



# **Progress on Environment and Development Policies in China (2010-2011) and CCICED Policy Recommendations Impact**

CCICED Chinese Chief Advisor & Support Team  
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## **Introduction**

The China Council for International Cooperation on Environment and Development (CCICED), a high-level policy advisory body, was established with the approval of the Chinese government, with the mandate to provide decision-makers with policy recommendations on critical issues in environment and development. At CCICED's Annual General Meeting (AGM), the Chinese and international members review policy research by Task Forces and Special Policy Studies and prepare policy recommendations for submission to the State Council and other government departments.

Since 2008, in order to further strengthen CCICED to play its unique role, improve its working mechanism, and to build CCICED members' understanding of policy development processes in China, the Chinese supporting team of the Chief Advisors Group has been delegated by the CCICED Secretariat to prepare this report on the Progress of Important Policies on China's Environment and Development, and the Impacts of CCICED Policy Recommendations. This report reviews major policy progress on China's environment and development, and provides some thoughts on the implementation and adoption of CCICED recommendations by the government departments.

The report follows two main lines. It reviews China's major policies introduced during the past year on environment and development, providing an overview of the latest progress. In addition, the report compares China's recent policy development in environment and development with the major issues tackled and policy recommendations submitted by the



CCICED previously, especially those considered at the 2010 CCICED AGM.

Policy-making is a complicated process, of course, with numerous sources of inputs. Therefore, it would be arbitrary to attribute a specific policy introduced in the last year by the Government of China to a specific CCICED recommendation. The real impact of the CCICED ultimately may have to be determined by decision-makers themselves. However, by analyzing and comparing China's policy practice with CCICED policy recommendations, the report helps to demonstrate linkages between the relevance of the research topic selection, content of the recommendations, and policy development.

This is the fourth report prepared by the Chief Advisors supporting team since 2008. The report is composed of two parts. Part 1 provides an overview of environment and developments of the "11<sup>th</sup> Five-Year Plan" and the goals of the "12<sup>th</sup> Five-Year Plan", including environment and development priorities for 2011. The report outlines important policy shifts in this past year, with comments on the relevance of CCICED policy recommendations to China's environment and development since the 2010 AGM held last November. Part 2 lists the major recommendations from the 2010 AGM.

## Part I Progress on important policies for China's environment and development

### 1. Overall situation of environment and development

#### *(1) The "11<sup>th</sup> Five-Year Plan" was completed with success on environment and development*

The "11<sup>th</sup> Five-Year Plan" came to a successful conclusion at the end of 2010. The Chinese government achieved major economic and social development objectives set in the "11<sup>th</sup> Five-Year Plan" while dealing well with the financial crisis, natural catastrophes and other domestic and international challenges, bringing domestic economy to a new stage. By the end of 2010, China's GDP reached 39.8 trillion RMB, with an average annual growth rate of 11.2%. For the same period, the average annual growth rate of energy consumption increased by 6.6 %, which was lower than that of GDP. China's fiscal revenue rose from 3.16 trillion to 8.31 trillion RMB for the same period. Progress was made in energy conservation and emission reduction, ecological construction and environmental protection. During the five-year period, cumulatively there was a decrease in chemical oxygen demand by 12.45%, and sulfur dioxide emissions by 14.29%. These two indicators surpassed the target levels. Cumulatively, energy consumption per unit of GDP decreased by 19.1%,

almost reaching the 20% target.

China actively participated in international actions on climate change, developed action goals and policy measures for reducing greenhouse gas emissions intensity by 2020, and made comprehensive plans for the implementation of energy conservation and emissions reduction, which includes reforestation of 25.29 million hectares through major forest ecological projects, overall treatment of 230,000 km<sup>2</sup> of land for soil erosion, water pollution prevention and treatment in major river basins, air pollution prevention and control, and treatment of ‘three wastes’ (air, water and solid wastes) from industry.

All in all, the government achieved major progress in the fields of environment and development during the “11<sup>th</sup> Five-Year Plan”.

