

The Information Office of China's [State Council](#) on Wednesday issued a white paper titled "China's Policies and Actions for Addressing Climate Change". Following is the full text of the document:

## **China's Policies and Actions for Addressing Climate Change**

Information Office of the State Council of the People's Republic of China

October 2008, Beijing

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### **Foreword**

Global climate change and its adverse effects are a common concern of mankind. Ever since the industrial revolution, human activities, especially the massive consumption of energy and resources by developed countries in the process of industrialization, have increased the atmospheric concentrations of greenhouse gases, produced conspicuous impacts on the natural ecosystems of the Earth, and posed severe challenges to the survival and development of human society.

As a developing country with a large population, a relatively low level of economic development, a complex climate and a fragile co-environment, China is vulnerable to the adverse effects of climate change, which has brought substantial threats to the natural ecosystems as well as the economic and social development of the country. These threats are particularly pressing in the fields of agriculture and livestock breeding, forestry, natural ecosystems and water resources, and in coastal and eco-fragile zones. Therefore, China's priority task at present is to adapt itself to climate

change. The multiple pressures of developing the economy, eliminating poverty and mitigating the emissions of greenhouse gases constitute difficulties for China in its efforts to cope with climate change, since the country is undergoing rapid economic development.

A responsible developing country, China sets great store by climate change issues. Fully aware of the importance and urgency of addressing climate change, following the requirements of the Scientific Outlook on Development, and taking into overall consideration of both economic development and ecological construction, domestic situation and international situation, and present and future, China has formulated and implemented a national plan for coping with climate change, and adopted a series of policies and measures in this regard. China combines the handling of climate change with its execution of its sustainable development strategy, acceleration of building a resource-conserving and environmental-friendly society and construction of a country of innovation. Taking economic development as the core objective, and placing emphasis on energy conservation, optimization of the energy mix, reinforcement of ecological protection and construction, and scientific and technological progress as backup, China strives to control and mitigate the emission of greenhouse gases and continuously enhance the capability of adapting itself to climate change.

China actively participates in worldwide efforts to address climate change, earnestly observes the United Nations Framework Convention on Climate Change (hereinafter referred to as the UNFCCC) and the Kyoto Protocol, and plays a constructive role in international cooperation in this regard.

## **I. Climate Change and China's Situation**

The latest scientific research findings show that the average temperature of the Earth's surface has increased by 0.74 degree Celsius over the past century, from 1906 to 2005, and is expected to further rise by 1.1 to 6.4 degrees Celsius by the end of the 21st century. The rise of global average temperatures since the mid-20th century is mainly caused by the increasing atmospheric concentrations of greenhouse gases, chiefly consisting of carbon dioxide, methane and nitrous oxide, emitted as a result of human activities, such as the burning of fossil fuels and changes of land use.

China's temperature rise has basically kept pace with global warming. The latest information released by the [China Meteorological Administration](#) shows that the average temperature of the Earth's surface in China has risen by 1.1 degrees Celsius over the past century, from 1908 to 2007, and that China experienced 21 warm winters from 1986 to 2007, the latter being the warmest year since the beginning of systematic meteorological observations in 1951. The national distribution of precipitation in the past half century has undergone marked changes, with increases in western and southern China and decreases in most parts of northern and northeastern China. Extreme climate phenomena, such as high temperatures, heavy precipitation and severe droughts, have increased in frequency and intensity. The number of heat waves in summer has grown, and droughts have grown worse in some areas, especially northern China; heavy precipitation has increased in southern China; and the occurrence of snow disasters has risen in western China. In China's coastal zones, the sea surface temperature and sea level have risen by 0.9 degree Celsius and 90 mm, respectively, over the past 30 years.

Scientific research predicts that climate warming trend in China will further intensify; frequency of extreme climate events is likely to wax; uneven distribution of precipitation will be more visible than before and the occurrence of heavy precipitation will increase; drought will expand in scope; and the sea level will rise faster than ever.

The basic conditions of China present the country with great challenges in addressing issues regarding climate change.

A complex climate and a fragile eco-environment determine that China's task of adapting itself to climate change is arduous. China is characterized by a continental monsoon climate, and most parts of China have a wider range of seasonal temperature change compared with other continental areas at the same latitude. Many places in China are cold in winter and hot in summer, and high temperatures generally prevail in the country at large in summer. Precipitation is unevenly distributed in time and space, concentrating in the flood season, and annual precipitation decreases from the southeast coast to the northwest interior. China has a fragile eco-environment, with serious soil erosion and desertification and a forest coverage rate of 18.21 percent, only 62 percent of the world's average. The area of natural wetlands is comparatively small; most grasslands are highly frigid meadows and desert steppes; temperate grasslands in northern China are in danger of degeneration and desertification due to the impacts of drought and deterioration of the eco-environment. With a coastline over 18,000 km long, China is vulnerable to the adverse effects of sea level rises.

A large population and a relatively low level of economy determine that China's development task is a formidable one. The population of the mainland of China reached 1.321 billion at the end of 2007, accounting for 20 percent of the world's total. China has a comparatively low level of urbanization, with an urbanization rate of 44.9 percent in 2007, lower than the world's average. The large population also brings huge employment pressure. New urban labor force entrants of 10 million and above need jobs every year; as the urbanization process moves forward, tens of millions of rural laborers transfer to the urban areas every year. Statistics from the International Monetary Fund show that the per-capita GDP (gross domestic product) of China in 2007 was 2,461 U.S. dollars, ranking 106th, a low-to-middle place, among 181 countries and regions. China is characterized by unbalanced regional economic development and is still nagged by a large income gap between urban and rural residents. The country is still troubled by poverty, with an impoverished rural population of 14.79 million inadequately fed and clad. Those who just have enough to eat and wear and earn an unstable, low income number 30 million nationwide. Moreover, China has a relatively low level of science and technology and weak capacity of independent innovation. Developing the economy and improving people's lives are imperative tasks currently facing China.

China's ongoing industrialization process and its coal-dominated energy mix determine that its task of controlling greenhouse gas emissions is a tough one. Historically, China's greenhouse gas emissions have been very low. According to data from relevant international research institutions, from 1904 to 2004, carbon dioxide emissions from fossil fuel burning in China made up only 8 percent of the world's total over the same period, and cumulative emissions per capita ranked 92nd in the world. China's carbon dioxide emissions from energy consumption in 2004 totaled

5.07 billion tons. As a developing country, China still has a long way to go in its industrialization, urbanization and modernization. To advance further toward its development objectives, China will strive for rational growth of energy demand, which is the basic precondition for the progress of all developing countries. However, its coal-dominated energy mix cannot be substantially changed in the near future, thus making the control of greenhouse gas emissions rather difficult.

## **II. Impact of Climate Change on China**

China is one of the countries most susceptible to the adverse effects of climate change, mainly in the fields of agriculture, livestock breeding, forestry, natural ecosystems, water resources, and coastal zones.

### **Impact on Agriculture and Livestock Breeding**

Climate change has already produced visible adverse effects on China's agriculture and livestock-raising sectors, manifested by increased instability in agricultural production, severe damages to crops and livestock breeding caused by drought and high temperatures in some parts of the country, aggravated spring freeze injury to early-budding crops due to climate warming, decline in the output and quality of grasslands, and augmented losses caused by meteorological disasters.

