, significant results have been obtained in energy conservation and consumption guidance, with over 230 billion kWh electricity saved and over 100 billion yuan of the public's electricity cost reduced indirectly. The number of enterprises and products approved by China's environment-friendly certification system has grown from 49 enterprises and 224 kinds of products at the end of 2000, to more than 1,800 enterprises and over 40,000 kinds of products. The output of certified environment-friendly products has realized a total value of more than 200 billion yuan.

2.5.5 Implementing a project of "energy-efficient products benefiting the public". In June 2009, China began to implement a project of "energy-efficient products benefiting the public" in an effort to promote energy-efficient products through financial subsidies. As of the end of 2010, the central government had allocated more than 16 billion yuan to promote over 340 million energy-efficient air conditioners, 1 million energy-efficient vehicles and 360 million energy-efficient lamps. According to a preliminary estimate, over 120 billion yuan worth of consumer demands have been stimulated directly. In addition, 22.5 billion kWh of power and 300,000 tons of oil have been saved, and 14 million tons of carbon dioxide emission reduced annually. The market share of energy-efficient air conditioners increased substantially from about 5% to over 50%; and that of energy-efficient vehicles rose from 7% to about 30%.

2.5.6 Making efforts to develop public transport. As of 2010, the number of urban (electric) buses at prefectural level and above had reached 458,000, with a total operating length of 634,000 km. Passenger transportation totaled 67.012 billion person-times in 2010. The urban mass transit and bus rapid transit (BRT) systems have expanded rapidly, with 12 cities launching urban rail transit lines and 13 cities opening BRT lines. The operational lengths of urban rail transit lines and BRT lines have reached 1,400 km and 514 km, respectively. At the same time, a slow traffic system dominated by walking and bicycling speeds up its development pace. "Healthy walking" and "green bicycling" have gradually become new fashions.

Box 2-7 Cases of thrift in the retail sector

Reducing the use of disposable chopsticks. Since 2005, the production, circulation and use of disposable chopsticks have been restricted. Since 2006 the disposable wooden chopsticks have been levied a 5% consumption tax.

Limiting the production and use of plastic shopping bags. In 2007, the Chinese government issued a "circular limiting the production, sales and use of plastic shopping bags", also known as "the Plastic Limit Order". It has triggered strong international responses. Preliminary statistics show that the annual use of plastic bags at major retailers has been reduced by more than 24 billion pieces since the implementation of the Order. An accumulative consumption of 600,000 tons of plastics has been cut, the equivalent of 3.6 million tons of oil, over 5 million tons of standard coal and 10 million tons of carbon dioxide emissions.

Implementing mandatory recycling. Mandatory recycling of the products or packaging has been stipulated in "the Circular Economy Promotion Law", which specifies responsibilities and obligations of the producers, sellers, and consumers. Relevant departments have also sped up the formulation of a compulsory recycling directory for products and packaging and related management measures. Efforts have also been made to limit the excessive packaging of goods. Packaging standards have been issued and implemented to regulate a variety of packaging. Supervision and inspection have also been strengthened in this regard.

Chapter III

Human Development and Social Progress

China always strives to make sure that the objectives and outcomes of all work are to realize, safeguard and expand the fundamental interests of the overwhelming majority of the people. We respect the principal position of the people in the country's political life, giving play to their creativity, while protecting their rights and interests and promoting their comprehensive development. We work hard to improve people's livelihood, to build a harmonious society, and promote sustainable development of the whole society.

Section 1

Promoting Sustainable and Balanced Population Growth

3.1.1 Background. China is a developing country with a population over 1.3 billion. To promote long-term and balanced population development is an important area of work for the implementation of sustainable development in China. Since the turn to the new century, the Chinese government has resolved to better understand and address population issues from a strategic perspective, adhering to its family planning policy, gradually improving its population policy, and actively exploring a path of population development in line with the country's actual conditions. Obvious achievements in those aspects have been obtained.

3.1.2 Maintaining a low fertility rate. In 2000, the Chinese government decided to make maintaining a low fertility rate a top priority for population development. In the Population Development Planning for the 11th Five-Year Plan (2006-2010) Period and 2020 released in 2006, objectives and measures for population control have been put forward. Between 2000 and 2010, China's population growth rate

gradually decreased. By the end of 2010, the country's total population was 1.341 billion, with a net increase of 73.48 million over the end of 2000, or an average annual growth of 0.57%. Women's total fertility rate (TFR) remained stable. In the mean time, through the projects including free pre-pregnancy eugenic health checks, and the prevention of birth defects, the quality of fertility has been improved. Campaigns for "Caring for Girls" have led the general public to gain a different understanding of marriage and childbearing, and promoted a balance in the gender ratio at birth. China's gender ratio for total population has declined for three consecutive years, with an upward trend basically capped.

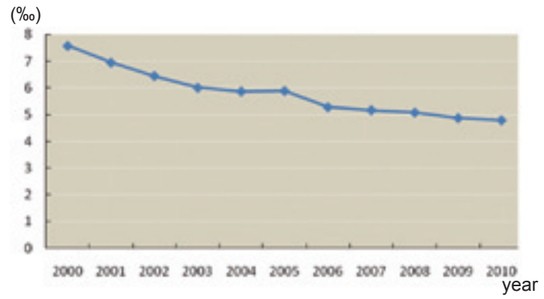


Fig.3-1 Natural population growth in recent decade in China

3.1.3 Actively addressing an aging population. China is the only country with an elderly population over 100 million, and the aging is seen accelerating. The sixth national census in 2010 shows that the number of people aged over 60 reached 178 million, accounting for 13.26% of the total population. Since the year 2000, governments at all levels have strived to establish and improve urban and rural old-age insurance schemes and construct a social old-age service system, actively responding to the challenges posed by an aging population. As of the end of 2010, there had been 39,904 various old-age welfare agencies with 3.149 million beds and 2.426 million senior citizens being accepted.

3.1.4 Promoting overall development of women and prioritized development of children. China adopts a basic national policy of gender equality and adheres to a principle of prioritized development of children, in a bid to constantly improve the security schemes to safeguard the rights and interests of women and children. The ability of women's participation in the management of state and social affairs is growing, and the social security schemes for women and children are in continued progress. Since 2000, among the total number of employees, the proportion of women is basically stabilized at around 46%. In 2010, the mortality rates of infants and children under five were 13.1‰ and 16.4‰, respectively, with a significant reduction from 19.1‰ and 23.3‰ in 2000. More caring and aid have been extended to vulnerable children groups including orphans, children from poor families, disabled children, street children, and children affected by AIDS.

3.1.5 Speeding up the undertakings for the disabled. The government has constantly intensified its efforts in helping persons with disabilities. As a result, rehabilitation and social assistance of the disabled and the protection of their rights and interests have achieved significant results. The implementation of dedicated rehabilitation projects such as the Prosthetic Replacement Welfare Project for Disabled

Persons in Nursing Homes in Western China, and the Tomorrow Plan—Operations and Rehabilitation for Disabled Orphans have greatly improved the rehabilitation level of the disabled. The implementation of preferential employment and tax policies has boosted the employment of persons with disabilities. In 2010, social welfare enterprises nationwide totaled 22,226, with 625,000 disabled workers, among whom those of working age with abilities to manage a daily life accounted for 34.0% in urban areas and 49.2% in rural areas.

Section 2

Striving to Improve People's Overall Quality

3.2.1 Background. Education, health, culture and other social undertakings are the most important areas for accumulating human capital. Education is a cornerstone of national rejuvenation; health is a foundation for comprehensive development of human beings; and culture is an important source of national cohesion and creativity. By implementing a prioritized education development strategy, and vigorously developing health, culture, sports and other social undertakings, China has unremittingly boosted the building of all residents' physical and mental health.

3.2.2 Promoting educational equity. China has gradually enlarged its investment in education and achieved full-scale free compulsory education in both urban and rural areas. These efforts have promoted sustained and rapid development of education at all levels. China places great emphasis on the equitable development of education. New funds for education are tilted to rural areas, especially poor and ethnic minority-concentrated areas. The implementation of a series of major projects, including the Compulsory Education in Underdeveloped Regions, the Renovation of Unsafe Buildings in Middle and Primary Schools, and the Building of Boarding Schools in Rural Areas, has greatly improved the conditions of primary and secondary schools in central and western rural areas. As of the end of 2010, China's net enrollment rates in primary schools, junior middle schools, senior middle schools and higher education were 99.7%, 100.1%, 82.5% and 26.5%, respectively. The illiteracy rate of young adults between 15 and 50 years of age dropped below 1.08%.

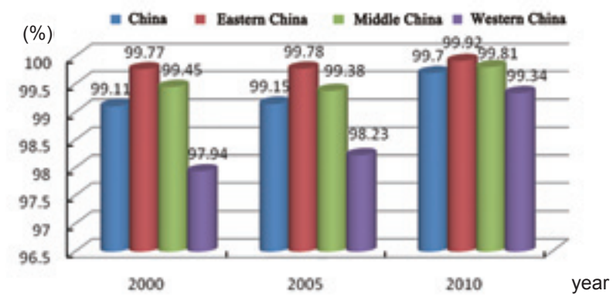


Figure 3-2 Net primary school enrollment rate by regions

3.2.3 Improving medical and health services. The total resources of Chinese medical and health services are on the rise. Compared to 2000, the number of beds in 2010 increased from 3.177 million to 4.787 million, and healthcare workers from 4.49 million to 5.88 million; the number of beds in hospitals and clinics per thousand population increased from 2.38 to 3.27, and practicing (assistant) physicians per thousand population from 1.68 to 1.79. In 2010, the total number of medical and health institutions reached 937,000. The Chinese government has taken proactive measures and effectively controlled the spread of major communicable diseases. In the wake of the SARS epidemic in 2003, the Chinese government carried out large-scale construction of a public health system. This has significantly enhanced disease control and prevention, and patients with major communicable diseases, such as HIV-AIDS and tuberculosis, are provided with free medication. By 2010, the goal of capping the number of the HIV-infected within 1.5 million had been realized; the national prevalence rate of tuberculosis dropped to 0.66 ‰, 61% lower than that of 2000, which means that the target of tuberculosis control set in the UN Millennium Development Goals has been realized ahead of schedule.

Figure 3-3 Medical services provided to residents in a Community Health Center

3.2.4 Actively developing cultural and sports undertakings. China has constantly beefed up the building of a public cultural service system, and launched a series of key cultural projects for benefiting the general public, such as the expansion of radio-TV coverage to every village, and the campaigns for sharing cultural information and resources. By the end of 2010, the coverage of county-level sub-centers for national cultural information resources sharing had reached 95%, and the coverage rates of radio and television were 96.78% and 97.62%, respectively. In rural areas, almost all natural villages with access to electricity and over 20 households have been covered by the project of expanding radio-TV coverage to every village. China has implemented a number of projects for the protection of national culture and natural heritage, endangered relics, historical and cultural cities, towns and villages, and intangible cultural heritage, with a focus on rescuing and protecting cultural heritage of ethnic minority groups. The publications like A Collection of Chinese Folk Cultural Annals, and A General Outline of Historical Sites of Chinese Ethnic Minority Groups reflect the major cultural outcomes of China's ethnic groups. The three important ethnic epics—King Gesar, Jianggar and Manas—have been collected, collated, translated, studied, and developed into an international discipline. China vigorously protects and uses ethnic minority languages, particularly in the areas of legislation, administration, publication, radio, film and television, effectively protecting the rights of ethnic minorities in learning, using and developing their national spoken and written languages. China boosts national fitness campaigns. In 2009, the Regulation on National Fitness was released, designating August 8 as the National Fitness Day. In 2008, China successfully held the 29th Olympic Games and the 13th Paralympic Games with a theme of Green Olympics, Hi-tech Olympics and People's Olympics, symbolizing a new stage of development for China's sports. As of 2010, over 1 million of sports facilities in every kind had been built.

Box 3-1 Key cultural projects that benefit the people

The Project of Expanding Radio-TV Coverage to Every Village. Started in 1998 and by the end of 2010, this project had enabled 117,000 administrative villages, 100,000 natural villages with more than 50 households and 722,800 natural villages with more than 20 households to be covered by radio and television networks by means of cable, wireless and direct broadcast satellite services. This helped about 150 million rural people get access to radio and TV signals.

The Project of National Cultural Information Resources Sharing. The project was launched in 2002, and after nine years, a service network covering the six administrative levels, i.e. national, provincial, municipal, county and township (sub-district), and village (community) has been established, with a total digital resource of 108TB, covering one national center, 33 provincial sub-centers, 2,867 county-level support centers, 22,963 township- and town-level service points, and 597,000 village-level service points, serving a population of 960 million.

The Project of Sending Movies to Rural Areas. Since its launch in 1999, the project has established a film screening network covering all rural China. In 2010, over 8 million movies were screened in rural areas and the goal of one public film screened in one village every month was realized.

3.2.5 Strengthening the building of talent pools. Great efforts have been put into the implementation of the strategy of strengthening the country through human resource development, and into the constant boosting of building various talent pools with a focus on high-level and highly-skilled talent. In 2010, the total number of professional and technical personnel reached over 50 million, and skilled workers totaled 112 million. Highly-skilled personnel above the level of senior workers accounted for 25.6% of the total skilled workers. Professionals involved in continuing education around China reached 30 million person-times. A working mechanism for personnel training has been basically established.

Section 3

Constantly Raising Employment Levels

3.3.1 Background. China is a big country in terms of population and labor force, with a growing working population. China firmly pursues a prioritized strategy for employment, i.e. making employment promotion our priority in economic and social development, improving a coordinated mechanism involving workers' independent job choices, market regulation and government promotion, creating equal employment opportunities, improving the quality of employment, and striving to achieve full employment. In recent years, China has implemented a proactive employment policy, realized a steady increase in total employment and further optimized the structure of employment. As a result, the unemployment rate has been effectively brought under control.

3.3.2 Scaling up employment. From 2003 to 2010, a total of 85.8 million new urban jobs were created, with an annual average increase of 10.725 million; 95 million surplus rural labor force were transferred to non-agricultural labor force. Meanwhile, the employment structure has been further optimized, with the employment proportions in secondary and tertiary industries on the rise and the proportion of employment in the three industries shifting from 50:22.5:27.5 to 36.7:28.7:34.6 (all in percentage).

3.3.3 Improving a public employment service system in a steady manner. "The Employment Promotion Law" was promulgated in 2007 to implement a proactive employment policy, with a view to maintaining a balance between economic development and the expansion of job opportunities, and promoting social harmony and stability. It clearly indicates that the government should regard the increase of employment as its important duty, and should establish a coordination mechanism for employment promotion at the state and provincial levels. In recent years, China has reinforced the construction of public employment service institutions, and basically formed a public employment service network at the four levels—city, district (county), sub-district (township and town) and community (village). As of the end of 2010, there had been more than 10,000 public employment service institutions at the county (district) level and above; 39,000 service windows at the sub-district (township and town) level, covering 97% of sub-districts and 92% of townships and towns, respectively; and 73,000 communities (accounting for 92% of the total) and some administrative villages had hired full-time or part-time staffs. An initial vocational training system for both urban and rural areas has been established, whereby extensive training programs on employment skills, post-related skills and entrepreneurship have been put forward, with the participation of 86 million person-times from 2006 to 2010. The full implementation of a labor contract system and the vigorous promotion of a collective consultation and collective contract system have steadily improved laborers' incomes and maintained a harmonious and stable labor relationship in general.

Box 3-2 A policy of small guaranteed loans for women's employment and entrepreneurship

In July 2009, to help women solve funding bottlenecks encountered in the process of entrepreneurship and employment, government departments issued a "circular on improving a small-loan financial discount policy to promote women's entrepreneurship and employment". Since the implementation of the policy, and through the focused and innovative practices at local levels, the work on providing small loans to women has been progressing smoothly. As of September 2011, there had been a total of 24.962 billion yuan of new loans, and a cumulative nationwide distribution of 48.648 billion yuan as discounted small loans for women, a total of 1.846 billion yuan from the central and local governments to implement the discounted capital policy. This policy directly supported 1.1 million urban and rural women during business startups and employment, and created jobs for nearly 4 million people.

3.3.4 Speeding up an overall planning for urban and rural employment. The Chinese government attaches importance to the issue of overall planning of urban and rural employment. Active efforts have been made to develop the labor economy, township enterprises and service industries, accelerate the construction of small towns and the development of regional economy, and create favorable conditions for the transfer of employment of surplus rural labor force. Efforts have also been made to promote the surplus rural labor force to get employed or start their businesses close to or in their hometowns, or to work in other cities in an orderly manner. We are determined to eliminate institutional barriers for floating employment, build a working mechanism of "three-in-one" composed of vocational training, employment services and labor rights protection, and promote urban and rural integrated and fair employment.

Box 3-3 An assistance action for tens of millions of migrant workers

In response to the impact of the international financial crisis on employment, in early 2009, the All-China Federation of Trade Unions launched an assistance action for tens of millions of migrant workers with an investment of 1.01 billion yuan in the same year. The project assisted nearly 14 million migrant workers, of which 5.2 million received training, 2.07 million got jobs, and 5.11 million received help and services in daily life and legal rights protection.

Section 4

Establishing a Sound Social Security System

3.4.1 Background. A sound social security system is of great significance for achieving sustainable social development. With continuous economic and social development and a steady growth of the total population, China gives greater priority to the building of a social security system, explicitly stating that it should adhere to the principles of wide coverage, basic guaranteed security, multi-levels, and sustainability in an effort to accelerate the establishment of a social security system coving all urban and rural residents, and to steadily enhance the social security level.

3.4.2 Significant progress in building a social security system. Over the past decade, the Chinese government has made constant efforts to improve urban and rural basic old-age security schemes and the basic medical security schemes, with an aim of achieving full coverage of urban and rural residents. Efforts have also been made to accelerate the building of unemployment insurance, work injury insurance and maternity insurance schemes, give priority to the building of a social assistance system, promote the social welfare system moving toward a moderate universally favored one, improve a disaster relief system, establish and improve a relief system for street beggars, and provide important institutional support to the protection and improvement of people's livelihood.