Environmental protection became better understood, and its awareness was raised for the whole society. The government introduced a series of new concepts and measures for enhancing environmental protection. During the “11<sup>th</sup> Five-Year Plan”, both the CPC Central Committee and the State Council have placed environmental protection in a more important strategic position, raising new concepts of ecological civilization, historical transformation for environmental protection, rehabilitation of rivers and lakes, energy conservation and emission reduction as critical measures for restructuring and transformation, environmental protection as livelihood issues and exploring a new path for China’s environmental protection.

More investment was made on pollution emission reduction through industrial restructuring, leading to continuous improvement in environmental quality. During the “11<sup>th</sup> Five-Year Plan”, desulfurization facilities with a capacity of 5.32 hundred million kilowatts were installed in coal-fired power plants, with installation of domestic thermal power desulfurization units rising from 12% in 2005 to 82.6%. The increased capacity for wastewater treatment exceeded 60 million tonnes per day, with urban wastewater treatment rate soaring from 52% in 2005 to 77%. More efforts were made on eliminating backward production capacity, and cumulatively 76.83 million kilowatts of small thermal power units were shut down, exceeding the goal of shutting down 50 million kilowatts in 1.5 years ahead of schedule. Elimination of backward production capacity also was achieved covering 120 million tonnes of iron, 69 million tonnes of steel, 350 million tonnes of cement, 93 million tonnes of coke, 10.7 million tonnes of paper, 1.8 million tonnes of alcohol, 300,000 tonnes of MSG, and 38 million weight cases of glass.

Environmental quality is improving continuously. Water sampling from state monitoring points of seven water systems showed that 59.9% exceeded Class III standard compared to 41% in 2005. An average annual concentration of sulfur dioxide in urban air



was 0.034 mg/cubic meter, a 19% reduction compared to 2005, and in key environmental protection cities, the concentration was 0.042 mg/cubic meter, a 26.3% reduction. The air quality in 79.6% mid-to-large cities reached or surpassed Grade II national standard.

Clean energy experienced fast development through energy restructuring. From the statistics obtained from the National Energy Administration, during the “11<sup>th</sup> Five-Year Plan” the increased hydropower capacity put in production was almost the total capacity for the previous 95 years in China. Wind power connected to the grid reached 31 million kilowatts, a doubling for five consecutive years. In 2010, wind power generated 45 billion kWh, up 63% over the previous year. In September and October 2010, Unit 1 in Guangdong Lingao Nuclear Power Station and Unit 3 of Qinshan Nuclear Power Station extension operated by the China National Nuclear Corporation were put into production, with a total nuclear power generation capacity exceeding 100 million kilowatts, the largest scale of any nuclear power station under construction. The five-year cumulative generation of hydropower, nuclear power and wind power surpassed three trillion kWh, an alternative for 1.5 billion tons of coal, with a reduction of nearly 300 million tons of carbon dioxide emissions. After the Fukushima nuclear power plant leak, the State Council suspended approval of new nuclear power projects, including projects that had started preliminary work. Some experts welcomed this temporary slowdown and hoped that in the long run it will serve to reinforce nuclear infrastructure safety.

Environmental monitoring has been intensified, and the integrated role of environmental protection in optimizing economic development is increasingly apparent. In accordance with requirements of the regional economic development plan of the State Council, environmental protection departments have effectively curbed environmental violations by taking the measures of “restrictions by regions” and “restrictions by industries”. They have continued to improve the system of strategic Environmental Impact Assessment (EIA), organized and completed EIA on priority industries in five regions, including the Bohai Sea and surrounding areas, west coast of the Taiwan Straits, North Bay, Chengyu region, and the industrial parks of the Yellow River upstream regions. EIA has been applied to more than 10 essential industries covering petrochemical industry, energy, metallurgy and equipment manufacturing in 15 provinces (autonomous regions and municipalities). The EIA findings have also been applied to major industrial layouts and accession to projects.