The impact of future climate change on agriculture and livestock breeding will still be mainly adverse. It is likely there will be a drop in the yield of the three major crops wheat, paddy rice and corn; changes in the agricultural production layout and structure; accelerated decomposition of organic elements in the soil; enlarged scope of crop diseases and insect pests; accelerated potential desertification trend of grasslands; rising frequency of natural fire disasters; sagging livestock production and reproductive ability; and growing risk of livestock epidemics.

### **Impact on Forestry and Other Natural Ecosystems**

The impact of climate change on China's forestry and other natural ecosystems are mainly manifested in the following aspects: the northward shift of the northern boundaries of eastern subtropical and temperature zones and early phenophase; upward shift of the lower boundaries of forest belts in some areas; elevation of lower line of highland permafrost and decreased area of permafrost; rising frequency of animal and plant diseases and insect pests with marked changes in the distribution of regions; reduced area and overall shrinking trend of glaciers in northwestern China; and threat to the oasis ecosystem posed by accelerated melting of glaciers and snow cover.

Future climate change will further increase the fragility of ecosystems, diminish the distribution areas of main afforestation and rare tree species, enlarge the outbreak scope of forest diseases and insect pests, and increase the frequency of forest fires and fire-vulnerable areas, shrink inland lakes and cause the decrease and functional degeneration of wetland resources, speed up the reduction of the area of glaciers and permafrost, and significantly alter the spatial distribution pattern of permafrost on the Qinghai-Tibet Plateau, and damage bio-diversity.

## **Impact on Water Resources**

Climate change has already caused changes in the distribution of water resources all over China. Over the past two decades, the gross amount of water resources of the Yellow, Huaihe, Haihe and Liaohe rivers in northern China has been visibly reduced, whilst that of rivers in southern China has slightly increased. Floods happen more frequently, droughts get worse, and extreme climate phenomena show a conspicuous rise.

It is predicted that future climate change will have a great impact on the temporal and spatial distribution of water resources in the following ways: augmenting annual and inter-annual changes and boosting the occurrence of extreme natural disasters, including flood and drought. In particular, accelerated melting of glaciers in western China owing to climate warming will further lessen the area of glaciers and glacier ice reserves, thus having significant impacts on rivers and runoffs with sources in glacier melt water. Climate warming will possibly reinforce the drought trend in northern China, and intensify water scarcity and contradiction between water supply and demand.

## **Impact on Coastal Zones**

The past 30 years have witnessed in China an accelerating trend of sea level rise, which has caused seawater intrusion, soil salinization and coastal erosion, damaged the typical marine ecosystems of coastal wetlands, mangrove swamps and coral reefs, and diminished the service functions and bio-diversity of coastal zones. Sea temperature rise and seawater acidification resulting from climate change have given rise to a lack of oxygen in some maritime areas, the degradation of marine fishing resources and the survival of rare and endangered species.

It is predicted that the sea level in the coastal zones of China will continue to rise. Sea level rise will undermine the capacity of public drainage facilities in coastal cities, and impair the functions of harbors.

## **Impact on Society, Economy and Other Fields**

Climate change will also produce far-reaching impacts on society, economy and other fields, and cause huge losses to the national economy. Corresponding economic and social costs will have to be paid for addressing climate change. In addition, there will be increased chances of disease occurrence and spread, ensuing dangers to human health, rising possibilities of geological and meteorological disasters and consequent threats to the security of major projects. The eco-environment and bio-diversity of nature reserves and national parks will be affected, accompanied by adverse effects on natural and cultural tourism resources, and augmented threats to the safety of life and property, and to the normal order and stability of social life.

## **III. Strategies and Objectives for Addressing Climate Change**

To address climate change, China adheres to the following guidelines: To give full effect to the Scientific Outlook on Development, adhere to the fundamental state policy of resources conservation and [environmental protection](#), control greenhouse

gas emissions and enhance the country's capacity for sustainable development, center on securing economic development and accelerate the transformation of the pattern of economic development, focus on conserving energy, optimizing the energy structure and strengthening eco-preservation and construction, and rely on the advancement of science and technology, increase international cooperation, constantly enhance the capability in coping with climate change, and make new contribution in protecting the world environment.

To address climate change, China sticks to the following principles:

To address climate change within the framework of sustainable development. Climate change arises out of development, and should thus be solved along with development. It is necessary to promote sustainable development amidst efforts to address climate change, and strive to achieve the goal of win-win in both.

To uphold the principle of "common but differentiated responsibilities," which is a core principle of the UNFCCC. Both developed and developing countries are obligated to adopt measures to decelerate and adapt to climate change. But the level of their historical responsibilities, level and stage of development, and capabilities and ways of contribution vary. Developed countries should be responsible for their accumulative emissions and current high per-capita emissions, and take the lead in reducing emissions, in addition to providing financial support and transferring technologies to developing countries. The developing countries, while developing their economies and fighting poverty, should actively adopt adaptation measures, reduce their emissions to the lowest degree and fulfill their duties in addressing climate change.

To place equal emphasis on both deceleration and adaptation. Deceleration and adaptation are integral components of the strategy for coping with climate change. Deceleration is a long and arduous challenge, while adaptation is a more present and imminent task. The latter is more important for developing countries. The two must be well coordinated, and with equal stress placed on them.

The UNFCCC and the Tokyo Protocol are the main programs for addressing climate change. The two documents lay the legal foundation for international cooperation in dealing with climate change, and reflect the common understanding of the international community. They are the most authoritative, universal and comprehensive international framework for coping with climate change. Their status as the kernel mechanism and leading programs should be unwaveringly upheld, and other types of bilateral and multilateral cooperation should be supplementary.

To rely on the advancement and innovation of science and technology. Technological advancement and innovation are the basis and support for tackling climate change. While promoting their own technological development and application, developed countries are obligated to promote international technological cooperation and transfer, and concretely materialize their promises to provide financial and technological support to developing countries, so that the latter can get the funds needed, apply climate-friendly technologies, and build up their capacity to decelerate and adapt to climate change.

To rely on mass participation and extensive international cooperation. Dealing with climate change requires changes in the traditional ways of production and consumption, and the participation of the whole of society. China is working to build a resources-conserving and environmental-friendly society, foster a social atmosphere in which the enterprises and the public participate on a voluntary basis under the guidance of the government, and raise enterprises' awareness of corporate social responsibility and the public's awareness of the necessity of care for the global environment. A challenge faced by the entire world, climate change cannot be solved without global cooperation and concerted efforts. China will, as always, participate in all modes of international cooperation that are conducive to tackling climate change.

China National Plan for Coping with Climate Change, released by the Chinese government in June 2007, set the following objectives to be met by 2010: Policies and measures concerning control of greenhouse gas emissions should achieve significant results, the capability of adaptation to climate change should be relentlessly enhanced, climate-change-related research should be promoted and new development should be made in scientific research related to climate change. In addition, the public awareness of the importance of tackling climate change should be enhanced, and the institutions and mechanisms for dealing with climate change should be further strengthened.