Box 3-4 Construction of China's social security system

The old-age insurance schemes covering urban and rural residents have been rapidly advanced. (1) By the end of 2009, all provinces, autonomous regions and municipalities in China had established old-age insurance schemes. (2) In 2009, the State Council released the Guiding Opinions on New Rural Social Old-age Insurance Pilot Schemes, and decided to launch the pilot schemes in the same year. (3) In 2010, China explicitly put forward building an old-age insurance scheme covering all urban residents, and the pilot scheme was started in 2011.

Institutionally, the basic medical insurance has realized universal coverage. A basic medical insurance scheme was established in 1998, and a new rural cooperative medical scheme in 2003. The pilot scheme of medical insurance for urban residents was launched in 2007 and fully promoted in 2009.

The unemployment insurance scheme has been gradually improved. " The Regulations on Unemployment Insurance" issued by the State Council in 1999 marks the formal establishment of an unemployment insurance scheme in China.

The work injury insurance scheme has been gradually established. "The Regulations on Work Injury Insurance" was formally put into force in 2004, and revised in 2010, when city-level pooling was fundamentally built for work injury insurance, and a systematic framework system combining work injury prevention, compensation and rehabilitation was initially established.

The building of a maternity insurance system has made steady progress. The maternity security system in China is composed of two parts: the maternity insurance scheme for urban workers mainly covering urban employees, and protective measures for unemployed women mostly covering non-working population in both urban and rural areas.

Social assistance and social welfare schemes have been gradually improved. In the 1990s, the Chinese government started to plough into the work of minimum living standard security for urban residents. In 2007, "the Circular on Establishing a Rural Security Scheme for Minimum Living Standards" was released by the State Council to guide the work nationwide. In 2010, the State Council released "the Regulations on Natural Disaster" Relief to promote the establishment of a disaster relief system combining disaster response preparations, emergency relief, and post-disaster relief, recovery and reconstruction. Also in 2010, "the Opinions of the State Council on Strengthening the Protection of Orphans" was promulgated, representing a major shift of orphans rearing from basic care to comprehensive protection.

Distributing basic pensions of a new rural social endowment insurance to farmers in Gujiao, Shanxi Province

3.4.3 Continuous expanding social security coverage. With the gradual improvement of the social security system, more residents have been covered. In 2010, the numbers of people participating in the urban basic old-age insurance, basic medical insurance, unemployment insurance and maternity insurance reached 257.07 million, 432.63 million, 133.76 million and 123.36 million, respectively, up 88.8%, 10.42 times, 28.5% and 3.1 times, compared to 2000; Work injury insurance policy holders reached 161.61 million, 2.5 times more than those in 2003. In 2010, 838 counties (cities, districts, banners) in 27 provinces or autonomous regions and some counties (districts) in the four municipalities launched the pilot programs for the national new rural social old-age insurance, with a total number of policy holders of 102.77 million. The number of people covered by a new rural cooperative medical scheme reached 835.6 million. Urban and rural residents entitled to basic living allowances were 23.11 million and 52.28 million, respectively, and the rural beneficiaries of the "five guarantees (food, clothing, medical care, housing and burial expenses)" were up to 5.549 million.

3.4.4 Continuously raising the level of social security. In the period of 2000-2010, China adjusted the basic pension level of retirees from enterprises for nine times, increasing the per capita basic pension from 522 yuan a month to 1,362 yuan. Meanwhile, supplementary pension insurances such as enterprise annuity were actively promoted to meet the pension needs at various levels. In 2010, the reimbursement ratios of social pooling funds for hospitalization costs of urban workers and residents within the provisions of health insurance policy reached about 75% and 60%, respectively. The per capita level of unemployment insurance benefits increased from 286 yuan a month in 2000 to 495 yuan in 2010. In 2010, the national standard for urban minimum living allowance was 251 yuan a month per person, and the standard in rural areas was 1,404 yuan a year per person.

Section 5

Gradually Improving Living Environment

3.5.1 Background. Urbanization is an inevitable process of economic and social development. China is in a stage of rapid urbanization. In the period 2000-2010, the urban population increased from 460 million to 670 million, and the level of urbanization upgraded from 36.22% to 49.95%. In light of the rapid expansion of cities and the fast rising of urban agglomerations and metropolitan circles, currently, there are 657 cities and 19,410 designated towns in China, and a urban system composed of large, medium and small cities and small towns has initially taken shape. China attaches great importance to enhance the quality of urban and rural human settlements. Over the ten years of hard work, there have been great improvements in urban and rural housing conditions, greening, environmental quality and drinking water conditions, and residents have been provided with better living and working environment.

3.5.2 Continuously upgrading overall urban carrying capacity. Over the past decade, with the rapid urbanization, the population in 287 cities at prefectural level and above (excluding city-administered counties) in 2010 accounted for 29.0% of the country's total, 3% higher than that in 2000; the gross regional domestic production stood at 61.3% of the country's total GDP, with a 11.3% increase over 2000. Urban infrastructure and municipal service capacities have been improving. Compared with 2000, in 2010, 96.7% and 92.0% of urban population nationwide could get access to water and gas, up 32.8% and 46.6%; the areas with centralized heating reached 4.36 billion cubic meters, 3 times higher; urban public transport vehicles in operation reached 458,000 in standard unit, up 122%; and there was a total greening area of 1.6125 million hectares in urban built-up regions, with a green coverage rate of 38.6%, or 1.55 times and 10.5% higher, respectively.

3.5.3 Housing conditions improved significantly. The Chinese government has worked to accelerate the development of urban affordable housing, increased efforts to transform dilapidated buildings in rural areas, and actively supported housing construction in both urban and rural areas. In 2010, urban and rural per capita housing areas were 31.6 square meters and 34.1 square meters, respectively, up 55.7% and 37.5% over 2000. Up to the end of 2010, thanks to the building of low-rent housing, public rental housing, affordable housing and commercial housing not exceeding a certain ceiling, as well as the transformation of various shantytowns, the housing problems for a cumulative total of almost 22 million urban low-income and lower middle-income families have been resolved.

3.5.4 Urban environmental quality improved substantially. China practices an emission-capping system for major atmospheric pollutants, intending to strengthen the control of industrial pollution sources, raising the proportions of clean energy consumption and energy efficiency, and intensifying pollution control from vehicles. In 2010, air quality of grade two and above was reached in 82.8% of the cities, up 46.3% over 2000. By strengthening supervision and management of noises from transportation, construction, industrial production and social lives, acoustic environmental quality in all cities nationwide is improving gradually. Efforts are being made to further strengthen the capacity of urban sewage and garbage processing. In 2010, the urban sewage treatment rate greatly increase over the year 2000; urban waste harmless treatment rate was 77.94%, 1.3 times higher than that in 2000.

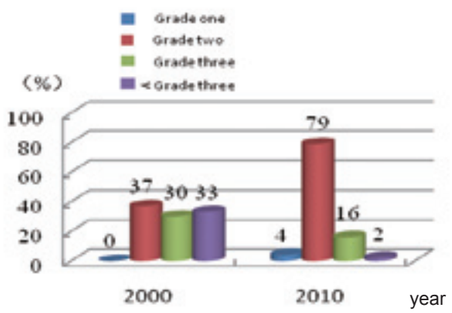


Figure 3-4 Comparison of urban air quality in China

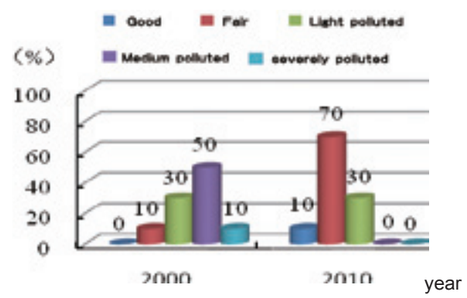


Figure 3-5 Comparison of urban environmental noise pollution in China

3.5.5 Initial success in comprehensive rural environmental rehabilitation. Since 2006, China has made constant efforts to strengthen the comprehensive management of villages, including village planning and "the enactment of the Technique Code for Village Management". By 2010, 6,600 villages or towns had received support for comprehensive environmental rehabilitation and ecological demonstration, and more than 24 million rural residents benefited directly from the support. A total of 8.27 million households in rural areas were equipped with non-hazardous sanitary latrines; methane gas users reached 40 million, accounting for 33% among suitable rural households nationwide, benefiting a population of 151 million; and over 1,200 model villages for clean living were built to effectively improve rural environment. Moreover, thanks to the projects of "building rural hydropower and electrification counties" and "small hydropower for fuel", over the past decade, annual per capita electricity consumption for daily life of 180 million farmers in over 400 mountain counties has increased from 96 kWh to 241 kWh; 510,000 households have been involved in the project of "small hydropower for fuel"; and 1.95 million rural residents' fuel difficulties in daily life have been resolved. All these efforts have played an active role in ecological protection.

3.5.6 Intensifying urban and rural drinking water security. China has always prioritized the issue of drinking water source protection, and to be specific, it has established a verification and safety assessment system for drinking water sources, issued a "national list of key drinking water sources", designated drinking water source protection zones, and promoted the campaign for meeting drinking water source safety standards. As a result, the urban water supply capacity nationwide has continued to grow, so has the population served. As of 2010, the total urban water supply capacity was 276 million cubic meters per day, with a total length of 540,000 km of water supply pipes, and a population of 381 million served. Great efforts have been made to accelerate the change in rural residents' difficult and unsafe access to drinking water. Over the period 2001-2010, a total of 56 million rural residents had no longer had difficult access to drinking water, and 221 million had no more had access to unsafe drinking water. The coverage rate of national rural centralized water supply project has reached 58%, six years ahead of the target in the United Nations Millennium Development Goals of "halving, by 2015, the proportion of the population without sustainable access to safe drinking water".

Figure 3-6 The project of providing water to households in Shaanxi Province delighting an old farmer

3.5.7 Actively building "environmental protection cities", "garden cities", "eco-cities" and launching low carbon pilot programs. In recent years, through pilot projects and demonstrations, China has been proactive in probing ways to promote sustainable urban development. As of 2010, a total of 71 cities and 5 municipal districts had been awarded the title of the National Environmental Protection Model City or District, 183 cities and 7 districts the title of the National Garden City or District, 63 counties the title of the National Garden County, and 15 towns the title of the National Garden Town. Altogether, 41 parks had been built and named as national urban wetland parks, with a total area of over 60,000 hectares. Starting from 2010, low-carbon pilot programs have been started in some provinces and cities.

Box 3-5 Sino-Singaporean Tianjin Eco-City

The construction of Tianjin Eco-City (hereinafter referred to as the eco-city) started from 2008 with the joint efforts of the Chinese Government and the Government of Singapore. The eco-city covering an area of approximately 30 square kilometers is sited on the land with initially high salinization. Over the past three years, using green development as a breakthrough, the eco-city has actively explored new development methods for industrialization and urbanization, completed the comprehensive treatment of sewage reservoirs, and improved and greened the saline-alkaline soil of 3 million square meters. A comprehensive renovation of 2-km-long demonstration section of the old Ji canal and a landscape construction project have been implemented, 5 square kilometers of wetlands retained and rehabilitated, a sewage treatment plant of daily processing capacity of 100,000 tons built, and 6 photovoltaic power generation projects completed. The eco-city has nearly 100 enterprises registered under the category of environmental technology. A technology innovation platform and service system and a social management and public service system have basically been formed. In September 2010, the first China (Binhai, Tianjin) International Eco-City Forum and Expo was held in the eco-city, producing a wide international influence.

Chapter IV

Sustainable Utilization of Resources

China has been very active in the promotion of sustainable utilization of resources, as it sees building a resource-saving society as a strategic task in its economic and social development, with priorities given to energy conservation, energy consumption reduction, the rational development and utilization of mineral resources and the strict protection of arable land and water resources.

Section 1

Promoting Energy Conservation and New Energy Development

4.1.1 Background. China's development in the current stage has generated a growing demand for energy. In 2010, a total of 3.25 billion tons of standard coal was consumed, with an energy self-sufficiency rate reaching 91.4%. China also faces an energy mix dominated by coal and a shortage of petroleum resources. In addition, the contradictions between energy use and environmental protection have become increasingly prominent. Therefore, China has inevitably moved toward choosing to save energy, adjust the energy structure and develop new energy resources.

4.1.2 Promoting energy conservation in key areas. China has put forward ten key energy-saving projects in areas including coal-fueled operation of industrial boilers and the cogeneration of heat and power, and implemented the action to conserve energy in 1,000 enterprises. China has also strengthened the administration of energy conservation in key energy-intensive enterprises, and promoted energy audits and energy efficiency benchmarking activities. In the field of manufacturing technologies, China has made efforts to spread green design techniques, new processing techniques for saving energy and protecting the environment, and the technology of green dismantling, recycling and remanufacturing of industrial products, so as to promote energy saving and energy consumption reduction in the production and application of industrial products. In the field of energy-saving buildings, China has expanded the

implementation of mandatory energy efficiency standards on new buildings, accelerated the energy-saving renovation of existing buildings, promoted large-scale applications of renewable energy in buildings and renovated office areas of public institutions for energy saving. In terms of fuel consumption in the operation of vehicles, China has put in place limit standards and access systems. China has also carried out a special action to promote low-carbon transport in 1,000 enterprises including those of automobiles, ships, highways and ports. In addition, China has vigorously developed public transport in urban areas.

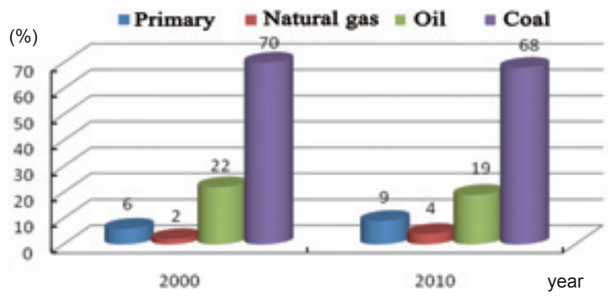


Figure 4-1 China's energy consumption structure

Box 4-1 Ten key energy-saving projects

In order to save energy resources, protect the environment, and enhance the economic performance, the Chinese government has carried out ten key energy-saving projects, including the renovation of coal-fired industrial boilers (kilns), regional cogeneration of heat and power, surplus heat and pressure utilization, petroleum conservation and substitution, energy conservation in motor systems, energy system optimization, energy-efficiency buildings, green lighting, energy-saving in government agencies and the construction of energy-saving monitoring and technical service systems. In the years from 2006 to 2010, China allocated over 8 billion yuan from the central governmental budget and more than 22 billion yuan from the special funds of central government for energy conservation to support more than 5,200 key energy-saving projects. By the end of 2010, a total capacity of 340 million tons of standard coal has been saved from the ten key energy-saving projects.

4.1.3 Continuing to improve energy efficiency in major industries and sectors. The Chinese government has vigorously pushed forward energy conservation through structural adjustment by optimizing the industrial structure and its spatial layout, eliminating outdated technologies, equipment and products, and making greater efforts to popularize advanced and appropriate energy-saving technologies. China has also comprehensively strengthened its energy management. As a result, China has managed to raise energy efficiency year by year in major energy-consuming industries. Compared with the year 2005, in 2010, the energy consumption per unit of industrial added value had a cumulative decline of 26% for enterprises above a designated size; coal consumption in thermal power supply dropped from 370 g of standard coal per kWh to 333 g of standard coal per kWh, a decline of 10%; the overall energy consumption per ton of steel decreased from 688 kg of standard coal to 605 kg of standard coal, a drop of 12.1%; The overall energy consumption of cement decreased by 28.6%, ethylene by 11.3%, and synthetic ammonia by 14.3%. The penetration rate of coke dry quenching technology was raised to above 80% in the steel industry. What's more, China managed to promote the wide use of a large number of energy efficient technologies and products such as new cathode aluminum reduction cells, high voltage inverters, rare earth permanent magnet motors, and plasma non-oil ignition technology.

Box 4-2 Shanghai Waigaoqiao No. 3 Power Generation Co., Ltd.: a case of improving energy efficiency

This company is one of China's first domestic thermal power generation projects with a capacity of one million kilowatts. In 2008, the company's two generating units were put into operation consecutively, and their coal consumption for power supply was 287.44 g per kWh (i.e. a net efficiency of 42.73%) in actual operation with the loading rate of 75%. The company managed to cut down the coal consumption for power supply to 282.16 g per kWh in 2009 and to 279.39 g per kWh in 2010 under the same loading rate (i.e. a net efficiency of 43.5% in 2009 and 44.03% in 2010). Environmental indicators of the two units are as follows: the dust removal efficiency is over 99.7%, the desulphurization efficiency is more than 97% and the denitrification efficiency is over 80%; and the emission concentration of nitrogen oxides in the fume is 202 mg per cu m, that of sulfur dioxide 69.4 mg per cu m, and soot 12.6 mg per cu m.

4.1.4 Continuously improving energy efficiency in the building sector. By the end of 2010, the rate of implementing the mandatory standards of energy conservation was 99.5% for new urban buildings in their design phase and 95.4% for those in the construction phase. From 2006 to 2010, a total of 4.857 billion square meters of energy-saving buildings were constructed, and a total of 180 million square meters of existing buildings in northern heating areas were renovated by installing heat metering for the energy-saving purpose. A total of 23.1% of the existing building areas in cities and towns were covered by energy-saving buildings. In addition, China has organized and implemented 371 demonstration projects of buildings with renewable energy, 210 demonstration projects of solar PV buildings, and identified 47 pilot cities and 98 pilot counties as demonstration renewable energy buildings.