National environmental standards have been upgraded continuously. During the “11<sup>th</sup> Five-Year Plan” more than 60 standards regarding key industrial pollution emissions were either introduced or amended, and another 1,050 national environmental standards have been

under revision and amendment.

Pollution control in vital watershed regions has been intensified. Under the guiding thinking of rehabilitating rivers and lakes, the government formulated the “Interim Measures Concerning Assessment of Implementation of Special Plan on Pollution Prevention in Key Watershed”. An overall water quality assessment system for sections at provincial boundaries has been established, and water quality in lakes under “rehabilitation” has achieved positive results. Following the air quality control measures for the Beijing Olympics, a new mechanism for joint prevention and control for regional pollution has been set up. The “Guidance of Promoting Joint Prevention and Control of Air Pollution and Improving Regional Air Quality” was issued, for the purpose of building a mechanism with unified planning, monitoring, control, assessment, and coordination.

Actions have been taken to address environmental problems damaging people’s health. The government has released the “Urban Drinking Water Sources Protection Plan (2008—2020)”, and developed “Ground Water Pollution Prevention Plan”. Progress has been made in heavy metal pollution prevention and control, and the development of Prevention Measures on Heavy Metal Pollution (2010—2015) has been completed. The government will make efforts to further optimize industrial structure related to heavy metals, and to improve the system of heavy metal pollution prevention, emergency response, and environmental and health risk assessment by 2015. The Central Government has added a special fund for heavy metal pollution prevention, and issued the first payment of 1.5 billion RMB in 2010 to support the comprehensive prevention and control measures in critical pollution zones, and to demonstrate and promote new control technologies.

Efforts were also made to improve ecological protection for rural areas. In July 2008, the State Council held a national teleconference on rural environmental protection, and proposed policy measures such as “promoting governance with awards and replacing subsidies with rewards”. For the first time, the Central Government set up a special fund for environmental protection in rural areas, amounting to 4 billion RMB for three years, attracting nearly 8 billion RMB from local investment. The government completed a survey on soil pollution and issued Opinions on Strengthening the Prevention and Treatment of Soil Pollution and Ecological Protection. Ecological conservation has been carried out. The State Council examined and adopted the China Biodiversity Conservation Strategy and Action Plan (2011—2030), and joined the International Year of Biodiversity. It also issued the National Plan for Ecological Function Protection Zone and National Ecological Function Zoning.

The legal system for environmental protection has been improved, and the scope of



environmental economic policies has been expanded. The Law on Prevention and Control of Water Pollution was issued, and the Environmental Protection Law and Law on Prevention and Control of Air Pollution are under amendment. The Law on Circular Economy has been implemented. The Regulations on Environmental Impact Assessment of Planning and Waste Electrical and Electronic Product Recycling Regulations have been issued. Other regulatory documents have been released in succession, including Comprehensive Work Plan For Conserving Energy and Reducing Emissions and National Climate Change Programme. Green trade, green credit, green taxes, green insurance as well as green government procurement policies are being implemented. Sewage fees and desulfurization electricity pricing have been improved. The government is pushing hard in emission trading and ecological compensation.

In his Work Report of the Government (2011), Premier Wen Jiabao made four summary points of economic and social development in the “11<sup>th</sup> Five-Year Plan”.

“First, we must follow scientific development with economic development at its core. The government must put people first, and work hard to improve their livelihood. Wealth should be shared by all, and the fruits of development should benefit all. In urban and rural development, in regional development and economic social development, integrated and coordinated development mode needs to be applied. The transformation of economic development mode needs to be expedited, with the drive for innovation, resource conservation and environmental protection, in order to achieve economic and social development coordinated with population, resource and environment, which will be more balanced and sustainable.”

“Second, we must continue to closely integrate government control with market forces. We must improve the socialist market economy, and make full use of the basic role of the market in allocating resources to stimulate the economy while using macro-control tools scientifically to promote long-term, steady and rapid economic development.”