### **Control of Greenhouse Gas Emissions**

Striving to mitigate greenhouse gas emissions through accelerating the transformation of the country's economic development pattern, strengthening policy guidance concerning energy conservation and efficient utilization, intensifying administration of energy conservation in accordance with the law, speeding up development, demonstration and application of energy conservation technologies, giving full play to the role of new market-based mechanisms for energy conservation, enhancing public awareness of the importance of energy conservation, and accelerating the building of a resource-conserving society. Through these measures, the energy consumption per-unit GDP is expected to drop by about 20 percent by 2010 compared to that of 2005, and carbon dioxide emissions will consequently be reduced.

Optimizing the energy consumption structure through developing renewable energy, boosting nuclear power plant construction and speeding up the development and utilization of coal-bed gas. The target by 2010 is to raise the proportion of renewable energy (including large-scale hydropower) in the primary energy supply by up to 10 percent, and the extraction of coal-bed gas up to 10 billion cu m.

Controlling greenhouse gas emissions generated by industrial production through reinforcing industrial policies concerning the metallurgy, building materials and chemical industries, developing a recycling economy, raising resources utilization efficiency and strengthening control of emissions of nitrous oxide. By 2010, the emissions of nitrous oxide from industrial production should be no higher than in 2005.

Striving to control emissions of methane by continuously spreading low-emission and high-yield rice varieties, semi-drought rice cultivation, scientific irrigation and the technology of application of fertilizers according to the results of tests of local soil,

and strengthening R&D on fine ruminant animal breeds, large-scale breeding and management techniques, strengthening management of animal waste, waste water and solid waste, and expanding the utilization of methane.

Striving to realize the target of a 20-percent increase in the forest coverage rate by 2010, and an increase of annual volume of carbon dioxide in carbon sinks by 50 million tons compared to that of 2005 through continuing key projects in afforestation, returning farmland to forest and grassland, and farmland capital construction, and implementing relevant policies.

### **Enhancing the Capacity of Adaptation to Climate Change**

Through improving the multi-disaster monitoring and early warning mechanisms, the policy-making and coordination mechanisms with more than one department involved, the action mechanism with extensive public participation, the capability of monitoring and forecasting meteorological disasters will be strengthened. By 2010, a number of meteorological disaster prevention projects will be completed and play a fundamental, overall and vital role in the economy and society, so as to enhance the country's comprehensive capacity to monitor, warn about and cope with meteorological disasters, and reduce the damage from them.

Through shoring up farmland capital construction, adjusting cropping systems, breeding stress-resistant varieties, developing bio-technologies and other adaptive measures, by 2010 some 24 million ha of grassland will be improved, 52 million ha of grassland suffering from degradation, desertification and salinity will be restored, and the efficient utilization coefficient of agricultural irrigation water will be raised to 0.5.

Through strengthening natural forest conservation and nature reserve management, continuing key eco-protection projects, establishing important ecosystems, and stepping up natural ecological restoration, by 2010 some 90 percent of typical forest ecosystems and key national wildlife species will be under effective protection; nature reserves will account for 16 percent of the national territory; 250,000 sq km of land suffering from water and soil erosion will have been improved; 300,000 sq km of land will have been ecologically restored; and 22 million ha of decertified land will have been put under control.

Through rational development and optimized allocation of water resources, improving new mechanisms for farmland water conservancy, strengthening measures for water conservation and hydrological monitoring, by 2010 the vulnerability of China's water resources to climate change will have been alleviated; concrete progress will have been made to build a water-conserving society; an anti-flood system of large rivers will be in place; and the standard for drought resistance of farmland will have been raised.

Through scientifically monitoring the trend of sea level change, controlling marine and coastal ecosystems, rationally exploiting the coast, protecting coastal wetlands and planting coastal shelterbelts, China aims to restore the mangrove swamps by 2010, and raise the coastal areas' capability to resist marine disasters. Strengthening R&D

Through strengthening basic research on climate change, further developing and improving research and analytical methods, and intensifying the training of professionals and decision-makers in relevant fields, China aims to keep up with international advanced level in fields related to climate change by 2010, so that it will have solid scientific ground for drafting national strategies and policies on climate change, and in participating in international cooperation in this regard.

Through building up its innovation capacity, and promoting international cooperation and technology transfer, by 2010 China will make big breakthroughs in technologies of energy development and conservation, and clean energy; quicken the industrial application of advanced technologies; enhance the technological capacity of agriculture, water conservancy and forestry sectors to adapt to climate change; and provide strong scientific support for efforts to address climate change.

### **Enhancing Public Awareness and Improving Management**

Through more publicity, education and training by means of modern information dissemination technologies to encourage public participation, by 2010 it is expected that public awareness of the problem of climate change will have been made universal, and a social environment conducive to addressing climate change will be in place.

Through improving the multi-ministerial decision-making coordination mechanism and building an action mechanism involving a wide range of enterprise and public participation, China aims to establish an efficient institutional and management framework commensurate with the work to address climate change.

## **IV. Policies and Actions to Decelerate Climate Change**

China has adopted proactive policies and taken active actions to slow the process of climate change. It has adopted a number of policies and measures to adjust the economic structure, change the development patterns, save energy and raise the efficiency of energy use, and optimize energy mix and promote afforestation. Marked achievements have been made.

### **Adjusting the Economic Structure to Promote the Optimizing and Upgrading of the Industrial Structure**

The Chinese government attaches great importance to the adjustment of the economic structure and the transformation of the economic development patterns, and has formulated and implemented a series of industrial policies and special programs to make the reduction of resources and energy consumption an important part of its industrial policies. By promoting the optimizing and upgrading of China's industrial structure, it aims to form a mode of economic growth featuring "less input, less consumption, less emission and high efficiency."

Accelerating the development of the service sector. The government issued Opinions on the Acceleration of the Development of the Service Sector in 2007, in which it sets the goal of raising the proportion of added value from the service sector in the GDP by three percentage points from 2005 to 2010. It has also made clear policies that

provide support to key areas, weak links and new fields of the service sector. As a result, modern services such as tourism, finance and logistics are booming.

**Making high-tech industry larger and stronger.** In 2007, the government issued the 11th Five-year Plan (2006-2010) for such industries as high-tech, e-commerce and information technology, suggesting that the proportion of added value of high-tech industry in the total industrial added value be raised by five percentage points from 2005 to 2010. The government has formulated and implemented policies and measures conducive to the development of such high-tech industries as digital television, software, integrated circuits and bioengineering. It has quickened the fostering of newly emerging industries that conform to the requirements of saving energy and reducing emissions. High-tech industries, including information technology, bioengineering, aeronautics, space flight, new energy, new materials and marine industries are developing rapidly. The revitalization of high-tech manufacturing industry has been effective, while construction of infrastructure and basic industries has made great progress.

**Accelerating the pace of eliminating backward production capacity.** In 2007, the government announced a timetable for different areas to close down their backward production facilities in 13 industries during the latest Five-year Plan period. Last year saw the stoppage of 14.38 million kw of small thermo-power generating units, and the reduction of 46.59 million tons of iron-smelting capacity, 37.47 million tons of steel making capacity and 52 million tons of cement production capacity. More than 2,000 heavily polluting papermaking plants, chemical plants, and printing and dyeing mills were ordered to close down, as were 11,200 small coal mines.