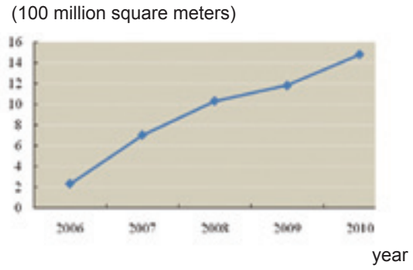


Figure 4-2 Construction area of using solar thermal energy

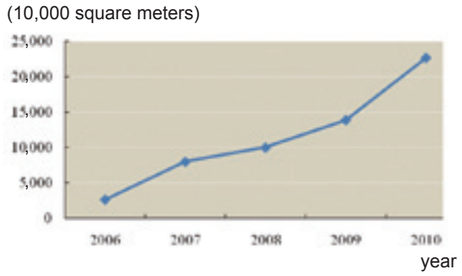


Figure 4-3 Area of using geothermal energy

Figure 4-4 Theme pavilion at the Shanghai World Expo

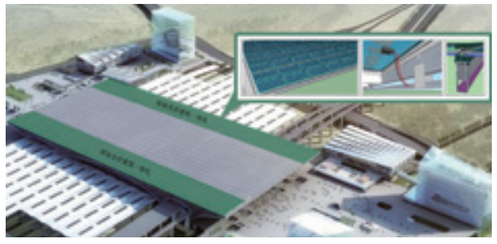


Figure 4-5 Graph of PV module nodes of Shenzhen North Railway Station

4.1.5 Promoting clean use of traditional energy. China has made great efforts to increase the proportion of coal washing and processing, and reduce the transport of coal and the use of coal for direct combustion. It encourages the use of middling, peat and coal gangue in power generation and actively promotes demonstration projects of clean power generation including the integrated gasification combined cycle, supercritical large-scale circulating fluidized beds, and ultra-supercritical generating units, so as to improve the proportion of clean coal power generation. China also encourages the development of catalyst series for engineering applications, and becomes the first country to achieve commercial operation of a direct coal liquefaction project.

Box 4-3 A demonstration plant for direct coal liquefaction established in Shenhua mine

The demonstration plant for direct coal liquefaction in Shenhua mine hosts the world's first large-scale project of its kind, which is also the world's first commercial direct coal to liquefied petroleum project. The project is the world's first industrial production line for the direct conversion of coal to oil, consisting of coal liquefaction, liquefied oil upgrading and hydrogen production.

4.1.6 Actively developing and utilizing hydropower. China holds firmly that it should maintain a balance between hydropower development and ecological environment protection, and ensure environmental protection in both completed and under-construction projects. Great efforts have been

put into strengthening R&D and application of hydropower environmental technologies, and evaluation criteria and evaluation system of green hydropower. In 2010, the national installed capacity of hydropower stood at 216.06 million kilowatts, an increase of 136.71 million kilowatts from that of 2000 with the average annual growth rate of the installed hydropower capacity at 10.5%. In the same year, the generating capacity of hydropower reached 686.736 billion kWh, accounting for 16.2% of the national total. Among that, the installed hydropower capacity in rural areas totaled over 59 million kilowatts, approximately 30% of the national total.

4.1.7 Developing the wind power sector. China has taken such measures as strengthening the development and management of wind power, improving the coordination of the wind power and the grid and supporting the development of competitive enterprises which produce wind power equipment, and has created favorable conditions for the large-scale development and utilization of wind power. Detailed investigation and evaluation of China's wind energy resources shows that 2.57 billion kilowatts of wind power capacity can technically be developed at 70 meters over land. In 2010, China's installed wind power capacity reached 31.07 million kilowatts, 91 times of that of 2000. Wind power generation output was 49.4 billion kWh, accounting for 1.2% of the national generating capacity. As a result, China managed to save 17.29 million tons of standard coal annually and reduce carbon dioxide emissions by 36.595 million tons.

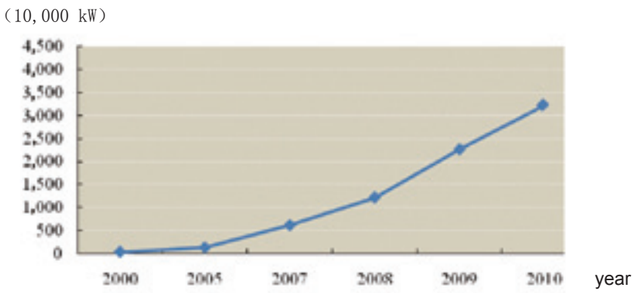


Figure 4-6 Installed wind power capacity in China

4.1.8 Encouraging an extensive use of solar energy. China has made steady progress in developing its industry of solar energy applications and has built pilot demonstration projects of solar thermal power generation in suitable areas in Inner Mongolia, Gansu, Qinghai, Xinjiang and Tibet. In 2010, the installed photovoltaic power generation capacity reached 800,000 kilowatts in China. And 168 million square meters of solar water heaters were installed for use which could annually save about 20 million tons of standard coal for fossil energy.

4.1.9 Developing nuclear power in a safe and efficient manner. Following the principle of "safety first" in the development of nuclear power, China carries out safety management over nuclear power projects under construction and makes efforts to ensure the safe and stable operation of existing nuclear power units. By the end of 2010, China had put into operation nuclear power generating units with 10.82

million kilowatts, 1.12% of the national installed electricity capacity, and approved the construction of 46 nuclear power generating units with a total capacity of 36.92 million kilowatts, of which 26 units with a capacity of 29.24 million kilowatts were under construction.

Box 4-4 Donghai Bridge Wind Farm

Donghai Bridge Wind Farm is China's first large-scale offshore wind farm and was designed and built domestically. The farm consists of 34 offshore wind turbines, each with the largest unit power in China. Its total installed capacity reaches 102,000 kilowatts. It is designed to generate power for 2,624 hours and to supply the grid with 267 million kWh of electricity every year. The total investment of the project is 2.365 billion yuan. After the completion, the project would entail an annual saving of 86,000 tons of standard coal and a carbon dioxide emission reduction of 237,400 tons, compared with a coal-fired power plant.

Section 2

Rationally Developing and Utilizing Mineral Resources

4.2.1Background. Mineral resources in China are characterized by low per-capita consumption and low quality grade. Since the beginning of this new century, China has made continuous efforts to improve its geological prospecting capability. Based on its domestic conditions, China develops its own mineral resources rationally. In addition, the country continues to enhance the comprehensive utilization of mineral resources and improve the mining environment, so as to ensure the sustainable development of its resources, environment and economy.

4.2.2 Intensifying mineral resource exploration and development. China has conducted a large survey of land and resources, substantially increased the level of work relating to basic geological surveys and geological exploration in major mining areas, and delineated a number of new prospecting targets. Over the past decade, China has discovered a cumulative amount of over 900 mineral deposits, among which 152 are either large or super-large ones, 70 are those of iron, manganese and other ferrous metals, 370 are of copper, lead, zinc and other non-ferrous minerals, and 250 are of gold, silver and other precious metals. For major mineral resources, China has attained significant amounts of incremental reserves, and achieved rapid growth of production. In 2010, China realized an annual production of 3.24 billion tons of coal (3.24 times of that of 2000) and 30.926 million tons of ten kinds of nonferrous metals (10.35 times of that of 2000). The annual production of petroleum reached 203 million tons, an increase of 40 million tons compared with that of 2000, and that of natural gas 96.76 billion cubic meters, an increase of 69.56 billion cubic meters over the year of 2000.

4.2.3 Enhancing the conservation and comprehensive utilization of mineral resources. The Chinese government strives to strengthen the centralized and unified planning and management of mineral resources, encourages and supports large- and medium-sized mines to carry out comprehensive exploration, evaluation and development, so as to improve the comprehensive utilization of mineral resources. China has made an integrated use of more than 20 out of the 30 useful coexisting and/or associated components in the black metal ores, and achieved a comprehensive utilization of over 70% of coexisting and/or associated components in non-ferrous metal ores. For instance, from comprehensive utilization in dressing, smelting and processing, China has obtained more than 50% of vanadium, over 22% of gold, and over 50% of platinum, palladium, tellurium, gallium, indium, germanium and other rare metals.

4.2.4 Further improving the environment of mines. China incorporates protecting and restoring the geological environment of mines as an important element into its "Nationwide Mineral Resources Planning (2008-2015)", and clarifies control measures to mitigate the negative impacts posed by the development and utilization of mineral resources in accordance with the principle of "prevention before mining, control in mining, and restoration after mining". It has established a guarantee-fund system for the restoration of mining environment to enhance the recovery and management of the mine geological environment, so as to improve the living and production conditions of mining areas. It has also carried out pilot projects of building green mining units and devoted great efforts to make the exploitation more scientific and rational, resource use more efficient, enterprise management more standardized, production processes more environment-friendly, and mining bio-environment better.

Box 4-5 A case of green mine: comprehensive improvement of the mine environment in Kunyang Phosphate Plant

Kunyang Phosphate Plant in Yunnan, along with other 36 mines, is a pilot unit in the national green mining project. In the 1980s, the plant started its land reclamation and re-vegetation. Since 2004, it has stepped up efforts to reclaim land, restore vegetation and improve geological environment. By June 2011, the cumulative investment in the land reclamation and re-vegetation reached 140 million yuan. As a result, it had achieved more than 14,400 mu (about 960 hectares) of forestation, and nearly 8,000 mu (about 533 hectares) of grass-planting land. The land reclamation and re-vegetation rate reached 94.46%.

An aerial view of land reclamation and re-vegetation in Kunyang Phosphate Plant, Yunnan

Section 3

Utilizing Land Resources in an Economical and Intensive Way

4.3.1 Background. China's land resources are abundant in terms of the gross amount, but low in per-capita quantity and poor in endowment. The existing arable land per capita is only 40% of the world's average. What's more, only one-third of the arable land is of high quality. The Chinese government promotes the investigation, evaluation, planning, management and protection of land resources in a comprehensive manner, strives to ensure their rational development and utilization, and spares no effort to control land degradation.

4.3.2 Effectively protecting the farmland. China sets strict control over the planning and programming of land acquisition and circulation, in which the balance between requisition and supplement of arable land as well as between compensation and settlement of land-expropriated farmers are also strictly held in check. China has fully implemented the policy of supplement before requisition, and replenished more than 400 million mu (about 266,667 hectares) every year, achieving an overall balance of requisitioned and supplemented land in the total. China also proposes implementing the requirements of the permanent protection over basic farmland, and takes rigorous measures to ensure the quality of supplemented land. It has also reformed the land requisition system and generally raised compensation standards for land requisitioned by a rate between 20% and 30%. In addition, China has advanced the constructive protection of arable land and simultaneously enhanced its quantity and quality, and put in place basic elements of quality monitoring network and evaluation system for cultivated land. China has made great efforts to enhance rural land improvement, resulting in newly added 42 million mu (2.8 million hectares) of arable land which is larger than the cultivated area occupied by buildings or damaged by natural disasters in the same period. At the same time, the per-unit yield of the improved land increased by 10% to 20%.

Box 4-6 Rural land improvement

Rural land improvement is a land-use campaign to enhance land utilization and increase yields through comprehensively harnessing, according to law, farm fields, water, roads, forests, villages which are inefficiently and irrationally used in rural areas. It has become an effective way and important platform in promoting construction of the New Countryside, accelerating urbanization and balancing urban and rural development. The main tasks of rural land improvement contain the following three aspects:

Firstly, increasing effective arable land acreage and its quality, and launching large-scale efforts to build high-standard basic farmland which is drought- and flood-tolerant, with the priority given to farmland improvement;

Secondly, improving pieces of construction land which are left scattered, abandoned, idle, or are in inefficient use in areas where conditions permit, standardizing the pilot project of linking the increase and decrease of the land for construction use in both urban and rural areas, improving rural infrastructure, public service facilities, and agricultural production conditions, and increasing the economical and intensive land use level;

Thirdly, developing and utilizing arable but unused land in a reasonable and appropriate manner to increase the cultivated land acreage, as well as protecting and improving the ecological environment.

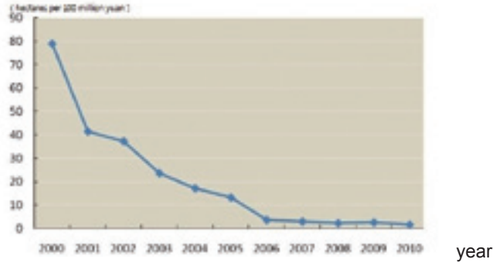


Figure 4-7 New construction land consumed per unit of newly added fixed asset investment

4.3.3 Significantly increasing the level of economical and intensive use of land. China has promulgated and implemented "the Outline of the National Overall Planning on Land Use (2006 - 2020)", and accordingly, made a strict control of the total area of land for construction use. China has formulated standards for construction land of industrial projects, and promulgated and implemented 33 national standards so that the level of economical and intensive land utilization has been improved. China has also established a pricing mechanism for land use rights, which can reflect market supply-demand relations, resource scarcity and environmental damage costs, and has played a positive role in promoting the optimal allocation of land resources and their economical and intensive use. In addition, China has made unified arrangements over the assessment of the new construction land consumption in relation to per unit of GDP and fixed asset investment growth in order to strengthen the assessment and evaluation of land use efficiency. Over the past decade, China has seen a gradual decline in the consumption of new

construction land per unit of GDP and the scale of fixed asset investment growth.

4.3.4 Converting expansion of land desertification and sandification into their shrinkage. China attaches great importance to the prevention and control of desertification. "The Law of the People's Republic of China on Prevention and Control of Desertification" was promulgated in 2001, and "the Decision of the State Council on Further Strengthening the Prevention and Control of Desertification" was released in 2005 in order to strengthen anti-desertification work and propel sandy areas to embark on a development path featuring increased productivity, improved living standards and sound eco-conditions. The State Council approved "the National Plan for the Prevention and Control of Desertification (2005-2010)" and carried out corresponding projects across the country accordingly. China has established an accountability system for province-level governments on anti-desertification, and launched a number of key projects for the prevention and control of desertification. As a result, China managed to accomplish an average annual net reduction of 2,491 square kilometers of desertification areas, which expanded by an average annual 10,400 square kilometers at the end of the last century, and made an average annual net reduction of 1,717 square kilometers of the sandification area, which expanded by an average annual 3,436 square kilometers at the end of the last century. According to the fourth monitoring of national desertification and sandification, the average vegetation coverage in desertified land increased from 17.03% in 2004 to 17.63% in 2009; fixed sandy land increased by 3,271 square kilometers; drifting sandy land decreased by 5,465 square kilometers; and semi-fixed sandy land shrank by 1,619 square kilometers.

4.3.5 Gradually increasing soil and water conservation capacity. Over the past decade, China has implemented national key projects of soil and water conservation and launched large-scale efforts to improve ecological conditions in major areas with soil and water erosion such as the upper and middle reaches of the Yellow River and the Yangtze River, the Danjiangkou reservoir area and its upper reaches, the Capital Water Resources Area, the sandstorm source area affecting Beijing and Tianjin, the rocky karst desertification area in Southwest China, and the black soil area in Northeast China. More than 600 counties have been covered by these efforts. By the year 2010, China had kept 1.068 million square kilometers of nationwide soil erosion areas under comprehensive control, and the existing soil and water conservation measures can reduce soil loss by an annual 1.5 billion tons and increase the storage capacity by over 25 billion cubic meters. Nearly 150 million people can benefit directly from the soil erosion management.

Box 4-7 Comprehensive management of small watersheds in Dingxi, Gansu Province

Through many years of efforts, Dingxi has built 105,000 hectares of horizontal terraces, reducing the annual soil erosion modulus to 1,666 tons per square kilometer, which has ensured the high and stable production of potatoes and other crops, and significantly reversed the poor and backward situation in local rural areas.

Section 4

Promoting Sustainable Use of Water Resources

4.4.1 Background. China is rich and ranks sixth in the world in terms of total amount of water resources, but it faces uneven spatial and temporal distribution and insufficient per capita amount of the same resources. Its per capita water resources is only 2,100 cubic meters, about 28% of the world average.

4.4.2 Constantly improving institutional systems for water resources management. China has established a relatively sound system of laws and regulations for water resources and basically finished the construction of an institutional framework system concerning the development, utilization, conservation, protection and management of water resources. It has accelerated the formulation and improvement of integrated water resources planning, integrated watershed planning, and various special plans, and initially built a water resource planning system which is divided into comprehensive and specialized types, covering the national, basin and regional levels. Moreover, constant progress has been made in improving the water resources management system which integrates watershed management and administrative regional management. Through the work of its seven major river basin commissions, China has initially completed the preparation of an index system for the total control of permit quotas for taking water from river basins, fully implemented a compensation mechanism for the use of water resources in its 31 provinces (autonomous regions or municipalities) and introduced plans for water function zoning. The water service system at the grass-root level has also been improved gradually.

4.4.3 Significantly improving the capabilities for allocating and controlling water resources. Given the uneven temporal and special distribution of water resources, China has carried out water resource allocation projects including the South-North Water Diversion Project to optimize the strategic pattern of allocation of such resources, and thus, to effectively alleviate the water shortage in Beijing, Tianjin, Qingdao, Guangzhou and other cities. The country has advanced weather modification projects to improve the developing capacity of cloud water resources, thus easing the agricultural and ecological

water shortage in arid and ecologically fragile areas. The existing water conservancy projects in China can supply more than 700 billion cubic meters of water and provide a basic guarantee of water security in urban and rural areas in medium-drought years. China has also constructed a number of key water control projects for river basins, such as the Three Gorges Project along the Yangtze River, the Xiaolangdi Project along the Yellow River and the Linhuaigang Project along the Huaihe River, and strengthened its efforts to manage major rivers. As a result, China has seen a significant increase in the control capacity of major rivers. Over the past decade, China has built a total of 291,400 kilometers of river dikes which protect a population of 590 million and an acreage of 710 million mu (about 47.3 million hectares) of arable land, and reinforced more than 9,000 dangerous and defective reservoirs.

4.4.4 Initial results scored in building a water-saving society. China has taken vigorous measures to implement a total control and quota management system over water usage. It has also adopted various ways of information dissemination to raise public awareness of water conservation and protection, and enhance the sense of urgency and accountability in relation to water conservation. Since 2001, China has established 300 pilot projects for building a water-saving society, among which 100 are at the national level and 200 provincial-level, and also named 57 national-level water-saving cities. China has carried out certification over water-saving products, and incorporated such products into the government procurement catalog. China has also gradually improved the technological standard system for conserving the agricultural, industrial and urban water, and promulgated and implemented such standards as “Evaluation Guide for Water-saving Enterprises” and intake quotas over ten sectors of high water consumption including thermal power generation, and integrated iron and steel complex. At the same time, China has seen a significant increase in the utilization of reclaimed water, seawater, rain water, flood water, mine water and other unconventional sources of water, thereby playing an active role in mitigating water shortages.