“Third, we must consider the overall domestic and international situations, make good use of both domestic and international markets and resources, balance domestic development and openness to the outside world, and take into consideration both domestic and external demand to achieve a balanced development.”

“Fourth, we must use reform and opening up to provide the basic driving force for economic and social development. We need to comprehensively carry out economic, political, cultural and social reforms and innovations; eradicate obstacles embedded in systems and mechanisms; fully liberate and develop productive forces; and promote social fairness and justice.”

The Ministry of Environmental Protection (MEP) has compared the implementation of environmental objectives with achievements of the “11<sup>th</sup> Five-Year Plan” and summarized some experiences. They are:

“First, environmental protection must be incorporated into the overall consideration of economic and social development, and environmental problems should be addressed at national macro-strategic level. Second, we must deal with the relationship between environmental protection and economic development and social progress, so as to achieve historic change in environmental protection so that it is tied into economic performance and efficiency as well as to peoples’ livelihoods. Third, the environmental problems affecting public health should be solved, and the environmental rights and interests of the public should be protected. Fourth, we must develop environmental economic policies for the whole process of manufacturing—covering production, circulation, distribution and consumption, using various policy instruments. We need to balance environmental protection in consumption, investment and exports. Fifth, we must promote harmony between people and nature, and the restoration of over-burdened ecosystems. Sixth, we must mobilize the whole society to join forces for environmental protection.”

The CCICED Phase 4 (2007—2011) has witnessed various pressures and challenges at the onset of the “11<sup>th</sup> Five-Year Plan” as well as the achievements at its close. The CCICED had a mission during this phase, to identify ways in which China might become “an environmentally friendly society”. Thus its work was tied closely to China’s environment and development efforts during the “11<sup>th</sup> Five-Year Plan” with annual themes in line with priority concerns: 2007, Innovation and Environmentally Friendly Society, emphasizing the importance of putting forward innovative concepts; 2008, Innovative Mechanism and Harmonious Development; 2009, Energy, Environment and Development; and in 2010, Ecosystem Management and Green Development. In 2011 CCICED has chosen Green Transformation of Economic Development as its theme. Over the past five years, CCICED policy studies have addressed the government need for the transformation of national strategies for environment and development. CCICED recommendations have had impacts on the “11<sup>th</sup> Five-Year Plan”, as pointed out by Premier Wen in his meetings with CCICED members.

## *(2) The “12<sup>th</sup> Five-Year Plan” has set the target of “green development”*

The Fourth Session of the 11<sup>th</sup> National People’s Congress adopted the “12<sup>th</sup> Five-Year Plan” for National Economic and Social Development on March 14, 2011. In the next five years, the “12<sup>th</sup> Five-Year Plan” stipulated that new progress should be made in scientific



development, and substantial results be achieved in the transformation of the economic development pattern. Continuing to build a resource-saving and environmentally friendly society is an important way to speed up the transformation. We shall forcefully push forward the implementation of the basic national policy of resource conservation and environmental protection, along with energy conservation and reduction of greenhouse gas emission intensity, development of circular economy and low-carbon technologies. We shall actively address global climate change, and follow the path for coordinated and sustainable development. In the following paragraphs the most relevant sections of the “12<sup>th</sup> Five-Year Plan” are described.

The “12<sup>th</sup> Five-Year Plan” has proposed a total of 12 binding targets, including seven environmental and resource constraints. The seven are: ① arable land shall be kept above 1.818 billion mu level; ② water consumption per unit of industrial added value shall be reduced by 30%; ③ the proportion of non-fossil fuels in primary energy consumption should reach 11.4%; ④ energy consumption per unit of GDP shall be reduced by 16%; ⑤ CO<sub>2</sub> emissions per unit of GDP should be reduced by 17%; ⑥ the release of major pollutants addressed in the “11<sup>th</sup> Five-Year Plan” should be reduced by 8%, and ammonia and nitrogen oxides emissions shall be reduced by 10%; ⑦ forest coverage should be increased to 21.66%, and forest stock should reach 14.3 billion m<sup>3</sup>.