**Limiting the excessively rapid expansion of industries that consume a large amount of energy and discharge heavy emissions.** Relevant policies have been promulgated to control new projects. Standards of market entry for high-energy-consuming industries have been promulgated. By raising the standard of entry of industry for high energy consumption, enhancing the entry threshold of energy conservation and environmental protection, and by adjusting tax rebates for exports and customs duties, the government is working to restrain the export of commodities that consume large amounts of energy, discharge large quantities of emissions and use precious raw materials. The expansion of high-energy-consuming industries is being slowed.

#### **Making Great Efforts to Save Energy and Raise Energy Efficiency**

The Chinese government attaches great importance to energy conservation, and has made it a fundamental state policy. For a long time it has pursued a policy of putting equal emphasis on both development and energy conservation with priority being given to conservation. The Outline of the 11th Five-year Plan for National Economic and Social Development (2006-2010) considers it a major strategic task for China to build an energy-conserving and environmental-friendly society. It stipulates that the energy consumption per-unit GDP in 2010 should be 20 percent lower than that in 2005, and that this goal is binding.

**Placing energy conservation and emission reduction in a more prominent position.** The State Council has set up a leading group on energy conservation and emission

reduction, and issued the Comprehensive Work Plan for Energy Conservation and Emission Reduction to guide work in this field.

A responsibility system is in place, establishing goals for energy conservation and emission reduction. The State Council has issued the Plan and Method Regarding the Monitoring of Energy Conservation, Emission Reduction and Evaluation, stating clearly that leading cadres in all provinces (autonomous regions and municipalities directly under the central government) and key enterprises will be appraised by their performance in achieving the goals for energy conservation and reduction of emission of major pollutants. Those who fail in this task will be held responsible.

Accelerating the construction of major energy conservation projects. In 2006, the state supported 111 key energy-conservation projects by using funds raised from issuing treasury bonds and investment within the central budget, resulting in an energy-conservation capacity of 10.1 million tons of standard coal. In 2007, the state supported 681 key energy-conservation projects by using funds raised from issuing treasury bonds, investment within the central budget and central treasury capital, resulting in an energy-conservation capacity of 25.5 million tons of standard coal. Technological transformation conducted by enterprises under the direction of local governments resulted in an energy-conservation capacity of 60 million tons of standard coal. It is expected that an energy-conservation capacity of 240 million tons of standard coal will be created after ten major energy-conservation projects are implemented from 2006 to 2010. With subsidies from the government, 50 million energy-saving bulbs are now being distributed to households all over the country, and within the coming three years more than 150 million energy-saving bulbs will be distributed.

Promoting energy conservation and emission reduction in key fields. An energy-conserving campaign has been launched among more than 1,000 enterprises to encourage them to conduct auditing on their energy use, formulate energy-saving plans, and make public their energy use situation. A campaign has also been launched in major energy-consumption enterprises to check their compliance with the energy efficiency indicators. The government is earnestly promoting "green" and environmental-friendly buildings that save energy and land. Newly constructed buildings must meet the compulsory energy-saving standards. Energy-saving renovations to existing buildings are carried out, and the task has been assigned to different regions to install measured heating equipment and complete energy-saving renovation to a total of 150 million sq m of floor space. Pilot work has been launched to set up a monitoring system on energy conservation in office buildings of state agencies and large public buildings in 24 provinces and cities. The government will continue to improve the fuel consumption restriction standard for motor vehicles, and enforce the standard strictly. State agencies at the central level have checked and remodeled their air-conditioning, lighting and boiler systems for energy-conservation purposes. They have also installed energy-conservation lighting in all their office buildings.

Raising the efficiency of energy development and conversion. More high-efficiency, energy-conservation equipment is used in the power-generating and coal-producing sectors, and the government has quickened its pace to eliminate small thermo-power stations and coal mines. In 2007, electricity generating units of 6,000 kw or above

saw their coal consumption drop from 448 g of standard coal per kwh in 1980 to 370 g. Energy and electricity consumed per production unit of raw coal in 2007 dropped by 5.9 percent and 5.1 percent, respectively, as compared with the previous year.

Implementing economic policies conducive to energy conservation. The resources tax for some mineral products has been readjusted, and prices for refined oil and natural gas have also been readjusted in a timely fashion. Policies aimed at saving energy in power generating and distribution have been adopted. The prices for electricity generated by small thermo-power plants transmitted by the state power grid have been lowered, and electricity price differentials have been adopted more broadly. Regulations have been promulgated regarding capital management that supports enterprises in making energy-saving technological transformation, popularizing high-efficiency lighting products, installing monitored heating systems in buildings and making energy-conservation renovations. Policies have also been introduced to encourage the production and use of environmentally-sound motor vehicles with small displacement and to restrict the use of plastic shopping bags. A compulsory government energy-saving products procurement system has been put into place.

Strengthening the construction of the legal system. The Energy Conservation Law has been amended. The General Office of the State Council has issued the Circular on Strictly Following the Temperature Control Standards for Air-conditioners in Public Buildings. Since 2007, national compulsory standards have been promulgated to restrict energy consumption for the making of 22 products (including thermo-power and sodium hydroxide) that consume excessive energy. Supervision and spot checks are now conducted on 16 categories of products, including motors and energy-saving bulbs, that are end-users of energy. Government departments in charge of energy conservation and supervision enforce the energy-conservation administrative regulations in accordance with the law. Thanks to all these efforts, energy consumption per-unit GDP in 2006 and 2007 across China was lowered by 1.79 percent and 3.66 percent, respectively. In 2007, key enterprises in the power-generating, iron and steel, building materials and chemicals industries which consume 10,000 tons of standard coal or more annually saw energy consumption of 33 of their 35 major products drop, with energy consumption rising for only two products. The energy thus saved was equivalent to 38.3 million tons of standard coal. The energy saved in 2006 and 2007 by these enterprises equaled 147 million tons of standard coal.

### **Developing Renewable Energy and Optimizing Energy Mix**

The Law on Renewable Energy and related policies were enacted in 2005 to give priority to renewable energy when transmitted on the state power grid, to purchase renewable energy at full price, to give users of renewable energy price discounts and to share the utilization of renewable energy among the whole society. A dedicated fund was created for developing renewable energy to support the evaluation and investigation of renewable energy resources, related technological research and development, construction of pilot and demonstration projects, and the development and utilization of renewable energy in the countryside. By the end of 2007, the annual installed capacity of hydropower in China was 145 million kw, generating 482.9 billion kwh of electricity, ranking first in the world in both installed capacity and power so generated. An average of 26 million kw of installed capacity was added in 2006 and 2007, with an average increase of 12 percent in each year. The scale of wind

power increased several-fold. Currently, with installed capacity of more than 6 million kw, China ranks fifth in the world. In 2006 and 2007, some 3.05 million kw of installed capacity was added, an average annual increase of 148 percent. The area of solar energy collectors has reached 110 million sq m, keeping China the world leader in this field for many years. The installed power generating capacity using biomass is 3 million kw, and the annual production capacity of ethanol as biofuel is more than 1.2 million tons. The installed capacity of nuclear power is 9.06 million kw, an increase of 30.5 percent over 2006. The proportion of coal in the consumption of primary energy dropped from 72.2 percent in 1980 to 69.4 percent in 2007. The proportion of hydropower, wind power and nuclear power combined was raised from 4 percent to 7.2 percent in the same period. The total amount of renewable energy available for use is approximately 220 million tons of standard coal (including large hydropower facilities).