Box 4-8 Construction of a water-saving society in Zhangye City, Gansu Province

Zhangye City of Gansu Province is located in the middle reach of the Heihe River, China’s second largest inland river. With the rapid economic and social development of the middle river basin, water is in growing demand, resulting in a serious drop of water volume and worsening ecological environment in the downstream of the Heihe River. In 2002, the Ministry of Water Resources decided to implement China’s first pilot project for building a water-saving society in Zhangye City, linking it with the integrated water regulation of the Heihe River.

Through various efforts, Zhangye City has achieved outstanding results in the construction of a water-saving society: Public awareness of water conservation and universal participation have been significantly increased, following the clarification of water use rights, the setting-up of water users’ associations, and the implementation of total control and quota management of water resources. The water utilization rate at the main, branch and lateral canals has been increased to 64%. Water consumption per 10,000 yuan of industrial added value has been reduced to 91 cubic meters; and the industrial water reuse rate has been improved to 54%. Crops with high yields and low water consumption including corn and potato have been promoted. And the structural ratio of food crops, cash crops and grass has been reasonably adjusted.

As a result, the regional economy has attained sustainable and rapid development.

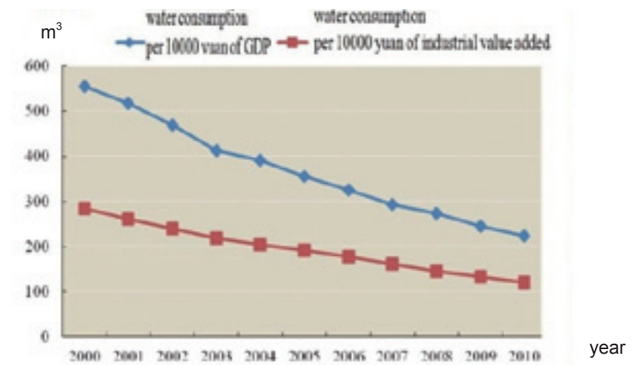


Figure 4-8 National water use efficiency(in comparable prices of 2000)

4.4.5 Water use efficiency and effectiveness significantly increased. China has continuously incorporated it as a binding target into two five-year plans (2001-2005, 2006-2010) that water consumption per unit of industrial value-added should fall by 30% within five years, and China has formulated a series of policies and measures to promote water conservation, thus significantly improving the efficiency of water utilization. Water consumption for every 10,000 yuan of industrial added value dropped from 285 cubic meters in 2000 to 124 cubic meters in 2010, and water consumption per 10,000 yuan of GDP fell from 554 cubic meters in 2000 to 225 cubic meters in 2010.

A renovated canal in the irrigation area at Liuchen, Guangxi Province

An irrigation area of Xiakou Reservoir at Jiangshan, Zhejiang Province

Figure 4-9 Examples of water conservancy projects

4.4.6 Stepping up efforts to protect water resources and ecosystems. China has strengthened the management of water function zones, making clear the major functions and conservation targets of rivers and lakes. A total of 81% of the 4,493 water function zones of China’s major rivers and lakes are defined as class III or above Class III in terms of water quality targets. In recent years, the pollutant carrying

capacities of water bodies including the Huaihe River, Haihe River, Songhua River, Liaohe River, Taihu Lake Basin, the Three Gorges reservoir area, and the Yellow River have been appraised, with limits to their total pollutant emissions proposed. In addition, surveys and registration have been completed for sewage outfalls along the seven major river basins. A directory of drinking water sources has been approved to be published for the country's 175 major cities. Periodic monitoring has been carried out over water quality of the country's more than 4,000 functional areas and key sections and regions of the 170,000-kilometer river length. The country has also made great efforts to protect and rehabilitate water ecosystems. For instance, China has conducted integrated water regulation of the Yellow River, attaining a continuous flow of the river for 11 consecutive years. China has also carried out comprehensive management for the Tarim, Heihe and Shiyang rivers to implement ecological water replenishment for their lower reaches on emergency occasions, significantly improving the ecological environment of river tails. Besides, China has organized and implemented some eco-replenishment projects for important wetlands, and carried out pilot projects of ecological protection and restoration of rivers, lakes and urban water. Moreover, China has implemented strict protection over groundwater, and actively promoted the management of over-developed areas of groundwater. As a result, progress has been made in the control and restriction of groundwater exploitation in some major areas.

Box 4-9 Integrated water regulation and sediment control in the Yellow River

Since 1999, China has carried out unified control over the Yellow River water. Since 2002, the country has conducted water and sediment regulation 12 times along the river, attaining a continuous flow of the river for 11 consecutive years, and significantly improving the water use efficiency. Compared with pre-regulation of the Yellow River basin, an approximate 80% drop has been scored in water consumption per 10,000 yuan of GDP; A nearly 20% decrease has been achieved in irrigation quotas for farmland in real terms. Besides, China has seen an average annual increase of 600 million cubic meters of water going into the sea. There has been a significant increase in the flow capacity of the lower Yellow River reach, with an average degradation of about 1.85 meters at the river bed elevation. The wetland area in the river mouth into the sea has increased significantly, with the trend of ecological deterioration gradually controlled. What's more, water security in the Yellow River basin has been strengthened.

Section 5

Rationally Developing and Vigorously Protecting Marine Resources

4.5.1 Background. With about 18,000 kilometers of mainland coastline and about 14,000 kilometers of island coastline, China has abundant marine resources in approximately 3 million square kilometers of the asserted sea areas under its jurisdiction (excluding the waters under the jurisdiction of Taiwan Province) , and has a growing marine GDP. At the same time, however, pollutants into the sea are increasing year by year. The integrated management and rational development of marine resources, and the protection of the marine environment have become important components in the strategy for sustainable development .

4.5.2 Remarkable results in the administration of the use of sea areas. China promulgated the "Law of the People's Republic of China on the Administration of the Use of Sea Areas" in 2002 and established the following three basic systems: marine functional zoning, administration of the right to the use of sea areas and the charged use of sea areas. In the same year, the State Council approved the implementation of "the National Marine Functional Zoning Plan", gradually forming a marine functional zoning system consisting of national, provincial, city- and county-level subsystems. China has strengthened efforts to standardize the examination and approval systems for sea-use application, and carried out sea-use demonstrations of sea-related projects. China has also established a management system for sea reclamation programs and incorporated the reclamation into the national economy and social development plan. Apart from that, China has set up the National Sea Area Dynamic Surveillance, Monitoring and Management System, and carried out basic sea-use projects relating to remote sensing monitoring, ground monitoring, data processing for the right to use sea areas, as well as tracking and monitoring of sea areas used in major projects.

4.5.3 Gradually advancing island protection and development. In 2010, China promulgated and implemented "the Law of the People's Republic of China on Island Protection". China has made steady progress in identifying the right to the use of uninhabited islands and establishing a dynamic monitoring system for island construction. China has also taken vigorous measures to build experimental bases for ecological construction on the islands, further promoting the improvement, rehabilitation, and protection of island ecosystems.

4.5.4 Comprehensively utilizing seawater resources. In 2005, China promulgated and implemented "the Special Plan for the Use of Seawater". China has been very active in promoting the comprehensive utilization of seawater and building a number of demonstration projects with independent intellectual property rights, ranging from 1,000-ton, 10,000-ton to 100,000-ton classes. Nearly 600,000 cubic meters of seawater are desalinated per day, and the scale of seawater-use engineering is nearly 60 billion cubic meters of seawater a year. At some islands' areas, desalinated water has become the main source of water for local residents. At present, China has set up a R&D system for seawater desalination and comprehensive utilization technologies, and promulgated nearly 50 national and/or industrial standards in

the field of seawater utilization.

4.5.5 Utilizing marine biological resources rationally. China is one of the richest countries in terms of marine biodiversity and has more than 20,000 kinds of recorded marine organisms, among which more than 200 are major economic species and provide rich raw materials for high-quality foods, drugs, biological products, and other deep processed products. China has established the world's largest marine aquaculture industry with an annual output of more than 15 million tons, over 60% of the world's total. Meanwhile, China has achieved an annual growth rate of about 30% in its GDP of marine bio-pharmaceutical industry, attaining 6.9 billion yuan of added value in 2010. The country has also established such preservation facilities as a center for marine microbial resources as well as for the gene pool of marine organisms as sources of medicines. In addition, it has discovered and preserved over 10,000 samples of biological marine species resources from coastal waters, oceans, deep sea waters and polar seas.

4.5.6 Considerably enhancing the protection of marine resources, environment and ecosystems. For the sake of environmental protection, China has strengthened its integrated supervision and management of offshore development activities including marine engineering, marine dumping, and offshore oil exploration and development. As a result, environmental quality of sea waters under the jurisdiction is generally good and about 94% of the total sea area under the jurisdiction are covered by seawater whose quality is in conformity with the first-class seawater quality standard. China has also carried out construction of various types of marine nature reserves, special marine reserves, protection areas for marine aquatic germplasm resources, and marine parks, and basically formed a system of marine protection areas featuring reasonable layouts, complete types and gradually improved functions. China has also established marine farm demonstration zones, and has been very active in carrying out resource enhancement and releasing, in a bid to promote sustained and healthy development of marine fisheries. In addition, the country has built 232 stations (centers) of marine environment monitoring of all levels, and actively and effectively responded to marine environmental disasters and emergencies including red tides (green tides), offshore oil spills, and nuclear radiation, with the timely release of early warning information from marine environment monitoring.

Chapter V

Eco-Environmental Protection and Response to Climate Change

China adheres to the basic state policy of environmental protection to build an environmentally friendly society. It has accelerated the construction of environmental protection infrastructure, strengthened related supervision and management, reduced the emissions of major pollutants, and improved environmental quality. China has continued to implement key projects for ecological protection and development, and constantly stepped up ecological conservation. Meanwhile, China has taken active measures to enhance its capabilities to mitigate and adapt to climate change.

Section 1

Intensifying Pollution Control

5.1.1 Background. Environmental issues that emerged in developed countries over the past century have erupted all at once in China, and are mainly manifested by the rapid growth of pollutant emissions, the coexistence of traditional and new pollutants, and regionally combined pollution. Increasing efforts in environmental pollution control in wider areas are one of China's core tasks toward promoting the strategy of sustainable development.

5.1.2 Improving the system and standards for pollution prevention and control. In 2008, the then State Environmental Protection Administration was upgraded to the Ministry of Environmental Protection, further reinforcing the government's function of environmental protection. "The Law of the People's Republic of China on Appraising Environmental Impacts" was promulgated and implemented for the prevention of adverse environmental impacts caused by construction of projects due to inadequate planning. "The Law of the People's Republic of China on the Prevention and Control of Water Pollution"

was amended in order to strengthen the management systems for total discharge control of key water pollutants, pollution discharge licenses and potable water source protection zones. Provisions such as preventing and controlling pollution from non-point rural sources and pollution by ships in inland waterways and handling water pollution emergencies are important new items. National standards for indoor air quality and for pollution emissions from thermal power plants, the cement industry, and automobiles, etc are promulgated or revised.

5.1.3 Inspecting the overall situation of environmental pollution. In 2008, China launched a national census of pollution sources, investigated major pollutants generated and discharged by a total of 5.926 million industrial, agricultural and household pollution sources, inspected the volumes of major pollutants' generation and emissions from centralized pollution treatment facilities and studied how pollutions were dealt with in these places. China has also conducted a soil pollution investigation across the country and comprehensively treated arable land that contains pollutants in levels exceeding stipulated standards, and thereby established a soil pollution database as well as a sample center.

5.1.4 Achieving notable effects in applying total control over pollutants. From 2000 to 2010, there was an overall downward trend in the major pollution indicators in terms of average concentration. Especially since 2006, China has made reducing sulfur dioxide emissions and chemical oxygen demand by 10% a binding target for national economic and social development, and has taken comprehensive emission-reduction measures, such as implementing relevant projects, upgrading production processes, and optimizing management, so as to vigorously control the total amount of pollutants discharged. In 2010, sulfur dioxide emissions stood at 21.851 million tons, down 14.29% compared to 2005; chemical oxygen demand totaled 12.381 million tons, a decrease of 12.45% over 2005. In 2010, China had 471 cities, 133 more than the previous 338 cities in 2000, carrying out air quality monitoring, and the proportion of cities whose air quality reached the national standard Level II increased from 36.5% in 2000 to 82.8%; compared to 2000, the ratio of Type I-III of surface water quality at monitoring sections increased by nearly 20%, that of negative V dropped by about 15%, and the ratio of water quality with Type I-III at provincial border sections increased by 13.2% over 2003.

Box 5-1 China's remarkable progress in air pollution prevention and control

In recent years, China has stepped up efforts to ensure above-standard air quality in cities and urged governments at all levels to manage this work through a variety of ways, e.g. the reduction of pollution emission sources, process control and terminal control. As a result, city air quality has improved.

The project of dust removal and desulphurization was implemented. In 2010, dust removal devices were installed in all thermal power generating units of China's power industry and in all sintering machines of the iron and steel industry and the cement industry; desulphurization equipment was installed in 86% of coal-fired power generating units and in 15.6% of sintering machines of the iron and steel industry; about 80% of oil refining and coking enterprises carried out the project of desulphurizing smoke and waste gas to recycle sulfur.

Outdated production facilities were eliminated. During the 11th Five-year (2006-2010) Plan period, China decommissioned small thermal power plants with a total capacity of 76.825 million kilowatts, eliminated backward facilities for iron production with a capacity of 120 million tons, steel of 69 million tons, cement of 340 million tons, coke of 93 million tons and plate glass of 60 million weight cases.

A new mechanism for joint prevention and control of regional air pollution was established. China applied this mechanism during the Beijing Olympics, enforced environmental laws and conducted environmental inspections in Jiangsu, Zhejiang and Shanghai during the Shanghai World Expo and in Guangdong, Fujian, Jiangxi, Hunan and Guangxi during the Guangzhou Asian Games, set up a new mechanism for joint prevention and control of regional air pollution featuring unified planning, monitoring, supervision, assessment and coordination, and succeeded in meeting air quality targets in specific regions.

Controls on motor vehicle pollution were also strengthened. Since 2000, China has succeeded in applying lead-free gasoline for automotives and ensuring the use of electronic fuel injection technology in cars, and formulated a series of national standards for motor vehicle pollutant emissions. The pollutant emission of a new light car in 2009 fell more than 90%, compared to 2000, effectively reducing the great pressures a growing number of vehicles place on the environment.

Box 5-2 Comprehensive control of water environment at the Taihu Lake Basin

China began to implement the master plan for the comprehensive cleanup of the water in the Taihu Lake basin in 2008, did solid work to control pollution, reduce emissions and carry out ecological restoration within the basin, and strengthened its infrastructure. As a result, water quality of the lake has become overall better, and great success has been achieved in the current stage of work to improve the Taihu Lake. Over the three years, Chemical oxygen demand and ammonia nitrogen emissions have decreased by 15.4% and 22.2%, respectively in the basin; water quality of rivers around the lake as a whole has shifted from moderate pollution to mild pollution; the whole lake's average nutrition status has been upgraded from moderate to mild level; and the lake area with middle eutrophication has significantly decreased.

5.1.5 Managing solid wastes scientifically. China revised and implemented "the Law on the Prevention and Control of Environmental Pollution by Solid Waste"; issued "the Regulations on the Administration of Medical Wastes", "the Regulation for the Administration of the Recovery and Disposal of Waste Electrical and Electronic Products", "the Measures on the Administration of Permit for Operation of Dangerous Wastes" as well as other laws and regulations; revised "the National Hazardous Waste Inventory (2008)", "the Management Measures on Electronic and Information Products Pollution", and "the Administrative Measures on Examination and Approval of the Export of Hazardous Wastes"; gradually improved laws and regulations; standardized management of hazardous, medical and electronic wastes; and formulated and put into effect "the National Plan on the Development of Hazardous Wastes and Medical Wastes Treatment Facilities". Total industrial solid wastes fell from 31.86 million tons in 2000 to 4.982 million tons in 2010, and the percentage of industrial solid wastes being comprehensively utilized reached 69%.

5.1.6 Strengthening environmentally sound management of chemicals. The Chinese government has been very active in promoting legislation on the environmental management of chemicals and strictly implementing the environmental management registration of new chemical substances and imported and exported toxic chemicals. China has revised a series of administrative regulations, e.g. "the Measures on Environmental Management of New Chemical Substances", and "the Catalog of Toxic Chemicals Strictly Restricted from Import and Export", strengthened environmentally sound management of chemicals, and conducted a survey of pollution sources with a focus on persistent organic pollutants and mercury.

Box 5-3 Progress in developing the two experimental areas for the comprehensive reform to build an energy-efficient and environmentally friendly society

In December 2007, China approved the Wuhan metropolitan area and the Changsha-Zhuzhou-Xiangtan city cluster to be the two experimental areas for the comprehensive reform to build an energy-efficient and environmentally friendly society, assigned certain places in the two areas to lead the way through pilot programs, and explored systems and mechanisms that are conducive to scientific development, energy conservation, emissions reduction and environmental protection. After three years of efforts, comprehensive reform and innovation was carried out in the experimental zone and substantive progress has been made in optimizing and upgrading industrial structure, developing a circular economy and making ecological environmental improvements. From 2010 onwards, China has selected 121 enterprises from nine industries, such as steel, nonferrous metals, chemicals and petrochemicals, and building materials, to join the pilot project to make themselves energy-efficient and environmentally friendly, and guided enterprises to take the path of sustainable development by establishing evaluation standards and a system of indices for the pilot project in each of the nine industries, and promoting a higher level of energy saving and environmental protection and technical progress in all sectors of industry.

Section 2

Conducting Ecological Preservation and Restoration

5.2.1 Background. Toward China's complex and diverse natural conditions, improper development may easily lead to ecological degradation. Over the last decade, China has followed the principle of balancing development between man and nature, increased ecological awareness, vigorously implemented projects of ecological protection and development, and initially brought worsening ecological environment under control. As a result, ecological environment in certain regions has significantly improved.