These indicators concerning resources and environment are more specific and clear than those in the “11<sup>th</sup> Five-Year Plan”. New items to be monitored according to targets include water consumption per unit of industrial added value, the proportion of non-fossil fuels in primary energy consumption, and carbon dioxide emissions per unit of GDP. The “12<sup>th</sup> Five-Year Plan” also added two new sub-binding targets for emission reduction (emissions of ammonia and nitrogen oxide), and it divided the original forest coverage indicator into forest coverage and forest stock. It has demonstrated the government’s resolution for “green-development”.

“Green development” was a key word in CCICED’s 2010 policy recommendations, and the title for the 6<sup>th</sup> chapter of the “12<sup>th</sup> Five-Year Plan” is “Pursue Green Development: Develop A Resource-Conserving And Environmentally Friendly Society”, showing “green development” has become a consensus for both the government and CCICED.

In this chapter, there are six sections, including active response to global climate change, enhancing resource conservation and management, developing circular economy, intensifying environmental protection, promoting ecological protection and restoration, and enhancing water conservation and disaster prevention and mitigation systems.

The “12<sup>th</sup> Five-Year Plan” has pointed out that, in order to achieve economic and social



development goals, we must emphasize scientific development, and accelerate the transformation of economic development, together with carrying out overall planning, reform and innovation. We must make more efforts to solve unbalanced, uncoordinated and unsustainable economic and social development problems, and identify major policy directions. These include a sound energy reduction incentive and restraint mechanism; optimization of energy structure and reasonable control of energy consumption; improvement of pricing mechanism for resource products and a tax system for resources and environment; energy conservation laws, regulations and standards, assessment of responsibility in achieving energy conservation targets; incorporating resource-saving and environmental protection into every aspect of production, distribution, consumption and construction; and enhancing capacities of sustainable development.

In dealing with the numerous major environmental accidents in recent years, the “12<sup>th</sup> Five-Year Plan” suggested prevention of environmental risks, with a focus on comprehensive management of heavy metal pollution, using Xiangjiang River as a pilot and demonstration site for restoration and treatment of heavy metal pollution. We need to intensify pollution prevention and control of persistent organic pollutants, hazardous wastes and chemicals; conduct pilot and demonstration programs for restoration of contaminated regions (soil and water, etc.); strengthen nuclear and radiation monitoring capacity, in order to ensure nuclear and radiation safety; and actively tackle environmental legacies. For sources of major environmental risks, we should enhance monitoring, early warning and control, and improve environmental and health risk assessment capabilities.

An important means to prevent environmental risks is to reinforce environmental regulations. The “12<sup>th</sup> Five-Year Plan” indicates that it is crucial to improve environmental protection laws, regulations and standards, as well as environmental technologies and economic policies; and to strengthen capacity building for environmental monitoring, early warning and emergency response. We ought to improve environmental law enforcement, with stricter environmental access, perform environmental impact assessment in accordance with the law, and strengthen the environmental regulation for transfer of industry. We also should implement a responsibility system for environmental protection, and an environmental accountability system regarding major pollution incidents, along with a public supervision mechanism for environmental protection.

Since the “11<sup>th</sup> Five-Year Plan”, green economy polices have played a more and more important role in environmental protection. In the “12<sup>th</sup> Five-Year Plan” this trend will not only continue, but also such polices will be further polished. According to the new “12<sup>th</sup> Five-Year Plan”, the reform of resource products pricing and environmental protection fees



will be carried out; a pricing mechanism will be established reflecting market supply and demand, resource scarcity and environmental costs of resource products, which would promote structural adjustment, resource conservation and environmental protection. We should push forward the reform of the environmental protection fee system, establish and improve the system of polluter-pays, raise the collection rate of sewage fee, reform fee collection methods for waste treatment, and raise waste treatment standards and financial subsidies. We should actively promote environmental tax reform, and start levying environmental taxes on items that require extensive prevention and treatment and have established technical standards, and gradually expand the application scope. We must establish and improve mechanisms for resources and environmental property rights. With the introduction of market mechanisms, we should establish compensation and trading systems for mineral rights and emission rights; regulate the market of trading mineral exploration rights and mining rights; develop emission trading market, and normalize the trading pricing for emission right; improve the system of laws, regulations and policies; urge the orderly flow of resources and environmental property rights; and ensure open, just and fair trade.