According to the Mid- and Long-term Plan for the Development of Renewable Energy and Mid- and Long-term Plan for the Development of Nuclear Power, China will continue to promote the comprehensive cascading development of water-power-rich river valleys. It will quicken the pace of constructing large hydropower stations on the precondition that the environment is well protected and adequate relocation of the local residents is ensured. Medium and small hydropower stations will also be developed where local conditions permit. China is determined to develop rapidly more of its wind-power potential to the scale that industrialization can be achieved. It will raise its capacity for developing and manufacturing wind-power equipment and make every effort to construct several wind-power farms of one million kw and wind-power bases of 10 million kw. China will energetically push forward the development and utilization of biomass energy, with emphasis on marsh gas, and solid and liquid biofuel, and on the use of biomass to generate electricity. China will actively take advantage of solar power to generate electricity and use it for heating while strengthening the research, development and utilization of new energy and alternative energy. It will make better use of coal-bed gas and gas in mines, and develop small and scattered sources of electricity with coal-bed gas as fuel. China enthusiastically develops nuclear power, is working hard to reform the nuclear power system and spur mechanism innovation in an attempt to establish a market-oriented nuclear power development mechanism. It will strengthen its capacity for developing and manufacturing nuclear power equipment, and raise its ability to absorb imported technology and make new innovations on this basis. It will strengthen the construction of nuclear power transmission and related technical services, as well as the training of qualified personnel. It will implement preferential policies on taxation and investment that will promote the development of nuclear power, improve nuclear power safety, and quicken the enactment of laws and regulations in this field. Finally, China will push forward the use of clean coal and develop efficient and clean power generating technology, such as large-scale combined cycle units and poly-generation, and promote technology for carbon dioxide sequestration.

### **Developing a Recycling Economy to Reduce Greenhouse Gas Emissions**

Attaching great importance to developing a recycling economy, the Chinese government is doing its best to reduce the amount of resources consumed, and reuse and recycle items so as to reduce greenhouse gas emissions from their sources and in the course of production. In recent years, a recycling economy is turning from an idea

to action, and developing rapidly across the country. The state has enacted laws and regulations such as the Clean Production Promotion Law, Law on the Prevention of Environmental Pollution by Solid Wastes, Law on a Recycling Economy and Methods on Management of Urban Garbage. It has promulgated the Opinions on Accelerating the Development of a Recycling Economy, setting forth the general strategy, short-term goals, basic means, and policies and measures for the development of a recycling economy. It has also promulgated an evaluation index system for a recycling economy. In addition, the Regulations Regarding the Management of the Recycling and Treatment of Discarded Electrical Equipment is to be promulgated soon.

Two batches of demonstration pilot projects have been carried out, resulting in a recycling economy development model at three levels, i.e., enterprises, between enterprises or industrial parks, and in society in general. Pilot projects featuring recycling and treatment of old and useless household electrical appliances and remanufacturing of automobile parts have made satisfactory progress. Preferential policies concerning taxation on the comprehensive utilization of disposables and the recycling and utilization of renewable energy have been improved. More support is being given to key projects in the recycling economy by treasury bonds and investment within the central budget. Through importation, absorption, digestion and self-innovation, some advanced technologies with proprietary intellectual property rights have emerged, in particular, a group of key technologies which play a leading role in respective sectors have been developed, demonstrated and popularized. Applicable technologies, such as low-temperature power generation by waste heat, coke dry-quenching, power generation by differential pressure at blast furnace top, cement produced using calcium carbide slag in the drying process, and disposal of garbage in blast furnaces and rotary kilns, are now widely used. In 2005, nearly one third of the raw materials for China's steel, nonferrous metals and pulp industries came from renewable resources, while 20 percent of the raw materials for cement and 40 percent of the raw materials for walls came from industrial solid waste. Marked progress has been made in reducing greenhouse gas emissions during the production of semiconductors, including sealing and packaging. The level of greenhouse gas emissions during the making of electronic information products remains low.

The state has formulated policies that encourage the recycling and utilization of landfill gas, and has promulgated industrial standards such as the Policies on Technologies for the Treatment of Urban Garbage and Pollution Prevention, and Technical Standards on Sanitary Landfill of Garbage, which promote the retrieval and utilization of landfill gas and reduction of emissions of methane and other greenhouse gases. Meanwhile, China is carrying out research into and popularizing advanced technologies for garbage burning and recycling, and utilization of landfill gas. Relevant technological standards are being promulgated, and the garbage collection and transportation system is being improved. Garbage classification has begun in some areas; comprehensive utilization of garbage as a resource has been raised to promote the industrialization of the treatment of garbage. Supervision is being tightened on enterprises engaged in garbage treatment. As a result, the detoxification rate of garbage was raised from 2.3 percent in 1990 to 52 percent in 2006.

### **Reducing Greenhouse Gas Emissions in Agriculture and the Countryside**

China has witnessed great progress in the reduction of greenhouse gas emissions in agriculture and the countryside in recent years. In 1,200 counties across the country, fertilizers are applied according to the results of tests of local soil. Guidance is given to farmers for the scientific application of fertilizers and to reduce the emission of nitrous oxide. Protective farming featuring mainly crop stalk coverage and non-tillage are being popularized. Crop stalks are also used to feed domestic animals, the manure and urine of which are then applied to fields to add organic carbon to the soil. A compensatory mechanism for grassland ecology has been created: a balance is maintained between the grass and livestock; a system is adopted to prohibit grazing, to have a stretch of grassland rest or grazed in rotation; and the numbers of livestock grazing are controlled to prevent it from deteriorating. Meanwhile, renewable energy technologies are being vigorously developed in the countryside, such as the use of marsh gas, solar energy and stoves that save on firewood and coal. By the end of 2007, there were over 26.5 million households in China using marsh gas, saving 16 million tons of standard coal annually, tantamount to a reduced emission of 44 million tons of carbon dioxide. China has constructed 26,600 breeding farm marsh gas projects, and installed 42.86 million sq m of solar-powered heaters in the countryside, 14.68 million sq m of solar energy houses, 1.12 million solar energy stoves and more than 200,000 small wind-driven generators. China has established some demonstration spots for the gasification and solidification of crop stalks. It has installed firewood- and coal-saving stoves in 151 million households and energy-saving stoves in 34.71 million households.