5.2.2 Proposing building a strategic ecological safety structure as "two shelters and three belts". In order to effectively protect the ecological environment, China has clearly set forth the targets and tasks of establishing a strategic ecological safety structure as "two shelters and three belts" in the national plan for development priority zones. The structure consists of designated areas where development is prohibited and dotted across the country, with the Qinghai-Tibet Plateau ecological barrier, Loess Plateau-Sichuan-Yunnan ecological barrier, northeast China forest belt, northern China sand prevention belt, and southern hills and mountain belt and major river systems as the frame, and other key national ecological function areas acting as important pillars. Within the structure, the national key ecological function zones fall into four categories, i.e. areas for conserving water sources, maintaining water and soil, preventing sandstorms and protecting biodiversity; and they are located at 25 regions, covering a total area of about 3.86 million square kilometers and accounting for 40.2% of the nation's total land area.

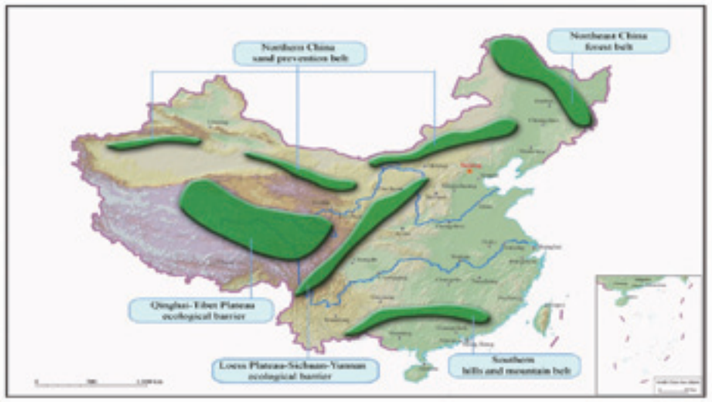


Figure 5-1 China's strategic ecological safety structure featuring "two shelters and three belts"

5.2.3 Making significant progress in forest ecological protection and development. In 2003, China introduced a "Decision on Accelerating Development of Forestry", which identified the development strategy of forestry with ecological improvement as its mainstay. Over the past ten years, China has made steady progress in key forestry ecological projects, with a total area of 43.57 million hectares afforested and ecological conditions within the zones of these projects significantly improved. There has been sustainable and rapid growth of forest resources: the forest area reaches 195.45 million hectares, an increase of 23% over ten years ago; the forest coverage rises to 20.36%, up 3.81 percentage points; the forest stock stands at 13.721 billion square meters, a rise of 21.8%. At the same time, China has constantly improved its abilities to prevent and fight forest fires, so as to minimize forest fires and fire losses as much as possible. Management of harmful biological species in forestry was strengthened, a great deal of efforts were made to prevent the invasion of harmful exotic pests and plants, and a forestry system for monitoring and early warning, quarantine, and disaster prevention and mitigation has been initially set up. Government funding for controlling harmful bio-species in forests has increased from 90 million yuan in 2000 to 500 million yuan in 2010.

Box 5-4 Progress in National Key Ecological Projects over the Past Decade

Natural forests protection project. A total of 8.32 million hectares of land have been afforested; the existing 104.86 million hectares of forests have been effectively protected; the total logging amount was 220 million square meters less; the total forest area increased by 10 million hectares, the forest coverage rate increased 3.7 percentage points, and forest stock increased by 725 million square meters.

The farmland-to-forest project. Some 21.77 million hectares of farmland has been developed into forests, and the forest coverage within the project zone has increased by 3 percentage points on average.

The forest shelterbelts in northwest-north-northeast China and the Yangtze River basin. A total of 8.32 million hectares of forest shelterbelts have been completed. Forest coverage of the areas for northwest-north-northeast China shelterbelts has increased to 12.4%, and the regional ecological conditions have obviously changed for the better.

The project for controlling sources of dust storms affecting Beijing and Tianjin. China has improved the environment totaling an area of 8.8979 million hectares, within which 5.7676 million were covered by afforestation projects, 2.2122 million hectares for grassland improvement, and 0.9181 hectares for small river valleys improvement. Within the project zone, the forest coverage rate has increased by 4.1 percentage points, and sandstorm conditions of the project zone have been controlled from very serious to serious.

The project of fast-growing and high-yielding timber forest base. From its inception in August 2002 till the end of 2010, the project has built a total of 8.1133 million hectares of forests.

The project for comprehensively preventing karst areas from becoming stony deserts. A total of 30,000 square kilometers of stony deserts have been dealt with, and vegetation coverage within the project zone has increased by 15% compared to the pre-project status.

5.2.4 Restoring grassland ecological environment. In recent years, the Chinese government launched a number of projects to protect grasslands, such as the projects to restore grazing areas to grasslands, improve grasslands in southwest karst areas and build permanent homes for nomadic herdsmen. Compared to other regions, vegetation coverage within the zones of these projects has averagely increased by 12 percentage points, vegetation height by 41.8% on average, fresh grass yields by an average growth of 50.5%, and there have been increased ecological effects of grasslands in conserving water and preventing soil erosion and sandstorms.

5.2.5 A wetland conservation system initially established. In 2000, China formulated an "action plan for wetland conservation", which provides a guide to conserve, manage and sustainably use wetlands. In 2003, China worked out a " National Wetland Conservation Program (2002-2030)". From 2006 onwards, the government has earmarked funds to implement demonstration projects for wetland protection, restoration and sustainable utilization and strengthen its capacity for that purpose; by 2010, over 70,000 hectares of wetlands of various types had been restored. China has established more than 550 wetland protection areas, 41 wetlands of international significance and 213 national wetland parks on a trial basis and a wetland protection system has been preliminarily set up.

Box 5-5 Wetland conservation projects for Sanjiang Plain, Heilongjiang Province

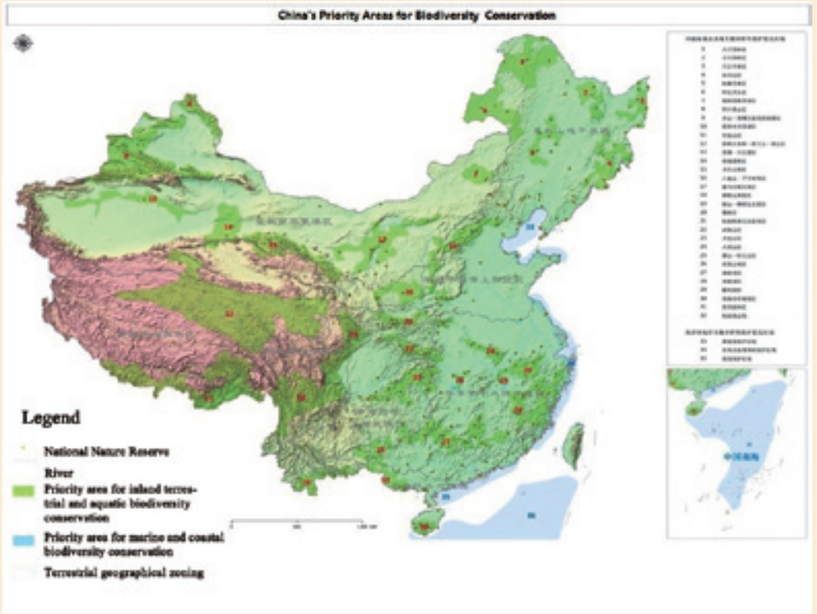
Between 2006 and 2010, the central government invested 71.96 million yuan to implement 11 key projects for conserving wetlands and subsidize 5 wetland protection projects in Sanjiang Plain, Heilongjiang Province, with more than 6,000 hectares of wetlands restored.

5.2.6 Protecting biodiversity. The Chinese government has promulgated "the China Biodiversity Conservation Action Plan", "the Outline of China's Plan for Development of Nature Reserves (1996-2010)", "the Outline of National Ecological Environment Protection Program", "the Outline of National Plan for Biological Species Resources Protection and Use (2006-2020)", "the National Biodiversity Conservation Strategy and Action Plan (2011-2030)", "the Action Plan for Cultivation and Conservation of Aquatic Biological Species Resources of China", as well as a number of other plans for specific sectors, e.g. agriculture and forestry, and has taken a series of actions on biodiversity conservation. As of 2010, a total of 2,588 nature reserves of different types and levels had been established, covering a total area of about 149.44 million hectares, and a network of nature reserves had been initially set up, with reasonable distribution, various types and sound functions. Rapid progress has been made in conserving wildlife and species resources by relocating them. The country has built nearly 500 zoos and botanical gardens, two national banks for long-term preservation of crop species resources and 25 for medium-term preservation, three national banks for forage species resources, 17 germplasm resources nurseries, six national genebanks of livestock and poultry germplasm resources, 139 primitive environmental conservation sites (zones) for wild flora under national priority protection, and 282 national reserves for aquatic germplasm resources. The country's abilities to conduct basic surveys of and research on biodiversity as well as its monitoring have been improved, and biological safety management strengthened.

Figure 5-2 Elk Protection Zone at Dafeng, Jiangsu Province

Box 5-6 China's strategy and action plan for biodiversity conservation (2011-2030)

In 2010, China published "the National Biodiversity Conservation Strategy and Action Plan (2011-2030)", which sets forth the overall targets and strategic tasks of biodiversity conservation over the next 20 years, identifies 35 priority areas for biodiversity conservation, 10 priority fields, 30 priority actions and 39 priority projects. Within the action plan, 32 inland and water priority areas have been distributed in 885 counties, with a total area of over 2.3 million square kilometers, accounting for about 24% of China's land area.



Section 3

Vigorously Addressing Climate Change

5.3.1 Background. In the context of global warming, there has been a marked increase in China's land surface mean temperature over the past century. In particular, China has become apparently warmer in the last 50 years, with a rise of 1.38℃ in land surface mean temperature and a warming rate of 0.23℃ per decade. Obvious changes have been witnessed with regard to the frequency and intensity of major extreme weather and climate events. Actively responding to climate change has become a strategic requirement for China to achieve sustainable development.

5.3.2 Establishing sound working systems and mechanisms. As a responsible developing country, China has followed relevant provisions of "the United Nations Framework Convention on Climate Change" and "the Kyoto Protocol", and gradually improved the systems and mechanisms for responding to climate change by taking into consideration the general requirements of its sustainable development

strategy. Since 1990, China has established a number of government organizations for dealing with climate change, e.g. the National Coordination Committee on Climate Change, National Leading Working Group on Addressing Climate Change, the Department of Climate Change under the National Development and Reform Commission, and the National Expert Committee on Climate Change. In 2006, China released its first "National Assessment Report on Climate Change". In 2007, it promulgated and implemented "China's National Climate Change Program", which clarifies the guiding principles, major areas, and key tasks of China's response to climate change. In 2011, China formulated and released "the Work Plan for Greenhouse Gas Emission Control during the 12th Five-Year Plan "(2011-2015) period, which makes comprehensive arrangements for greenhouse gas emissions control in the 12th Five-Year Plan period. In 2011, China issued its "Second National Assessment Report on Climate Change".

5.3.3 Striving to slow down greenhouse gas emissions. In recent years, the Chinese government has taken active steps to optimize energy structure, improve energy efficiency, conserve energy, develop renewable energy and nuclear power, strengthen R&D and application of low-carbon technology, and increase afforestation. While maintaining steady and rapid economic development, China has also worked hard to slow down the growth of greenhouse gas emissions and obtained positive results. From 2006 to 2010, China saved 630 million tons of standard coal by conserving energy and improving energy efficiency, equivalent to 1.46 billion tons of carbon dioxide emissions reduced; nitrous oxide emissions generated during industrial production remained basically stable at the level of 2005, and methane emissions growth was controlled; forest coverage reached 20.36%, and forest stock stood at 13.7 billion square meters. In July 2010, the Chinese government began launching pilot projects to build a low-carbon society in some provinces and cities. In October 2011, the Chinese government initiated trading of carbon emissions rights on a trial basis in seven provinces and cities, and actively explored ways and experience that stimulate economic development and improve people's livelihood at the current stage, while dealing with climate change, reducing carbon intensity and promote green development.

Box 5-7 New-energy automobiles serving the Beijing Olympic Games

During the 2008 Beijing Olympic Games and Paralympic Games, China organized the largest-scale pilot operation of new-energy vehicles in the history of Olympic Games, and achieved zero-emission traffic in the central area of the Olympic Park.

Box 5-8 China's targets of controlling greenhouse gas emissions by 2020

In November 2009, China announced an action plan to slow down greenhouse gas emissions in light of its national conditions:

By 2020, carbon dioxide emissions per unit of GDP will decrease by 40%-45% over 2005 and be included as a binding target into the long and medium-term plan for the national economic and social development. Corresponding measures on statistics, monitoring and assessment will be formulated.

By vigorously developing renewable energy and promoting development of nuclear power, China will increase the consumption ratio of its non-fossil fuel to primary energy to 15% by 2020.

By increasing afforestation and strengthening the management of forests, the forest area will have an increase of 40 million hectares over 2005, and forest stock will increase 1.3 billion square meters.

5.3.4 Actively adapting to climate change. The Chinese government adheres to the principle of attaching equal importance to mitigating and adapting to climate change and incorporates all policies and actions on adaptation to climate change into the overall national framework. In recent years, China has strengthened the infrastructure construction in related fields; set up a climate observation network system; improved the monitoring and early warning system of climate; ameliorated comprehensive planning and overall arrangement; built natural disaster response work and response mechanisms; carried out preliminary assessment as well as evaluation of climate change; and utilized effective policy measures and technological actions related to agriculture, water resources, forestry and natural ecological system, comprehensive management of coastal areas, disaster prevention and relief, sanitation and health as well as other fields. As a result, the adverse effects of climate change on economic and social development and people's lives have been mitigated.

5.3.5 Strengthening capacity building. In 2004, China submitted its Initial National Communication on Climate Change, which fully describes the country's information related to climate change. In 2008, China initiated the compilation of the Second National Communication on Climate Change, in a bid to improve the integrity and accuracy of the greenhouse gas emissions inventory, and lay a solid foundation for a system of statistics and evaluation of greenhouse gas emissions. From the same year, China began to publish "China's Policies and Actions for Addressing Climate Change" in the form of white paper or annual report; launched scientific and technological initiatives for responding to climate change; and held all kinds of training programs and seminars to popularize knowledge of climate change and improve the abilities of related officials to respond to climate change. Meanwhile, various mass media including radio and television, the Internet, forums and publications are extensively used to publicize policies, actions and achievements regarding climate change, raise public awareness on climate change, and encourage people's participation.

Box 5-9 China's major measures on adaptation to climate change

Adaptation measures in major fields include: (1) strengthening the development of agricultural infrastructure, developing new technology, encouraging mass production of competitive agricultural products, and enhancing agriculture's ability to survive disasters; (2) strengthening the construction of water conservancy infrastructure, and increasing capacity of emergency response; (3) attaching more importance to afforestation and forest protection and management, and improve forest's ability to adapt to climate change; (4) improving the design standards for tide-resistant facilities, and strengthening the construction of these facilities in coastal areas.

Adaptation measures in various regions are as follows: in Northeast China, rationally utilizing suitable crop varieties and agricultural technology, and taking advantage of global warming to develop grain bases; in North China, building water-saving production systems and controlling desertification on the basis of local conditions; in Northwest China, rationally allocating water resources, develop water-saving agriculture, and protect and improve the ecological environment; in coastal areas, gradually raising the standards for tide-resistant facilities and strengthening the development of coastal forest shelterbelts to address the rising sea level.

Chapter VI

Capacity Building for Sustainable Development

China has attached great importance to every form of basic capacity building, so as to enhance the capacity for sustainable development. China strives to strengthen the capacity of independent innovation to build an innovative country. China is speeding up infrastructure construction, enhancing the capacity to withstand natural risks while improving laws and regulations in a bid to consolidate bases to implement its sustainable development strategy. China has been carrying out public-education campaigns, expands the channels of public participation, so as to improve public identification with and participation in sustainable development in the society at large.

Section 1

Strengthening the Capacity for Scientific and Technological Innovation

6.1.1 Background. Scientific and technological innovation is of great significance in promoting the transformation of economic development patterns, improving human living environment and boosting the implementation of sustainable development. In 2006, Chinese took scientific and technological innovation as an important component of its national development strategies and proposed the guidelines of "making independent innovations and leapfrog advances in key areas of science and technology while supporting development and guiding the future", in order to boost independent innovation capacity.

6.1.2 Conditions for scientific research improved markedly. With the implementation of the strategy of developing China through science and education, the intensity of China's investment in science and technology has continued to grow and a number of significant landmark technological infrastructures

have been completed. From 2000 to 2010, the total annual expenditure on R&D in China at large rose from 89.6 billion yuan to 706.26 billion yuan, and the national financial input in science and technology achieved an average annual growth rate of over 20%. As of 2010, China had established 333 national (key) laboratories, 391 national engineering centers, 91 national engineering laboratories, 729 corporate technology centers recognized by the state, and 105 national field research stations (networks) of various kinds. Meanwhile, a number of multi-level network systems and physical platforms for integrating and sharing resources as well as field observation research and demonstration systems have emerged, various kinds of scientific data and conserved natural scientific and technological resources have begun to take shape, and the scale of crop germplasm conservation has become the second largest in the world.

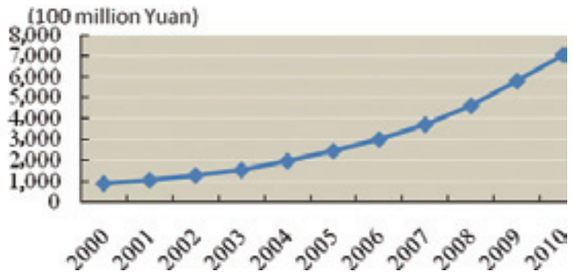


Figure 6-1 Total R&D investment across China

6.1.3 Scientific and technological strength improved rapidly. China began to implement the strategy of "strengthening the country through human resource development" in 2002, and promulgated "the National Outline for Medium- and Long-Term Talent Development (2010-2020)" in 2010, which took strengthening the training and introduction of scientific and technological personnel (especially those with innovation potential) as a significant task. As of 2010, the total R&D personnel in full-time equivalent in China had amounted to 2.554 million person-year, with 2,146 post-doctoral research centers and 1,743 research stations, and there have been a number of highly efficient and capable academic teams in major disciplines and technological fields. Over the past decade, China has initiated 26 major projects including super hybrid rice and control and management of water body pollution. The country has combined key and dedicated demands with its S&T programs, such as the National Basic Research Program(also called 973 Program), National High Technology Research and Development Program (also called 863 Program), and the National Key Technology R&D Program to make breakthroughs in a number of core technologies, with the capacity for original innovation improved substantially. With the leapfrog development in key technological fields, the role of science and technology in supporting and leading sustainable development has been significantly strengthened.