Developing a circular economy will not only save resources and reduce pollution from the source, but also play a role in “green development”, as is stated in the “12<sup>th</sup> Five-Year Plan”. In line with principles of reduction, reuse and recycling, we should give priority to reduction, aiming to improve resource efficiency. We need to promote the development of a recycling economy throughout production, circulation and consumption. Moreover, we should accelerate the construction of a resource recycling system for the whole society. We also need step up the implementation of cleaner production in agriculture, industry, construction, business services and other key areas, and bring pollutants and emissions under control from the source throughout the entire process, while reducing resource consumption. We need a sound resource recycling system for renewables, establish and improve systems of classified garbage recovery, sealed shipping, and central treatment. We should promote green consumption patterns and lifestyle, advocating a civilized, economical, and green low-carbon consumption concept in the whole society. We should put green government procurement into practice, and gradually raise the proportions of energy-saving and water-saving products as well as recycled products; strengthen policy support such as fiscal and financial policies, technical support, and planning guidance; improve laws, regulations and standards; establish the system of extended producer responsibility; develop technologies and product catalogues regarding circular economy; and establish a renewable product identification system and a sound statistics and

assessment system for circular economy.

In order to ensure the fulfillment of its objectives and tasks, the “12<sup>th</sup> Five-Year Plan” also emphasized the creation of a performance evaluation mechanism for the benefit of the environment: “accelerating the development and improvement of performance evaluation system and specific assessment methods that will help boost scientific development and step up the transformation of economic development patterns. We should lessen the assessment based on economic growth rate, and strengthen a comprehensive evaluation system based on indicators of structural optimization, livelihood improvement, resource conservation, environmental protection, basic public services and social management. The evaluation results ought to be regarded as an important basis for adjustment, selection and appointment, along with punishment and award for government officials at all levels.”

In addition, in the “12<sup>th</sup> Five-Year Plan”, environmental protection is also given a lot of attention in Part III, “Transform and Upgrade Industries: Raise Their Core Competitiveness” and Part V, “Optimize the Structure: promote balanced development between regions and a healthy development of urbanization”.

The “12<sup>th</sup> Five-Year Plan” is the most “green” of the Five-Year Plans, indicating a major transformation in China’s development mode, and marking China’s entry into a “green development era” along the road of “ecological civilization”. It will also be an important contribution to sustainable development of the world as well as a response to global climate change.

The State Council issued the Comprehensive Work Plan for Conserving Energy and Reducing Emissions on August 31, 2011, which stipulated requirements for the overall emission reduction during the “12<sup>th</sup> Five-Year Plan”, in reducing the intensity of energy consumption, reducing the total discharge of major pollutants and reasonably controlling energy consumption.

We will use a forced mechanism for speeding up the transformation of economic development pattern and strengthening responsibility, legal systems and policy implementation combined with effective supervision. We will establish and improve incentive and restraint mechanisms, optimize industrial structure, promote technological progress, improve energy efficiency, and significantly reduce emissions of pollutants. We should build a government-led, business-oriented and market-driven pattern, together with the participation of the whole society in the promotion of energy conservation and emissions reduction; and achieve a resource-saving and environmentally friendly society.

The Comprehensive Work Plan for Conserving Energy and Reducing Emissions contains sections on responsibility in reaching energy-saving and emission reduction targets,



adjustment and optimization of industrial structure, energy conservation and management, circular economy, energy-saving technology development and application, energy-saving economic policies, supervision and inspection of energy conservation, and market-based energy conservation mechanisms. The Work Plan also specifies indicators for energy conservation, discharge of sulfur dioxide, nitrogen oxides, ammonia, and chemical oxygen demand for each province, autonomous region and municipality.