### **Promoting Afforestation and Strengthening the Capacity of Carbon Sinks**

In the past 20-odd years, some four million ha of trees have been planted every year with the help of continuously increasing investment from the central government. Meanwhile, the state also encourages citizens to take part in tree planting. By the end of 2007, millions of people had planted 51.54 billion trees all over China. In recent years, through the reform of the collective forest right system, farmers' enthusiasm for tree planting and forest protection has been aroused. At present, China has 54 million ha of man-made forest, its timber volume reaching 1.505 billion cu m, with the country's rate of forest coverage going up from 12 percent in the early 1980s to 18.21 percent now. In 2006, some 35.1 percent of China's urban areas, or 1.32 million ha, were covered with grass or trees. It is estimated that tree-planting activities in China between 1980 and 2005 effectively absorbed 3.06 billion tons of carbon dioxide, that forest management absorbed 1.62 billion tons of carbon dioxide, and that carbon dioxide emission was reduced by 430 million tons because of improved forest protection. All this has further enhanced the capacity of forest as the sinks of greenhouse gas.

### **Intensifying R&D Efforts to Deal with Climate Change Scientifically**

Including response to climate change in the plan for scientific development. The Outline of China's Mid- and Long-term Development Plan for Science and Technology promulgated in 2006 made energy and environment priority fields in the development of science and technology. It listed the observation and monitoring of global climate change and countermeasures as priority issues in the field of environmental protection. China's Special Sci-Tech Campaign to Cope with Climate Change enacted in 2007 set forth phased goals for scientific work as a response to

climate change during the 11th Five-year Plan period (2006-2010) and long-term goals up to the year 2020. It mainly discusses the following topics and makes relevant countermeasures: the scientific explanation of climate change, research and development of technologies that can be used to control greenhouse gas emissions, technologies and measures that help adapt to climate change, and major strategies and policies to cope with climate change.

Strengthening the cultivation of personnel and construction of research bases. Thanks to efforts made over the past 20 years or so, a contingent of specialists has been formed in the field of climate change who are doing basic and applied research across fields and disciplines. They have made pioneering research achievements, providing important scientific support for China to cope with climate change. A batch of national-level scientific research bases has been established, and a large observation network system, including the National Climate Monitoring Network, has basically been set up. China has strengthened research into and development of advanced technologies dealing with climate change, as well as their demonstration. The integration of research, teaching and production has accelerated the industrialization process of advanced technologies.

Continuously increasing investment in scientific and technological work related to climate change. While sources of funds from the government remain relatively stable, efforts are being made to raise money from other sources, attracting funds from society at large for scientific and technological research and development concerning climate change. During the 10th Five-year Plan period (2001-2005), the government invested more than 2.5 billion yuan in scientific and technological research dealing with climate change through national science and technology plans such as the Gongguan Plan<sup>1</sup>, 863 Plan<sup>2</sup> and 973 Plan<sup>3</sup>. By the end of 2007, the National Science and Technology Plan for the 11th Five-year Plan period (2006-2010) had appropriated more than seven billion yuan for scientific research into energy conservation and emission reduction. In addition, the state, through other channels, has invested large amounts of funds for scientific research into climate change.

Key areas of scientific research. China has decided to place the emphasis of its research on technologies that can reduce greenhouse gas emissions or slow the process. These include technologies that save energy and enhance its efficiency; technologies for renewable energy and new energy; technologies that can control, dispose of or utilize greenhouse gases, such as carbon dioxide and methane in major industries; biological and engineering carbon fixation technology; technologies for the clean and efficient exploitation and utilization of coal, petroleum and natural gas; technologies for manufacturing advanced equipment for coal- and nuclear-generated power; technologies for capturing, utilizing and storing carbon dioxide; and technologies that control greenhouse gas emissions in agriculture and how land is used.

Notes:

1. The "Gongguan Plan" is a national plan aimed at tackling key and difficult scientific and technological problems facing China's economic construction and social development. It was first implemented in 1982, and has been linked with China's Five-year Plans since then.

2. The "863 Plan" is a plan initiated by the Chinese government in March 1986 for the development of high-tech industries.

3. The "973 Plan" refers to the National Plan of Basic Research for Some Key Areas initiated by the government in 1997.

## **V. Policies and Actions to Adapt to Climate Change**

China actively applies policies and takes actions to adapt to climate change in natural ecological systems such as agriculture, forestry and water resources, as well as ecologically fragile areas like coastal zones and regions, and has achieved positive effects.

### **Agriculture**

The state has made great efforts to establish and improve a law regime for agriculture to adapt to climate change, including the Agriculture Law, Grassland Law, Fisheries Law, Law on Land Management, Regulations of Responses to Major Emergent Animal Epidemics, and Regulations on Grassland Fire Prevention. The state has strengthened construction of agricultural infrastructure and capital construction of farmland water conservancy, enlarged irrigation areas, improved farmland irrigation and drainage efficiency and capability, and promoted dry farming and water-saving technologies, making agriculture better able to deter and mitigate natural disasters and increasing overall agricultural productivity. Through the "Seed Project," China is cultivating stress-resistant varieties of seeds with high yield potential, high quality and specific abilities of resistance to drought, water logging, high temperature, diseases and pests.

China will further extend superior strains of livestock to larger areas and increase the acreage sown with such strains; enhance the prevention and control of major animal epidemic diseases, establish and improve the monitoring and early-warning systems and enhance capability in this regard; protect and improve the grassland ecosystem through turning grazing area back to grassland, constructing meadow enclosures, artificial grasslands and grassland fire-prevention facilities; and launch activities for aquatic life conservation and protect aquatic life resources and the aquatic environment.

### **Forests and Other Natural Ecosystems**

For years, China has made great efforts to protect forests and other natural ecosystems by formulating and enforcing relevant laws and regulations, such as the Forest Law, Law on the Protection of Wildlife, Law on Water and Soil Conservation, Law on Prevention and Control of Desertification, Regulations on Conversion of Farmland to Forests, Forest Fire Prevention Regulations, and Regulations on Forest Diseases and Insect Pest Prevention and Control. The state is now working hard to draw up laws and regulations on the protection of nature reserves, wetlands and natural forests, and pushing forward the all-round implementation of a national program of environment development and protection.

China will further strengthen the protection and management of forest land, forests and wildlife resources, continue projects for the protection of forests, conversion of cropland to forest and grassland, wildlife conservation and nature reserve development and wetland protection, so as to push forward the sustainable development and management of forests, and intensify efforts in ecological water and soil conservation. The government has established a comprehensive monitoring system for forest resources and ecosystem conditions; improved a forest fire, pest and disease evaluating system and an emergency-response system, as well as the training of professionals in this field; carried out a nationwide medium- and long-term program for the prevention of forest fires, pests and diseases, enhanced the protection of endangered species and their habitat ecosystems; and restored the functions of eco-fragile areas and ecosystems.

### **Water Resources**

China has worked out and enforced laws and regulations in this regard, including the Water Law, Flood Control Law, and Regulations on River Administration. It has formulated and completed the program of flood control on major rivers and other water-conservancy programs, and has set up an elementary law regime and a program on water conservancy commensurate with China's conditions, and established an elementary flood-control and disaster-alleviation system for major rivers and a water-resource allocation and protection system. Meanwhile, great efforts have been made to control soil erosion. By the end of 2007, China had made efforts to bring soil and water erosion under control over an area of one million sq km, thus effectively protected the soil and water resources and improved its eco-environment.