Box 6-1 Major scientific and technological achievements in the field of sustainable development

In the field of energy and environmental protection, the world's first ± 800KV UHV DC transmission project – Yun-Guang UHV DC bipolar transmission project was put into operation in 2010. Key technologies of the over 10,000-meter ultra-deep drilling equipment were indigenous innovation, making China the second country to own such equipment. In 2009, the IGCC demonstration project developed, designed and manufactured independently by China was launched, marking the substantial progress made in the GreenGen Project.

In the field of biotechnology, China has successfully developed more than 20 kinds of gene therapy as well as the world's first recombinant staphylokinase through injection and recombinant human endostatin injection. In February 2009, China successfully developed the world's first H1N1 Influenza A Vaccine (Split Virion) which was approved for production. In addition, China's super hybrid rice research has been in the forefront in the world, the molecular marker breeding has been in the international leading level, and the yield of super rice achieved 900 kg per mu in 2011.

6.1.4 Constantly optimizing the innovation environment. In 2006, China made the decision of "enhancing the capacity of independent innovation and building an innovation-oriented country", and in line with the decision, "the Law on Scientific and Technological Progress" and "the Patent Law" were revised and implemented, "the Outline of the National Program for Long- and Medium-Term Scientific and Technological Development " and its supporting policies and measures were enacted and promulgated. As a result, a sound policy system to spur technological innovation has been built. In addition, the construction of the national demonstration zones for independent innovation has been smoothly carried forward, the national technological innovation projects have been implemented thoroughly, and the pilot projects of knowledge innovation have achieved significant progress.

Box 6-2 Rapid development of national hi-tech industrial development zones

The National Hi-Tech Industrial Development Zone (hereinafter referred to as "High-Tech Zone") is a significant initiative to promote the industrialization of high-tech findings. As of June 2011, China had built 88 High-Tech Zones. With their scaling-up, both the input for and output of R&D in High-Tech Zones have been on the rise, so has the industrialization of scientific and technological achievements. In 2010, the afore-mentioned input accounted for 23% of the national total; the number of effective patents of corporate inventions amounted to 69,168; the output value of new products reached 2559.72 billion yuan; and the total revenue was 10591.73 billion yuan.

Box 6-3 Key contents of China's National Innovation System

The national technological innovation project. Focusing on building a technological innovation system with enterprises as the mainstay, China continues to promote the construction of three supporting bases—strategic alliances for industrial technology innovation, service platforms for technology innovation as

well as innovative enterprises.

The knowledge innovation project. The Chinese Academy of Sciences has successfully implemented its three phases of the knowledge innovation project, which has significantly improved the innovation capacity and pushed China's academic influence in chemistry, materials science, mathematics, engineering and other disciplines to the world's forefront. In addition, China has been implementing the "985 Project" and "211 Project" in institutions of higher education, in a bid to adjust the layout of disciplines as well as improve the conditions for scientific research.

The regional innovation system. The building of engineering research centers (engineering laboratories) has been accelerated by the central and local governments collaboratively. A number of regional public service platforms for science and technology as well as innovation bases have been planned and constructed. China has successively launched the "Special Science and Technology Projects in the Western Regions", "Action Plan for Revitalizing the Northeastern Regions through Science and Technology", "Action Plan for Supporting Tianjin Binhai New Area through Science and Technology", "Three Gorges Innovative Project" as well as special action plans to make the counties prosperous through science and technology. National demonstration zones for independent innovation, such as Beijing Zhongguancun, Wuhan Donghu and Shanghai Zhangjiang, as well as national innovative cities, have made positive progress.

6.1.5 Contributions made by hi-tech to improving people's livelihood. In recent years, China has laid out a number of major technological R&D projects in the fields related to people's livelihood, e.g. medicine and health, disaster prevention and mitigation, comprehensive utilization of resources as well as ecological environmental protection. It has carried out a series of major scientific and technological actions relevant to people's livelihood, e.g. improving living environment, promoting energy- and land-saving and livable housing, advocating universal energy conservation and population health as well as accelerating the construction of new countryside, through which the capacity of servicing livelihood with science and technology has been strengthened markedly. Both in the mitigation of and reconstruction after devastating natural disasters such as the Wenchuan Earthquake, Yushu Earthquake and Zhouqu Debris Flow, and in the major national construction projects such as the Three Gorges Project and the Qinghai-Tibet Railway Project, science and technology has played an important supporting role.

Section 2

Enhancing the Capacity in Disaster Prevention and Mitigation

6.2.1 Background. With affecting disasters in various types, wide geographic distribution, high frequency and huge losses caused, China becomes one of the countries with the most serious natural

disasters in the world. The Chinese government constantly strengthens the bases for disaster prevention and mitigation and improves emergency management system against disasters, through which China's capacity in disaster prevention and mitigation has been substantially strengthened.

6.2.2 National disaster management system further strengthened. The integrated and coordinated system for disaster prevention and mitigation, under the unified leadership of the State Council, and integrated coordination by the State Flood Control and Drought Relief Headquarters and the National Committee for Disaster Reduction, is a mechanism, which has taken an initial shape, with a clear division of responsibility among relevant ministries and collaboration among the committees for disaster reduction at all levels.

6.2.3 Significantly enhancing the capacity for flood control, drought relief and disaster mitigation. China amended its "Flood Control Regulation" in 2005 and promulgated "the Drought Control Regulation" in 2009. Various emergency plan systems for flood control and drought relief at all levels have been gradually established. After years of construction, the main reaches of major rivers have basically attained the capacity to prevent the largest ever flood since 1949 and ensure the security of water supply in urban and rural areas during moderately dry years. In addition, the key seawalls built have reached the standard of resisting typhoons of once every 50 years and above. China has successfully resisted the severe basin floods occurred in the Huaihe River in 2003 and 2007 and in the Pearl River in 2005, as well as the severe droughts happened in Sichuan and Chongqing in 2006 and in the southwestern region in 2010. China has responded effectively to super typhoons; properly tackled the risks of 105 Tangjiashan barrier lakes induced by the Wenchuan earthquake, and successfully carried out rescue and relief missions after the Yushu earthquake and the Zhouqu debris flow.

Figure 6-2 Emergency water supply during severe drought periods in the Southwestern Regions

Figure 6-3 Large trucks clearing streets in Zhouqu County, Gansu Province

Box 6-4 Handling the Tangjiashan barrier lake scientifically

After the May 12 Wenchuan earthquake, there emerged 35 barrier lakes with big-enough sizes on several major rivers and tributaries including the Minjiang, Tuojiang, Fujiang and Jialing rivers, among which the Tangjiashan barrier lake was the most serious and difficult to deal with and attracted the most concern at home and abroad. The landslide mass was 612 meters long across the river and 803 meters long along the river, with the height varying from 82 to 124 meters. Its volume was 20.37 million cubic meters and the upstream catchment area was 3,550 square kilometers, which presented a serious threat to the cities, railways, oil pipelines as well as the over 1.3 million population in the downstream. After numerous consultations, rigorous analysis and full authentication, the feasibility of retrogressive erosion of the landslide mass was confirmed, and a follow-up plan was developed to eliminate risks by excavating discharge channels through the natural passes of the landslide mass and to evacuate people out of the risky region. As a result, "zero casualty" was achieved and the disposition was regarded as a miracle in dealing with large barrier lakes in the world.

6.2.4 Improving the monitoring, early warning and emergency response capacities against earthquake and disasters induced by it. China has preliminarily established a nationwide digital earthquake observation network and continental tectonic environment monitoring network, which have significantly improved China's real-time reporting and emergency response capacities to earthquake. China has extensively carried out seismic safety evaluation of major projects and detection of urban active faults, and thus the capacity of the whole society against earthquake has been greatly enhanced. In addition, China has established the Chinese International Rescue Team as well as 38 provincial earthquake emergency rescue teams, set up a collaborative and joint action mechanism for emergency rescue, and preliminarily built a number of emergency shelters and storehouses, thus substantially strengthening the emergency rescue capacity.

6.2.5 Strengthening prevention and control against geological disasters. China promulgated "the Regulations on the Prevention and Control of Geological Disasters" in 1993, and has successively enacted and implemented "the 11th Five-Year Plan (2006-2010) on the Prevention of Geological Disasters" and "the National Emergency Plans against Geological Disasters". In this context, China has basically established a nationwide mass detection and prevention network and information system against natural disasters, covering more than 100,000 potential geological disaster sites. Over the past decade, China has carried out over 1,000 management projects against landslides and debris flows and eliminated a number of serious potential threats to towns, villages and infrastructural facilities; As a result, 6,290 geological hazards have been successfully predicted, with the lives of 315,100 people saved and 4.1 billion yuan of direct economic losses reduced. On the basis of previous experience and lessons, China has developed a large number of codes for seismic resistance design, and a standard system for earthquake-proof technologies.

6.2.6 A system of meteorological disaster monitoring, early warning and prevention taking shape. China has initially established a nationwide specific government plan system against meteorological disasters, and has successively issued "the Regulations on Prevention of and Preparedness for Meteorological Disasters", "the National Plan for Prevention of and Preparedness for Meteorological Disasters", (2009-2020) and "the National Plans for Emergency Response to Meteorological Disasters". China has initially built up a comprehensive meteorological monitoring network combining all ground-, air- and space-based means, and established a monitoring, diagnosis and prediction system for the early-warning and short-time now-casting of disastrous weather, short-term forecast, and extreme weather and climate events. As a result, China's meteorological monitoring capacity has been significantly enhanced. In addition, China has basically set up a meteorological disaster early warning and information dissemination system, with an array of mass media means including television, radio, telephone, newspaper, the Internet, loudspeakers in rural areas and electronic display screens.

6.2.7 Gradually strengthening prevention and mitigation of marine disasters. Following the establishment of a new department— the Department of Marine Prediction and Disaster Mitigation under the State Oceanic Administration, the functions of disaster prediction and mitigation in China have been strengthened. China has formulated its "Overall Program on the Construction of Marine Observation Network", and scored periodical achievements in building the network of marine observation and data transmission, allowing for minute-level transmission of data acquired from observation stations. In addition, a nationwide long-distance video discussion system on marine early warning and forecasting has been built and put into operation, and an emergency response mechanism against marine disasters has gradually taken shape. Moreover, China has done much of the groundwork, such as the monitoring and impact study of sea-level changes, verification of warning tidal levels, risk assessment and zoning of national marine disasters as well as risk screening of large-scale coastal projects.

Section 3

Carrying out Pilot Demonstration Programs for Sustainable Development

6.3.1 Background. China began to build experimental zones for sustainable development in 1986. After 25 years of persistent promotion, the experimental zones, or the sustainable communities, have explored different paths for sustainable development with Chinese characteristics, providing useful references for different types of areas in their pursuit of sustainable development. As of 2010, China had built 104 experimental sustainable communities in 30 provinces, municipalities or autonomous regions.

6.3.2 Distinctive and new sustainable development models emerging. Based on their regional and industrial characteristics, the sustainable communities strive to reduce and eliminate unsustainable patterns of production and consumption and explore distinctive and new sustainable development models. In the field of industrial production, they attach importance to establishing clean industrial production systems and pursue a "re-resourced" circular economy. In the field of agricultural production, they focus on improving ecological environment and gradually form a circular chain within the agricultural system. In the field of social services, they pay special attention to reinforcing social service functions, constantly improving people's well-being and advocating a community of minimal emissions.

Box 6-5 Shougang's green transformation

Located in Shijingshan District of Beijing, China Shougang is a large steel enterprise with a history of over 90 years. As one of the world's top 500 companies, this large-scale iron and steel, giant once occupied a large proportion of the economic aggregate in Beijing. Along with the construction of a state-level sustainable community in Shijingshan District, Shougang took the lead in the restructuring of giant steel enterprises. In 2010, the Shougang's factory in Shijingshan District was shut down with over 60,000 workers properly reassigned work. During the year immediately after its relocation, the consumption of 3.264 million tons of coal, and the emissions of 15,461.9 tons of sulfur dioxide and 11,849.3 tons of nitrogen oxide were reduced. Meanwhile, Shougang successively restructured five steel enterprises in China's southwest, north, northwest and northeast, and shifted its industrial layout to the regions with rich resources and market potential. By 2010, all its new steel plants were built and equipped with the world's leading technologies and equipment. Moreover, the original factory site will be transformed into a new Shougang comprehensive high-end industrial service area, with its focus on the development of high-end metal materials, the manufacturing of high-end equipment, production services as well as cultural and creative industries.

A view before Shougang's relocation

A view after Shougang's relocation

Box 6-6 Wind-Solar hybrid power generation in Dafeng, Jiangsu Province

The state-level sustainable community in Dafeng, Jiangsu Province has explored a new and distinctive path for development—wind-solar hybrid power generation. Photovoltaic power plants are built by making use of the land between the turbines in a wind farm, to achieve the integrated utilization of land resources and maximize the effects per unit area. Moreover, in light of the complementary features of the two resources—wind resource is rich during the night but weak during the day, while solar resource is the opposite, the grid load is thus optimized and the grid protected. The following picture shows the largest wind-solar hybrid green energy base at Dafeng.

6.3.3 Marked role played by an innovative institutional mechanism. Guided by a management system and operational mechanism of "led by government, assisted by experts, sponsored by communities and participated by the public", sustainable communities are developed collaboratively. Government departments have played a key role in leading and organizing the construction of sustainable communities. The five-year development plans for such communities have been formulated and approved by the people's congress at the same level and become legally binding documents. Expert steering committees at national and provincial levels are composed of experts from various disciplines and fields, who provide technical assistance and guidance to local practices. The publicity and education activities carried out by the sustainable communities have fostered a favorable policy environment and various channels for public participation in activities of sustainable development, and mobilized the initiatives of schools, enterprises, associations as well as community residents to participate in the development of sustainable communities.

6.3.4 International cooperation and exchanges. Sound collaborative relations have been built between sustainable communities and international and regional organizations such as the United Nations Development Program, United Nations Human Settlements Program and the European Union, as well as governmental agencies and research institutions in the United States, Germany, Sweden and other countries. The sustainable communities have successively implemented dozens of international cooperation programs such as the Local Agenda 21 of the United Nations Development Program, the EU-China Environmental Management Cooperation Project and the UN-HABITAT's Sustainable Cities Program, providing training to more than 3,000 people domestically and nearly 100 officials from Vietnam and other neighboring countries, and sending about 600 management and technical personnel overseas for training. The sustainable communities have become important platforms in China for international cooperation and exchanges in the field of sustainable development.

Figure 6-4 Hailin, Heilongjiang Province, appointed by UN-HABITAT as a key experimental city for the Sustainable Cities Program

Section 4

Establishing a Sound Legal System

6.4.1 Background. A sound legal system in the field of resources and environment is a firm guarantee for the harmony between man and nature and for the coordinated development of economy, society, population, resources and environment. Through continuous efforts, China has improved its legal system in this field.

6.4.2 A legal system on resources and environment basically built. Since 2000, China has attached greater importance to laws and regulations to protect resources and environment and achieve sustainable development. Over the past decade, 28 laws regarding resources and environment have been approved by the Standing Committee of the National People's Congress, with such laws as "the Land Administration Law", "Forest Law" and "Water Law" amended. The State Council has enacted 39 administrative regulations in this field, and amended many regulations such as "the Administrative Regulations on the Prevention and Control of Pollution Damages to the Marine Environment by Coastal Engineering Construction Projects" and "the Regulations on the Safety and Protection of Radioisotopes and Radiation Devices". In addition, relevant agencies under the State Council as well as local people's congresses and governments have enacted a large number of departmental and local laws, regulations and rules in light of specific circumstances. Based on the Constitution and relevant laws, China has basically established a sound legal system on resources and environment, within which administrative laws and regulations are the mainstay, supplemented by local laws, regulations and rules.

6.4.3 Objectives of sustainable development ensured by law. Both the Chinese legislative body and government pay special attention to make sustainable development as the purpose and content of legislation in the processes of enacting new laws and regulations on resources and environment, or amending the existing ones. For instance, in "the Energy Conservation Law", "Law on the Prevention and Control of Water Pollution", "Circular Economy Promotion Law" and "Renewable Energy Law", the promotion of socio-economic sustainable development is set as their important legislative purpose.

Box 6-7 Marked improvement in supervision and law enforcement capacities

In 2001 and 2002, China carried out special actions on "Thorough Investigation of Environmental Violations to Curb on-the-rebound Pollution" for two consecutive years. Since 2003, China has continuously implemented the "action on regulating illegal industrial discharge to protect public health and the environment", investigated and handled a number of major cases and resolved a number of prominent environmental issues. At present, environmental law enforcement systems at the national, provincial, prefectural and county levels have been established, with 3,063 environmental monitoring agencies and a staff of 45,000.

Section 5

Encouraging Public Participation

6.5.1 Background. As a result of increasing publicity activities, the concept of sustainable development has reached deeper in the Chinese society, gaining wide recognition and public participation.

6.5.2 Publicity activities on sustainable development. From 2001, China started to launch educational campaigns on environmental hazard warning. A series of large-scale news interview activities, such as "Song of Life—a photograph exhibition for education on environmental hazard warning", "A centennial eco-tour to Western China" and "A tour on environmental protection along the route of South-to-North Water Diversion Project", have been organized to objectively reflect the harsh environment and ecological status quo and problems, and help enhance the sense of responsibility and urgency for environmental protection among the general public. Moreover, China has carried out activities of building "green schools", "green communities" and "green homes", with the participation of more than 40,000 schools. From 2006 to 2010, with the theme of "conserving energy resources, protecting ecological environment and ensuring safety and health", China put forward numerous popular science promotional activities in schools, communities, enterprises and governmental institutions. For instance, the number of such activities on the concept of sustainable development sponsored by the China Association for Science and Technology totaled 1.23 million with a wide public participation of over 900 million person-times; and since 2010, the National Aquatic Wildlife Conservation Association has launched nationwide campaigns of "Popular Science Publicizing Month" to advocate aquatic wildlife protection. During the Beijing Olympic Games, the Shanghai World Expo, the June 5 World Environment Day and other major events and hotspots, the Chinese government has strengthened publicity and significantly enhanced public awareness on sustainable development.

6.5.3 Establishing a public oversight mechanism. In 2001, the Chinese government launched the "12369" hotline for reporting and complaining about environmental pollution in 3,000 environmental protection departments at county level or above. Within half a year immediately after the operation of the hotline, 2,340 cases were reported, and 2,235 of them were settled; many environmental violations were investigated and punished according to law.

6.5.4 Universal participation in the course of sustainable development. Over the past decade, China's NGOs, communities, families, particularly women and youth, have been actively involved in the campaigns for sustainable development. The themes of the campaigns have shifted from early ones targeted at publicity and protection of particular species to those aimed at public oversight, safeguarding public environmental rights, and promoting sustainable development. The numbers of participating organizations and individuals have continued to grow, with an increasing scale.

Box 6-8 Universal participation in the course of sustainable development

The Friends of Nature, China's first non-governmental environmental group that was set up in 1994, has more than 8,000 individual members and around 30 corporate members. In 2002, the Global Village of Beijing formed a delegation of grassroots environmental organizations to attend the World Summit on Sustainable Development in Johannesburg, South Africa. The China Society on Sustainable Development and other civil societies have carried out extensive academic exchanges and popular science promotional activities on energy conservation, renewable energy development, and response to natural disasters.

The All-China Women's Federation and other relevant organizations have jointly launched a number of campaigns, e.g. "the role of women in water conservation", "a low-carbon family and modern lifestyle", and the "March 8 Green Project". Over the past decade, 306 national demonstration bases for the "March 8 Green Project" have been built, and nearly 120 million people have participated in the campaigns of afforestation. In addition, a great number of young people have joined in the action of "Protecting the Mother River", and planted more than 5 million mu (333,000 hectares) of "youth forest".

Since 2006, China has extensively launched campaigns for energy conservation, e.g, "Save Every Drop of Water and Value Each Unit of Electricity" and "Set Air Conditioners No Higher Than 26 Celsius Degrees." More and more people voluntarily join in energy conservation.

Chapter VII

International Cooperation

China has attached great importance to international cooperation, and has taken the initiative to promote bilateral and multilateral cooperation by deepening cooperation with concerned parties through multichannel, multilayered and diverse exchanges, It has fully honored its commitments in the field of sustainable development, complying with various international treaties that China has joined, while taking on responsibilities and obligations consistent with its own abilities, to enable China to contribute to sustainable development worldwide.

Section 1

Strengthening Cooperation with Developing Countries

7.1.1 Background. Due to historical and practical reasons, developing countries, with populations accounting for more than 80% of the world's total, are confronted with many difficulties, such as a serious lack of funds plus technology combined with weakened capacity, posing severe challenges toward achieving sustainable development. As one such developing country, China has carried out extensive and in-depth cooperation with other developing countries in terms of economic, technological, educational and cultural fields, and providing any possible assistance in accordance with the principles of equality, mutual benefit, emphasis on practical results, utilization of diversified forms, and the pursuit of common development.

7.1.2 Supporting other developing countries in poverty reduction through tariff and debt reductions and financial and technical assistance. Economic development and poverty eradication are the primary tasks facing most developing countries. China has continued to create conditions for other developing countries to export products to itself through a variety of ways including tariff reductions. As of the end of 2010, China had offered zero tariff treatment to more than 60% of the products from 38 least developed

countries, provided other developing countries with 287 billion yuan of financial assistance, and written off 30 billion yuan debt of 50 Heavily Indebted Poor Countries and Least Developed Countries. In recent years, to help other developing countries cope with the international financial crisis, China has provided some African countries with 10 billion U.S. dollars in preferential loans, and committed to providing 15 billion U.S. dollars in credit to the Least Developed Country members of ASEAN (Laos, Cambodia and Myanmar) to support their infrastructure construction projects. China has also signed "Memorandums of Understanding on Poverty Reduction Cooperation" with Mexico, Argentina, Venezuela, Colombia and other Latin American countries to jointly promote the eradication of poverty.

Box 7-1 The China Cooperation Center in Tanzania under the International Poverty Reduction Center in China

The China Cooperation Center in Tanzania under the International Poverty Reduction Center in China (hereinafter referred to as the Center) aims to meet the urgent needs of Tanzania for China's experience on large-scale poverty reduction and rural modernization transformation, and promote experience sharing on poverty reduction through policy advice, capacity building and community development projects. The Center came into being in 2010, planning to launch a community-based poverty alleviation project with Chinese characteristics—poverty alleviation through entire village advancement. This project mainly includes high-yield agricultural cultivation techniques, and capacity building for farmers and communities.

7.1.3 Promoting the development of social undertakings. By 2010, China had helped build more than 100 hospitals and medical service centers as well as a number of drinking water and sports facilities for other developing countries, dispatched to nearly 70 countries medical teams of more than 20,000 personnel, and cured hundreds of millions of patients. Moreover, the Chinese government has repeatedly provided disaster relief assistance to developing countries hit by natural disasters. For example, China donated meteorological data satellite receiving systems or equipment for disaster prevention and mitigation to over 70 developing countries, and increased technical assistance and service support on meteorological satellites and disaster monitoring to neighboring countries.

7.1.4 Helping develop human resources. The Chinese government, through various means, conducted personnel training programs for developing countries in more than 20 areas such as agriculture, health, education, economics and environmental protection. As of the end of 2010, a total of 130,000 management and technical personnel had been trained.

7.1.5 Carrying out cooperation in the field of energy and environment. The China-Brazil Center for Technological Innovation in Energy and Climate Change was set up; documents such as "the Memorandum of Understanding for Cooperation in Technology and Mechanism Concerning Africa's Environment", and "the Implementation Agreement of Environmental Cooperation Projects in Africa" were signed to promote cooperation among developing countries. In 2011, the operation of the China-ASEAN Environmental Protection Center symbolized a new step for environmental cooperation between China and ASEAN.

Section 2

Enhancing Cooperation with Developed Countries

7.2.1 Background. In terms of promoting global sustainable development, the "common but differentiated responsibilities" are shouldered by all countries. The Chinese government has formed a regular exchange and cooperation mechanism with developed countries in environmental protection, climate change, energy and resource conservation and sustainable use, disaster prevention and relief, so as to jointly promote global sustainable development.

7.2.2 Strengthening exchanges and cooperation in renewable energy and energy efficiency. China signed with the EU a "Memorandum of Understanding on China-EU Dialogue on Energy and Transport Strategies" in 2005; China and the UK signed a "Memorandum of Understanding on the Establishment of the Sino-British Energy Working Group" in 2006; China and the United States signed a "Memorandum of Cooperation on the Establishment of Sino-US Renewable Energy Partnership" in 2009; China and Japan signed a "Memorandum of Understanding on the Continuous Cooperation in Energy Saving and Environmental Protection" in 2008 and carried out fruitful cooperation in energy-saving professionals' training and demonstration projects on energy conservation and environmental protection. In addition, China has signed MOUs on buildings' energy efficiency, green building and low-carbon eco-cities with departments from the United States, Canada, the EU, Germany, the UK, France, Singapore and other countries, and launched a number of cooperation projects.

7.2.3 Improving cooperation in the field of environmental protection. In 2001, the leaderships of China and the EU agreed to establish a ministerial-level dialogue mechanism on China-EU environmental policies and so far the ministerial meetings have been held four times. In 2005, China and the UK signed a "joint declaration of high-level dialogue on sustainable development"; in 2006, the Environmental Protection Sub-Committee of Sino-Russian Premiers' Regular Meeting Committee was established, and it has been convened six times so far. In 2007, the Chinese and Japanese governments have signed a "Joint Statement on Further Strengthening Environmental Protection", and a "Joint Communique on the Promotion of Cooperation in Environment and Energy", facilitating their in-depth cooperation in policy management, technology exchange, and capacity building related to environmental protection. In 2008, China and the United States held the fourth Strategic Economic Dialogue, signed a "Ten-Year Framework for Cooperation on Energy and Environment" . Over these years, China has also made full use of the platform of the China Council for International Cooperation on Environment and Development to study the major issues of environment and development, and to share and spread the successful international experience.

7.2.4 Strengthening cooperation in the field of disaster reduction and relief. After the SARS outbreak in 2003 and the 2008 Wenchuan earthquake, the governments of the United States and Germany, among others, provided China with a great amount of material, financial and technical assistance. In 2009, China and the EU reached cooperation intention agreements on emergency management co-operation projects and in 2010, signed the Financing Agreement, marking the launch of the EU-China Disaster Risk Management project. In 2009, China and Germany signed the Sino-German Agreement on the Project of Disaster Protection, Emergency Planning and Crisis Management and carried out cooperation in the field of disaster relief and personnel training. Switzerland has invested a total of 1 million Swiss francs between 2003 and 2009 to aid China in capacity building of rescue teams.

Section 3

Giving Full Play to the Role of International Cooperation Platform

7.3.1 Background. As the largest developing country, China has actively joined in activities of various international organizations and institutions, strengthened multilateral international exchanges and cooperation, participated in sustainable development policy-making, promoted the concept of sustainable development, engaged in cooperation projects, used the funds and technologies of international organizations and institutions for domestic economic and social sustainable development, and helped improve the sustainable development capacities of other developing countries.

7.3.2 Engaging in sustainable development activities of UN-led international institutions. Chinese leaders have attended major international conferences and worked with their counterparts in discussing and developing international strategies and policies, and promoting sustainable development. China has also participated in the deliberation of sustainable development issues at the UN General Assembly, and proposed nearly 50 resolutions on sustainable development issues along with the Group of 77. Moreover, China has been actively involved in the work of the United Nations Commission on Sustainable Development, conducted a careful review of progress in sustainable development issues with other member states, and made recommendations for the smooth implementation of the decisions made at the sustainable development summits.

7.3.3 Completing a number of demonstration projects. Over the past decade, China has made full use of the loans from the World Bank, the Asian Development Bank, the European Investment Bank, the International Fund for Agricultural Development and other financial organizations to build a large number of demonstration projects covering the fields of agriculture, forestry, soil and water, energy, environment, urban construction, disaster prevention and mitigation, providing a strong impetus for sustainable development. From 2001 to 2010, the Global Environment Facility (GEF) approved a total of 77 projects in China and promised 565 million U.S. dollars in grants to improve the ability of China to comply with international environmental conventions. In addition, the Chinese government has also

cooperated with the United Nations Development Program, the Food and Agriculture Organization and the Nature Conservation Foundation and was granted the funding of more than 20 million U.S. dollars.

7.3.4 Deepening scientific and technological cooperation. Since 2006, China has launched a series of science and technology plans, including the International Traditional Chinese Medicine Program for Cooperation in Science and Technology, the International Renewable Energy and New Energy Program for Cooperation in Science and Technology, the Human Genome Project, the Third Pole Environment Plan and the International Space Weather Meridian Circle Program. The Chinese scientific community actively participated in the International Human Dimensions Program on Global Environmental Change under the Earth System Science Partnership, the World Climate Research Program, and the assessment activities of the Intergovernmental Panel on Climate Change. In addition, China has participated in more than 350 international scientific and technological organizations, in which more than 200 Chinese scientists are working, playing an important role in international scientific and technological development.

7.3.5 Working with international organizations to help developing countries to achieve sustainable development. The Chinese government and the World Bank jointly held the Shanghai Poverty Conference—Scaling up Poverty Reduction and the Experience-sharing Program on Development between China and Africa, deepening the understanding of the international community on global poverty concepts and practices, and promoting the exchanges of experience between China and other developing countries, particularly with African countries on poverty reduction and development. China also donated 30 million U.S. dollars to the UN Food and Agriculture Organization (FAO) to set up a special trust fund, focusing on the South-South cooperation projects under the framework of the Special Program for Food Security under the auspices of the FAO by providing agricultural technical assistance to developing countries in order to help them increase food security. Furthermore, the Chinese government, together with the United Nations Environment Program, set up the China-Africa Environmental Center of the United Nations Environment Program in the Republic of the Congo (Brazzaville) in a bid to improve the environmental protection capabilities of African countries. In addition, China cooperated with Asia Development Bank (ADB) to successfully hold the high-level seminar on PRC-ADB platform for knowledge sharing and conducted South-South knowledge cooperation and facilitated the sharing of best practices within the Asia-Pacific region. China also worked with the International Fund for Agricultural Development to launch a seminar for South-South cooperation, introduced Chinese experience in rural development and poverty alleviation and development and shared with other developing countries its theories and practices in rural poverty alleviation and development. In the Light up Africa project, jointly initiated by United Nations Industrial Development Organization (UNIDO) and the International Center on Small Hydropower, the Chinese government has sent experts to Africa to carry out such work as consulting, training, rural electricity planning. In addition, together with the UNIDO, China successfully held the industrial energy conservation seminar for developing countries, through which China's achievements in industrial energy saving were introduced, injecting new vigor into the South-South cooperation and regional economic cooperation.

Figure 7-1 Comprehensive agricultural development and poverty reduction seminar held in Nanning, China, in 2010

Figure 7-2 Field trips by attendees at the 2010 comprehensive agricultural development and poverty reduction seminar

7.3.6 Actively holding international conferences to promote the sustainable development process. In recent years, China has hosted many conferences, including the Global Poverty Conference, the United Nations Climate Conference, the International Soil Conservation Organization Conference, the International Conference on Sustainable Irrigation and Drainage, the World Water Congress, the World Lake Conference, the Intergovernmental Review Meeting for the Protection of the Marine Environment from Land-based Activities, the Fourth World Urban Forum, This is a positive contribution by China to the realization of the United Nations Millennium Development Goals on poverty reduction, water and health. As the host of the International Network for Bamboo and Rattan, the Chinese government has actively organized a series of international conferences and implemented a number of projects to help developing member countries develop and use bamboo and rattan resources and eradicate poverty. In addition, China and the United Nations International Strategy for Disaster Reduction have set up an International Center for Drought Risk Reduction and an Asia-Pacific Network for Sustainable Forest Management and Rehabilitation and organized meetings to promote disaster reduction. In 2010, China successfully held the World Expo in Shanghai, and the Shanghai World Expo Executive Committee in cooperation with the United Nations and the International Exhibitions Bureau compiled "Shanghai Manual—A Guide for Sustainable Urban Development in the 21st Century", providing cases and policy guidance to sustainable development of cities in developing countries. In 2011, co-sponsored by the China government and the United Nations Office for the Coordination of Humanitarian Affairs, the Humanitarian Partnership Workshop for the Asia-Pacific Region was held in Shanghai. The workshop was a success because it promoted the exchanges of experience between China and other countries and international organizations in the area of disaster management and also helped enhance the capacity of China in disaster reduction and management.

Section 4

Fulfilling International Conventions on Environment and Development

7.4.1 Background. To combine all efforts to address various global environmental issues, the international community has established a system of international environmental treaties with extensive coverage. Among the system, "the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa", "the Convention on Biological Diversity", and "the United Nations Framework Convention on Climate Change" are the three conventions with the epoch-making significance promoted by the 1992 United Nations Conference on Environment and Development. China has earnestly fulfilled its obligations specified in the conventions, continued to strengthen the performance and capacity building of the institutions concerned, and actively engaged in international cooperation.

7.4.2 Facilitating the implementation of the United Nations Convention to Combat Desertification. China has formulated and implemented a national compliance action program to promote the establishment of a Committee for the Review of the Implementation of the Convention, actively participated in the formation of the convention's ten-year strategy and the global demonstration of the implementation and impact indicators. China has also organized over 20 seminars and training courses for Asian and African countries to share the experience of China's desertification control. Moreover, China has implemented "the National Plan for Sand Prevention", and set up a multi-financing investment mechanism led by the central government and joined by local governments, enterprises and non-governmental organizations to intensify desertification control and improve technical support for desertification prevention and control, and the monitoring and early warning capability of desertification.

7.4.3 Enhancing compliance capabilities of the Convention on Biological Diversity. The Chinese government has issued a series of laws and administrative regulations related to biodiversity conservation, and compiled and implemented relevant plans and programs. China has also set up a coordination group of the Convention of Biological Diversity and a joint meeting mechanism of the authorities in the biological species resources protection, established an exchange mechanism of biological diversity and bio-safety information and basically formed a national coordinating mechanism for the conservation of biological diversity and compliance of the Convention. Similar institutions and coordinating mechanisms have also been set up by relevant departments and provincial governments. In addition, China and relevant international organizations and NGOs have carried out a series of cooperation projects in terms of the biodiversity conservation policy and technical exchanges.

Box 7-2 Achievements in the promotion of the 2010 International Year of Biodiversity

In 2010, China set up a National Committee of 2010 International Year of Biodiversity, chaired by Vice Premier Li Keqiang, to promote the protection of biodiversity and biological species resources, and carried out related promotional activities, which significantly improved the awareness of biodiversity conservation. To be specific, central departments carried out 40 large-scale promotional activities of various types, mobilized nearly 200 types of institutions and NGOs, issued 370,000 pieces of various publicity materials and affected 804 million people through various media campaigns. Local departments hosted 191 large-scale publicity activities, distributed more than 350,000 copies of promotional materials, produced 25 films on biodiversity protection, held 17 seminars and symposiums, published a monograph on biodiversity protection and reached 14 million people in terms of publicity coverage.

7.4.4 Implementing the convention on climate change. China attaches great importance to the issue of climate change, adheres to the principles of fairness and "common but differentiated responsibilities", complies with "the United Nations Framework Convention on Climate Change" and "the Kyoto Protocol", by making efforts to control greenhouse gas emissions and improving the ability to adapt to climate change and participating in international efforts to address climate change, thus making important contributions to the establishment of a fair and reasonable international regime on tackling climate change and its negotiation process. Moreover, China has actively expanded international cooperation in the field of climate change, and in collaboration with international organizations such as the United Nations Development Program, United Nations Environment Program, World Bank, conducted a series of projects concerning the science of climate change, mitigation and adaptation, policies and measures to tackle climate change, established dialogue and exchange mechanisms with many countries, and signed cooperation agreements to strengthen the response to climate change. The Chinese government also continues to strengthen cooperation with other developing countries and improves their ability to respond to climate change through such means as technical assistance, personnel training and capacity building. Also, according to "the Kyoto Protocol" and relevant decisions of the Conference of the Parties, China has carried out cooperation in clean development mechanism projects, promulgating, implementing and revising "the Operation and Management Methods of Clean Development Mechanism Projects". As of the end of 2010, China had ratified 3,241 clean development mechanism projects, of which 1,718 projects successfully registered with the United Nations Clean Development Mechanism Executive Board. For the registered projects, the certified emission reductions are expected to be about 351 million tons of carbon dioxide equivalence, accounting for 63.78% of the global total, which is a tremendous contribution to global greenhouse gas emissions reduction.