China will accelerate the pace of formulating nationwide comprehensive plans for water resources and river basins, drawing up a water-allocation plan for major rivers, speeding up the construction of the south-to-north water-diversion and other water-diversion projects, so as to optimize the water resource allocation pattern, and increase the water supply capability for drought emergencies. Efforts are being made to enhance unified water resources management and allocation, and establish national water-right distribution and transfer systems as well as a water resources conservation and protection system. The state will strengthen the construction of projects to control floods on major rivers as well as a system to control floods caused by mountain torrents, thus basically establishing a flood-control and disaster-alleviation system mainly formed by reservoirs, river channels, dykes and a mountain flood-control system. Further efforts are being made to improve the national commanding system in control and prevention of floods and droughts, establish a flood-risk management system, so as to enhance the country's capability in controlling floods and droughts. In river basins with serious ecological deterioration, China will set the cap on extraction of groundwater, strictly control excessive extraction of groundwater and adopt active measures to rehabilitate and protect water resources. Research will be strengthened into the impact of climate change over China's water resources and into the mechanisms of water conversion between atmospheric water, surface water, soil water and groundwater as well as related technologies for optimizing water-resource configuration. China is also strengthening study, development and popularization of technologies relating to reuse of wastewater and desalinization of seawater.

### **Coastal Zones and Coastal Regions**

In accordance with the Marine Environment Protection Law, Law on the Use and Administration of Sea Areas, General System Development Plan for the Air-Sea Interaction, among others, China has worked out the objects and contents of a system to deal with climate change in marine areas, established a decision-making mechanism and a coordination mechanism of comprehensive management, thereby striving to slow down and adapt to the adverse impacts of climate change. Work is also done to increase the capability of the coastal zones and coastal regions to adapt to climate change. Through investigations and researches, China has strengthened study on air-sea interaction to deepen the understanding of air-sea interaction, and has initially formed an all-dimensional observation network pertaining to the marine environment, thus improving its capability to control and prevent marine disasters.

The country will further improve its all-round capability to control and prevent marine disasters in coastal regions through establishing and further improving an emergency response system for marine disasters. It will set up observation and service networks to analyze, evaluate and forecast climate change in coastal areas, establish a system to monitor, forecast, analyze and evaluate sea level change and do a better job in this regard, and improve the capability of the marine ecosystem and coastal region ecosystem to cope with and adapt to climate change. The state is promoting R&D of technologies for marine ecosystem protection and restoration, popularizing the research results, reinforcing the construction and management of marine reserves, carrying out restoration work in coastal wetlands and marine eco-environment, setting up demonstration areas with typical marine ecosystems, and building coastal protection forest belts with every effort. China will enhance the management of coastal zones, raise protection standards of coastal cities and major engineering projects, prevent excessive exploitation of groundwater and take measures against land subsidence in coastal areas. As one of such steps, fresh water will be taken from rivers or reservoirs to dilute brackish water and deter seawater intrusion in estuaries.

### **Other Fields**

China has enhanced its capability of monitoring and issuing early warning over extreme climate events, and basically established mechanisms to deal with extreme meteorological emergencies, including their derivative and secondary effects. Great progress has been made in countering the effects of extreme climate phenomena like typhoons, regional intense thunderstorms and floods, and a comprehensive monitoring system for climate and climate change has taken initial shape.

To counter the expansion of epidemic-infected area caused by climate change, the state will further build up its monitoring and control network, and establish a health-guarantee system. The government has worked out a city flood control and water drainage plan, and raised the design standards for city flood control projects. In the design, construction and operation of major projects, the factor of climate change has been taken into full consideration, and new standards have been established for adaptation to future climate change.

## **VI. Enhancing Public Awareness in Addressing Climate Change**

China has all along attached great importance to education and publicity concerning the environment and climate change, as well as public participation in relevant

activities. In recent years, the government has constantly guided the public in enhancing its awareness of climate change, and advocated the concept of harmonious development between man and Nature through publicizing and implementing such advanced ideas as the Scientific Outlook on Development, establishing a harmonious society and sticking to the sustainable development road. The Politburo of the Communist Party of China particularly held a study session on global climate change and enhancement of the capability to cope with it. It stresses on vigorous enhancement of public awareness and capability in participation of addressing of climate change, and on the building of a good social atmosphere to this end. The state makes the concept of building a resource-saving and environmental-friendly society an important component of school education and the mass media, and disseminates knowledge about climate change by all ways and means to sharpen the concern of the whole society about global environmental issues.

China has produced large numbers of publications and audio-video products on climate change, set up dedicated TV weather channel and an information database to disseminate knowledge about climate change through the mass media. It has held the "International Forum on Climate Change and Science & Technology Innovation," and hosted many large-scale international seminars with topics such as "Climate Change and Ecosystems" and "Bio-diversity and Climate Change." Since 1992, China has staged 18 sessions of National Energy Conservation Publicity Week in succession. The Chinese government issued the Public Action Plan on Energy Conservation and Emission Reduction, carried out relevant activities throughout the country, with the participation of communities, young people, enterprises, schools, servicemen, government agencies, scientific and technological circles, popular science circles, and the mass media. As a result, a mechanism of energy conservation and emission reduction has been formed with the government taking the lead, enterprises as actors and everyone as participant. China fully utilizes the exemplary roles of government agencies and officials through a campaign to establish a "conservation-minded government." It carries out publicity and education of energy conservation and emission reduction in enterprises, mobilizes employees to participate in the management of energy conservation and emission reduction in enterprises. It encourages citizens to remold lifestyles and consumption patterns in their families, creates a platform for energy conservation and emission reduction in communities. It actively encourages citizens and social groups to plant trees voluntarily, and launches actions like restricting free use of plastic bags by charging fees so as to enhance their awareness of energy conservation and emission reduction. It fosters students' awareness of the importance of energy conservation and emission reduction through school education and practical activities. In recent years, many social groups and NGOs have participated in the campaign for energy conservation and emission reduction in various ways and played an active role.

Recycling economy represents the future trend of economic development. The Chinese government attaches great importance to the development of a recycling economy, and advocates such economy throughout the country. In recent years, with vigorous development of the recycling economy as focus, the government has launched a series of educational and publicity activities in order to root the idea of a recycling economy deeply in the people's minds and create a sound social atmosphere.

China will further enhance education and training in order to better deal with climate change. Knowledge about climate change will be included in basic education, higher education and adult education, with the focus being placed on fostering among youngsters the awareness of climate change and a sense of participation in relevant activities. It will conduct training courses and seminars on climate change for government agencies, enterprises, consultation institutes, scientific research staff and communities, so as to improve their understanding of the importance and urgency in dealing with climate change, and encourage them to undertake their social responsibilities in an active manner.

## **VII. Enhancing International Cooperation on Climate Change**

Based on the "mutually beneficial, pragmatic and effective" principle, China actively participates in and promotes international cooperation in the field of climate change, playing a positive role. In recent years, China's president and premier have both stated China's position on international cooperation on climate change at multilateral and bilateral exchanges, including the outreach session of the G8 summit, Asia-Pacific Economic Cooperation (APEC) meeting, East Asia Summit (EAS) and Boao Forum for Asia, energetically promoting global action to cope with climate change.