7.4.5 Carrying out "the Convention on Wetlands of International Importance Especially as Waterfowl Habitat" and "the Convention on International Trade in Endangered Species of Wild Fauna and Flora". China has been improving its legislative system by establishing and improving a national protection system of wetlands and endangered species of wild fauna and flora. "The Regulation for the Management of Import and Export of Endangered Species of Wild Fauna and Flora" was

enacted in 2006, enabling China to change from a Class II country to a Class I country. China has also strengthened inter-departmental coordination and regulation of wetlands of international importance; set up a national compliance committee of the wetland convention and issued "the Communique on Ecological Conditions of China's Wetlands of International Importance"; conscientiously fulfilled the responsibilities as a convention's standing committee member, and participated in the Conference of the Parties and other related activities; and made significant progress in cooperation projects with the United States, Australia, Germany and other government departments, as well as the World Wide Fund for Nature, Wetlands International, Conservation International and other international organizations. In addition, China has been very active in bilateral and multilateral cooperation and exchange, and has conducted trade investigations, law enforcement training, education and promotion in relation to endangered species.

7.4.6 Promoting the implementation of the Basel Convention. China has strictly implemented the provisions of "the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal", promoted the domestic solid waste management and made positive progress in this regard. Moreover, China issued "the Management Method for the Approval of Export of Hazardous Waste", and realized the Basel Convention's requirement on domestic legislation of the prior informed consent system as well as the monitoring on the whole process of hazardous waste export; strengthened international cooperation and information sharing, and conducted joint law enforcement actions, which dealt a heavy blow to the illegal transboundary movements of hazardous wastes; improved the domestic capacity-building for harmless treatment of hazardous wastes, and encouraged the hazardous waste to be under the nearest disposal and controlled transboundary movements.

7.4.7 Complying with international conventions on the environmentally sound management of chemicals. China has signed "the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade" (hereinafter referred to as "the Rotterdam Convention") and "the Stockholm Convention on Persistent Organic Pollutants" (hereinafter referred to as "the Stockholm Convention"). Since the signing of "the Rotterdam Convention", China has submitted the information on the national authorities to the Convention Secretariat in a timely manner; compiled the Import Decisions concerning the chemicals and pesticide imports provided for in Annex III and submitted the Import Decisions to the Convention Secretariat; and registered imports and exports of the chemicals covered in the Rotterdam Convention and implemented the prior informed consent procedure. Since the signing of "the Stockholm Convention", China has made remarkable achievements in establishing a compliance mechanism, conducting a basic information survey, improving policies, strengthening regulation, carrying out promotional activities, and displaying technologies for reduction and elimination of persistent organic pollutants.

7.4.8 Complying with the international convention on the protection of the atmosphere. China has achieved remarkable results since acceding to "the Montreal Protocol on Substances that Deplete the Ozone Layer". As of 2010, China had reduced the production of approximately 100,000 tons of ozone-depleting substances and the consumption of such substances by 110,000 tons; eliminated the use of chlorofluorocarbons and halon two and a half years before the deadline set by the Convention. China banned the production and use of carbon tetrachloride, methyl chloroform in 2009 to honor

its commitment made to the international community. China has actively and fully engaged in the negotiation process of the global instrument on mercury, and participated in global mercury partnership. Moreover, China has conducted the domestic pilot projects on atmospheric mercury emissions from coal-fired power plants so as to promote the synergistic control of mercury pollution.

Chapter VIII

China's Principled Stance on the United Nations Conference on Sustainable Development

The 2012 United Nations Conference on Sustainable Development shall send a positive, clear and powerful message to reinvigorate international cooperation, calling on countries to support each other, to make concerted efforts and conduct sincere cooperation, so as to integrate economic development, social progress and environmental protection, adopting effective measures to solve the difficulties and problems faced by developing countries, while strengthening the pillar development role of the United Nations, thereby injecting new vitality into global sustainable development.

Section 1

Concerning Objectives and Themes

8.1.1 The Conference reaffirming the existing political commitments and formulating concrete action plans. The Conference should promote stronger political will, and call on countries to fully implement the consensus reached at United Nations Conference on Environment and Development in Rio de Janeiro in 1992 and the World Summit on Sustainable Development in Johannesburg in 2002, so as to take an action-oriented and pragmatic attitude to speed up the achievement of the goals. In accordance with the established goals and in view of the new and emerging problems and challenges facing the world, efforts should be made to comprehensively assess the progress of the international community in sustainable development, define the gaps and deficiencies, especially the practical difficulties and new challenges faced by developing countries. The Conference should develop a clear and specific

implementation plan, covering specific approaches that developed countries should take concerning financial support, technology transfer and capacity building, so as to promote the global sustainable development process and ensure that international cooperation can achieve positive results.

8.1.2 Green economy being an important means to achieve sustainable development. The development of a green economy is conducive to eliminating poverty and economic restructuring, but it also brings risks and challenges. Developing a green economy is a difficult, complex and long-term process, which is extremely difficult for developing countries, due to their limitations on capital, technologies and capacity. The international community should strengthen cooperation, draw on advantages while avoiding disadvantages, and properly resolve the concerns of developing countries. Developed countries should take the lead in changing unsustainable patterns of production, living and consumption, and embark on the path of green development, so as to set an example for developing countries. Moreover, they should also help developing countries develop a green economy, including fund supplies, technology transfer, capacity building and market access expansion. Developing countries should develop and implement green economic development strategies in line with their national conditions.

8.1.3 Developing a green economy conducive to eliminating poverty and promoting social development. Poverty undermines the most basic right to survival and development of the people in developing countries. Eradication of poverty is the primary consideration for the development of green economy in developing countries, and should become an important yardstick in the formulation and implementation of green economic policies. At the same time, in the process of developing green economy, countries should develop an overall job growth plan, supported by effective social protection measures, so as to ensure everyone has decent work and stable source of income, and guarantee that the basic living and sustainable development needs of the ordinary people, especially the vulnerable populations, can be satisfied. The international community should help developing countries develop education programs and vocational training, supply necessary funding and technologies, reduce and compensate the social costs that developing countries shoulder in their transition to a green economy.

8.1.4 Opposition to green barriers required for developing a green economy. The international community should provide a favorable external environment for developing countries and oppose various forms of trade protectionism or additional conditions for foreign aid on the pretext of developing a green economy. Many developing countries are at a stage of rapid industrialization and urbanization, during which they are faced with both the arduous tasks of poverty eradication, economic restructuring and the transition to a green economy, and with the constraints of energy, resources and environmental factors. Developing a green economy in these countries is crucial to the global sustainable development, and they deserve the understanding and support from the international community.

8.1.5 Promoting an effective institutional framework for sustainable development. An effective institutional framework for sustainable development is an important condition for the full implementation of "Agenda 21" and "the Plan of Implementation of the World Summit on Sustainable Development"

and the response to new and emerging challenges. Such institutional framework should help coordinate economic development, social development and environmental protection, increase the voice and decision-making power of developing countries and solve their practical difficulties concerning capital, technology and capacity building.

8.1.6 Giving full play to the UN role and its relevant agencies. It is necessary to give full play to the core leadership role of the United Nations, strengthen its policy guidance and coordination functions, so that it can coordinate and guide various agencies of the international community, multilateral institutions and treaty mechanisms to take consistent actions for sustainable development. The existing role of its specialized agencies should be strengthened. The role of the United Nations Economic and Social Council, the Commission on Sustainable Development and other specialized agencies of the United Nations in the field of sustainable development should be strengthened so as to enhance the functions of the United Nations in this field and promote the implementation of Agenda 21 and the Plan of Implementation of the World Summit on Sustainable Development. The important role of United Nations Environment Program should be given full play in global environmental governance and more capital and technical support shall be rendered to it. As for the new functions and tasks of United Nations Environment Program, the attending parties should reach a consensus following thorough discussions.

8.1.7 Strengthening the governance capacity at other levels. As for the governance at the regional, national and local levels, "Agenda 21" should be used as the basic framework to strengthen such governance, encourage all states to develop their comprehensive strategies to strengthen the coordination of various government departments, and mobilize public participation and improve the implementation capacity. International financial institutions, the World Trade Organization and the multilateral development banks should incorporate the agenda on sustainable development into their planning and projects, and coordinate and cooperate with relevant UN bodies to form synergies and support the sustainable development governance at the regional, national and local levels.

Section 2

Concerning Key Areas

8.2.1 Capital and technology transfer. Developing countries, which account for the world's majority, are constrained by their levels of economic development, and therefore face more pronounced difficulties in promoting sustainable development. The international community should take full account of the differences between developing countries and developed countries in terms of development stages and basic needs, establish and implement long-term, effective funding and technology transfer mechanisms, and integrate the development of developing countries and the improvement of their intrinsic driving

force for development with their sustainable development capacity.

8.2.2 Poverty elimination. Backwardness and poverty are still the biggest obstacles in the way of developing countries to achieve sustainable development. The international community should fully understand the seriousness of this problem, strengthen cooperation and take actions to alleviate and eventually eliminate poverty. Developing countries bear the primary responsibility for their own poverty reduction. It is necessary to accelerate the transformation of the economic development pattern, adjust the economic structure and layout, strengthen the economic competitiveness, and implement development strategies and policies in favor of poor areas and the impoverished population. Developed countries should honor their official development assistance (ODA) commitments and look beyond the short-term commercial interests to reduce the technological monopoly. International organizations should develop a fair assessment framework to comprehensively assess the progress made by countries in reducing poverty and coping with challenges, and carefully evaluate the implementation of the ODA commitments and contributions to poverty reduction.

8.2.3 Rural and agricultural development. Rural and agricultural development concerns the survival and development of mankind. The livelihoods of half of the world labor force and the protection and utilization of the land, freshwater and marine ecological systems have extensive and far-reaching social, economic and environmental impacts. The international community should take concrete actions to support the efforts of developing countries and help them increase investment in agriculture, adopt new agricultural technologies, improve rural infrastructure and increase agricultural productivity, so as to promote sustainable rural and agricultural development and improve food security.

8.2.4 Urbanization. Sustainable urban development plays a very important role in achieving sustainable development in each country and the world as a whole. At present, the world's urbanization rate is about 50% and there will be large numbers of rural population moving into the cities. This mainly happens in developing countries. Developed countries should draw on their own experience of urbanization, and provide financial and technical support for developing countries, helping them achieve sustainable urbanization. In the process of urbanization, developing countries shall attach great importance to energy and resource conservation and environmental protection, highlight the role of national planning in guidance and restraint, take into full account their own historical and cultural backgrounds and energy resources, in order to find a suitable path for sustainable urban development. As a country currently in a stage of rapid urbanization, China will further cooperate with the international community to integrate the urban and rural development, improve urban planning, construction management and service levels, strengthen the housing guarantee, energy efficiency for buildings and green building development, traffic management, urban and rural greening, and historical and cultural protection, develop low-carbon eco-cities and improve the living environment.

8.2.5 Energy. There are about two billion people in the world who do not have access to modern energy supply, which not only affects people's lives, but also restricts economic development and social progress. In this regard, providing them with basic energy service should become the primary goal

of sustainable energy development. We should strengthen the energy infrastructure and improve the universal energy access capacity. Efforts should also be made to strengthen technical cooperation in the use of alternative energy sources and the increase of energy efficiency, in a bid to jointly promote the sustainable use of energy resources and ensure energy security. Every country has the right to the rational use of energy resources to promote their development. Appropriate energy development paths should be selected based on national conditions and resource endowments, and countries should optimize their energy structures, develop hydropower, and wind, solar and biomass energies based on local conditions and achieve diversified energy development. It is also important to develop measures to improve energy efficiency according to the needs and possibilities, and rely on scientific and technological innovation to reduce energy waste. China will, grounded on its domestic energy resources, accelerate energy development, while paying attention to the sustainable use of energy and making efforts to guarantee the basic supply of energy, thus becoming a positive force in safeguarding world energy security.

8.2.6 Water. Sustainable use of water resources is closely related to the safety of drinking water, flood control, and food, ecological and economic security. Ensuring economic and social sustainable development through the sustainable use of water resources is a common challenge and urgent task facing the world. All countries should, based on their national conditions, develop and implement appropriate water resources development strategies and policies. Developed countries and other countries with the ability to help should strengthen their support to developing countries and improve their capacities to cope with flood and drought disasters and achieve sustainable hydrological development. The Chinese government strives to ensure the sustainable development of water and implement the most stringent water management system, so as to achieve the rational development, efficient use, comprehensive management, optimal allocation, comprehensive conservation, protection and scientific management of water resources. Moreover, China is willing to strengthen exchanges and cooperation with other countries, share outcomes and experience and promote the sustainable use of water resources.

8.2.7 Oceans. The United Nations should encourage member countries to develop and implement sustainable marine development strategies in line with their national conditions, take joint actions to ensure the fair, sustainable use of marine resources and maintain or restore the structure and functions of marine ecosystems. The international community should support developing countries to promote marine economy, conduct close cooperation in the construction of marine ecosystems, marine environmental protection, responses to sea level rise and ocean disaster prevention and reduction, with an aim of improving the capacity of developing countries in the sustainable use of marine resources. China is willing to conduct extensive exchanges and cooperation with other countries, further promote rational development and utilization of marine resources, strengthen protection and utilization of islands, integrate marine environmental protection and pollution prevention of land-based sources, and beef up protection and restoration of marine ecosystems, improve the technology innovation capability for the sustainable use of marine resources, and to enhance the capacity for marine disaster prevention and reduction.

8.2.8 Climate change. The issue of climate change derives from the process of development and can only be resolved through sustainable development. It is necessary to adhere to the basic framework of

"the United Nations Framework Convention on Climate Change" and "the Kyoto Protocol", follow the principles of fairness and "common but differentiated responsibilities". Developed countries should take the responsibility for their historical emissions and current high per capita emissions and make a change to their unsustainable lifestyles and consumption patterns. They shall take the lead in substantially reducing greenhouse gas emissions, ensure a proper space for development for developing countries, and at the same time, provide funds and transfer technology to the developing countries. In the process of economic development and poverty reduction, with the support of developed countries, and according to their national circumstances and sustainable development requirements, developing countries should take active measures and actions for climate change mitigation and adaptation, which are the two integral parts for addressing climate change and should be given equal attention. It is necessary to coordinate and make headway in mitigation, adaptation, capital, technology and other issues. China will continue to play a positive and constructive role in international negotiations on climate change, and strengthen multi-level consultations and dialogues with other countries, encourage all parties to enhance mutual understanding, build consensus, so as to make contributions to the establishment of a fair and reasonable international regime to address climate change.

8.2.9 Disaster prevention and mitigation. Disaster prevention and mitigation is a common challenge for each nation to achieve sustainable development and is the responsibility and obligation that the world should take on. All countries should carry out international cooperation and exchanges, participate in relevant scientific and technological research projects of international organizations, initiate and participate in global, regional disaster prevention cooperation programs. Efforts should also be made to promote the sharing of scientific and technological resources in this regard, improve bilateral and multilateral scientific and technological collaborative mechanisms, enhance the overall levels of national disaster prevention, so as to create synergy in disaster prevention and mitigation worldwide. Developed countries should support developing countries in strengthening disaster response and disaster risk management, as well as disaster monitoring, prediction and warning.

8.2.10 Biological diversity. Biological diversity conservation is a common responsibility of mankind, and developed countries should support developing countries in biodiversity conservation. China will implement "the Convention on Biological Diversity", take measures to protect biodiversity in the economic and social development, promote the R&D of sustainable development technologies of biological resources to realize the scientific and rational use of biological resources, and promote the access to and benefit-sharing of biological genetic resources and associated traditional knowledge.

8.2.11 Desertification. Combating desertification and achieving sustainable land management are effective measures to ensure food security, rural poverty reduction, and maintenance of ecosystem services. The international community should fully understand the importance of combating desertification in sustainable development and strengthen its political commitment. Relevant UN agencies should strengthen coordination and cooperation, make full use of their institutional strengths to support the implementation of the United Nations Convention to Combat Desertification. Developed countries should strengthen their financial and technical support to the affected developing countries for the implementation of the convention, help developing countries improve the quantitative performance

monitoring and evaluation system for the implementation of the convention and the national reporting capacity. Governments shall incorporate the control of desertification into national economic and social development plans and strategies, so as to provide funds and policy support for desertification control. Moreover, China calls for setting goals of global desertification control, establishing a powerful technological support mechanism, strengthening fund-raising, ensuring compliance through effective use of regional coordination mechanisms and promoting experience-sharing and technical exchanges.

8.2.12 Forests. Each country has the absolute sovereignty of its own forest resources, and should consider the ecological, economic and social benefits of forests in the use of forest resources, with an aim of ensuring the sustainable use of forest resources. Forestry is becoming a leading factor in developing a green economy, promoting green growth and achieving sustainable development. On the basis of the basic principles established by the United Nations Conference on Environment and Development, the international community should promote the intergovernmental consultation process on forest issues, and the launch of international forest instruments to strengthen global forest resources and ecological management systems. China is willing to participate in the bilateral, multilateral and intergovernmental consultations on international forest issues, in a bid to make due contributions to the realization of sustainable development of the world's forests.

8.2.13 Wetlands. The international community should be fully aware of the important role that wetlands can play in ecological, water and food security, poverty reduction, disaster prevention and mitigation, and sustainable economic and social development. It should also strengthen international cooperation to support developing countries to carry out wetland conservation. China will implement "the Convention on Wetlands", and increase efforts to protect natural wetlands, restore degraded wetlands and maintain the health and safety of the wetland ecosystem.

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