Over a long period of time China has actively participated in and supported the activities of the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, working hard to accelerate the effective implementation of the two documents. Chinese experts have energetically taken part in the activities of the Intergovernmental Panel on Climate Change (IPCC), making contributions to the composing of relevant reports. China earnestly performs its duties stipulated by the UNFCCC and Kyoto Protocol, released China Initial National Communications on Climate Change in 2004, and issued the National Plan for Coping with Climate Change and China's Special Sci-Tech Campaign to Cope with Climate Change in June 2007.

As to multilateral cooperation, China is an official member of the Carbon Sequestration Leadership Forum, Methane-to-Market Partnership and Asia-Pacific Partnership on Clean Development and Climate. It is also a participant in the meetings of the leaders of the G8 and the five major developing countries on climate change, and Major Economies Meeting on Energy Security and Climate Change. At the APEC meeting, China moved the proposal of the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation, and hosted the International Forum on Climate Change and Sci-Tech Innovation. China strives for the enhancement of international exchanges and mutual trust in the sphere of climate change, as well as the establishment of an impartial and effective global mechanism to cope with climate change.

In bilateral exchanges, China has set up a dialogue and cooperation mechanism on climate change with the European Union, India, Brazil, South Africa, Japan, the United States, Canada, the United Kingdom and Australia, focusing on cooperation in the field of climate change. China has all along helped African countries and small developing island states to improve their ability to cope with climate change. China's African Policy makes it clear that China will actively promote China-Africa cooperation in climate change. The Chinese government has sponsored two study

courses on the Clean Development Mechanism (CDM), aiming to improve the abilities of African and Asian developing countries to carry out CDM projects.

China energetically develops cooperation in research on climate change with foreign governments, international organizations and research institutes, covering scientific problems, deceleration and adaptation, policies and measures to cope with climate change, including China's trend of climate change, impacts of climate change on China, adaptation measures and actions adopted by China's farming and forestry departments, China's water resources management, and China's comprehensive management of coastal zone and marine eco-systems. This cooperation extends to the cost for China to reduce greenhouse gas emissions and China's potential capability in reducing greenhouse gas emissions, China's laws and regulations and policy research to cope with climate change, as well as studies, development and demonstrations of technologies regarding low-carbon energies. China actively participates in corresponding international scientific and technological cooperation programs, including the World Climate Research Programme (WCRP) under the framework of the Earth System Science Partnership (ESSP), International Geosphere-Biosphere Programme (IGBP), International Human Dimensions Programme on Global Environmental Change (IHDP), intergovernmental Group on Earth Observations (GEO), Global Climate Observation System (GCOS), Global Ocean Observation System (GOOS), Array for Real-Time Geostrophic Oceanography (ARGO), and International Polar Year. In addition, China enhances information exchanges and resource sharing with relevant international organizations and institutes.

China energetically impels and participates in technology transfer under the UNFCCC framework, works hard to build a favorable domestic environment for international technology transfer, and has submitted a technological demand list. China believes that technology transfer under the UNFCCC framework should not solely rely on the market. The key is for the governments of developed countries to make efforts to reduce and eliminate obstacles to technology transfer, and adopt pilot and incentive policies and measures, thus playing an effective role in the promotion of technology transfer. For key technologies under study concerning climate change, it is necessary to take advantage of the joint efforts of the international community and lose no time in making breakthroughs, and such technologies should be shared by all countries in the world.

China attaches importance to the CDM's active role in facilitating its own sustainable development, and is willing to make contributions to reduce greenhouse gas emissions by joining CDM programs. Through international cooperation, China has conducted systematic research on CDM, providing a scientific base for the making of international rules and domestic policies, as well as providing valuable information for the benefit of all sides. China has carried out a host of activities to improve the abilities of government departments, enterprises, academic institutions, advisory bodies and financial institutions to develop CDM projects. It has improved the relevant domestic rules, and promulgated the Measures for the Operation and Management of Clean Development Mechanism Projects in China. Up to July 20, 2008, China had had 244 CDM cooperation projects successfully registered with the United Nations, which were expected to reduce carbon dioxide emission by 113 million tons annually. CDM projects have effectively boosted the development of China's renewable energy, accelerated the improvement of energy intensity, and

greatly enhanced the awareness of the seriousness of climate change on the part of relevant government departments, enterprises, organizations and individuals. China holds that CDM, as a comparatively effective and successful cooperation mechanism, should continue to be implemented after 2012. However, efforts should be made to promote fairness, transparency, simplicity, certainty and environmental completeness during the implementing of projects, and to encourage the transfer of advanced technology to developing countries. The host country should play a more important role in developing CDM projects.

### **VIII. Institution and Mechanism Building for Coping with Climate Change**

The Chinese government set up special institutions to deal with climate change in 1990, and established the National Coordination Committee on Climate Change (NCCCC) in 1998. In order to further enhance the leadership of the work on climate change, the National Leading Group to Address Climate Change, headed by the Chinese premier, was set up in 2007 to draw up important strategies, policies and measures related to climate change, and coordinate the solving of major problems in this regard. During the institutional reform in 2008, the number of member units of the National Leading Group increased from 18 to 20. The [National Development and Reform Commission](#) (NDRC) was vested to undertake the general work in respect of climate change, and the general office of the National Leading Group was set up and placed in the NDRC. And a special institution was established in the NDRC responsible for organizing and coordinating work on climate change all over the country. The Experts Committee for Climate Change has been set up to improve scientific decision-making on climate change, and this committee has done a great deal of work in supporting government decision-making and boosting international cooperation and nongovernmental activities.

In 2007, the State Council called on all regions and departments to strictly implement the National Plan for Coping with Climate Change in the light of their actual conditions. They were required to build and improve management systems, coordinating mechanisms and special institutions on climate change, organize teams of local experts to deal with climate change, make corresponding policies and measures in light of the local geographic environment, climate conditions and economic development level, set up statistical and monitoring systems on climate change, and organize and coordinate local actions to slow climate change.

In order to facilitate the implementation of the National Plan, governments at all levels will further improve industrial, financial, taxation, credit and investment policies, make full use of price leverage, form institutions and mechanisms conducive to reducing greenhouse gas emissions, increase financial input and improve corresponding rules conducive to decelerating and adapting to climate change, thus enhancing work on climate change in accordance with the law.

### **Conclusion**

China is now in a crucial period in the building of a moderately prosperous society in all respects, and at an important stage for speeding up the country's industrialization and urbanization. It has onerous tasks to develop the economy and improve the people's livelihood, and faces a more severe challenge of climate change than

developed countries do. China will continue to follow the guidance of the Scientific Outlook on Development, unswervingly stick to the road of sustainable development, and adopt more powerful policies and measures to strengthen the ability to deal with climate change in an all-round way.

The whole world, without exception, faces the challenge of climate change. The solution demands the joint efforts of all countries and the entire international community. China will work unremittingly for global sustainable development with other countries and continuously make new contributions to the protection of the climate system which is the common wealth of mankind.