### *(3) Environment and development priorities for 2011*

In the Work Report of the Government (2011), Premier Wen Jiabao stated that we:

“Should vigorously promote the development of new strategic industries of energy conservation and new energy. We will actively promote changes in the way energy is produced and used, and raise energy efficiency. We will give impetus to the clean use of traditional energy sources, intensify the construction of smart power grids, and vigorously develop clean energy. We will strengthen energy conservation, environmental protection and ecological development, and actively respond to climate change. We will develop circular economy. We will move forward with pilot projects for low-carbon cities. We will strengthen our capacity to adapt to climate change and respond to extreme climate events. We will put in place well-equipped statistical and monitoring systems for greenhouse gas emissions, energy conservation and emission reduction.

“We will accelerate the planning and building of sewer networks and garbage disposal facilities in urban areas, and expand the use of recycled water. We will strengthen the environmental management of chemicals. We will start the work of denitration in coal-fired power plants and strengthen prevention and control of particle pollution. We will step up the treatment of marine pollution, accelerate the treatment of water pollution in major river basins, the treatment of air pollution, the treatment of heavy metal pollution in key areas and the comprehensive improvement of the rural environment with focus on pollution from non-point rural sources.”

“We will continue to carry out major ecological restoration projects, intensify the protection and management of major functional ecological zones. We will carry on with phase 2 of the protection of natural forest resources, implement the subsidy and reward policy for grassland ecological conservation, consolidate achievements already made in turning reclaimed farmland into forests and grasslands, as well as grazing land to grasslands. We will carry out afforestation, strengthen wetland protection and recovery, and make progress in comprehensively dealing with desertification and rocky deserts. We will improve contingency plans for preventing and mitigating natural disasters, and accelerate

the development of systems for surveying and evaluation, monitoring and early warning, prevention and control, and emergency response in areas prone to geological disasters from mountain torrents.”

On September 27, the State Council held a national teleconference on energy saving, aiming at comprehensive mobilization and deployment of energy conservation in the “12<sup>th</sup> Five-Year Plan”. Wen Jiabao pointed out that during the “11<sup>th</sup> Five-Year Plan”, energy conservation, as a strong impetus to industrial restructuring and technological progress, had made important contributions in response to global climate change. However, at present, the energy conservation situation is still quite grim. Therefore, we must be fully aware of the importance and urgency of energy conservation, and enhance the sense of crisis and responsibility. We must comprehensively put into practice the Comprehensive Work Plan for Conserving Energy and Reducing Emissions under the “12<sup>th</sup> Five-Year Plan”, and aim to achieve the desired results. Premier Wen Jiabao put forward that, on the basis of ensuring safe and efficient development of nuclear power, we should build a safe, stable, economical and clean-energy modern industrial system. Starting with pilot projects, we will establish a carbon emission trading market step by step; improve the statistical accounting and monitoring methods; and establish a sound emission monitoring system at national, provincial and municipal levels. We should promote green, low-carbon consumption, and advocate for energy-saving consumption patterns and lifestyles. At the teleconference, the Minister of Environmental Protection indicated that there was good and bad news about reducing pollutant emissions in the first half of the year. Chemical oxygen demand and sulfur dioxide emissions have continued to decline, but the ammonia emissions have only decreased by 0.73%, while nitrogen oxide emissions have increased by 6.17%, a huge disparity with the annual emission reduction targets and goals set in the “12<sup>th</sup> Five-Year Plan”.

## 2. Important policy progress in environment and development in the past year related to recommendations to the government of china

### *(1) Marine development and environmental protection was highlighted*

The State Council has approved three national strategic marine economic development plans during 2011, including the Development Plan for Shandong Peninsula Blue Economic Zone, Development Plan for Zhejiang Marine Economic Demonstration Zone, and Development Plan for Guangdong Comprehensive Marine Economic Experimental Zone. It also officially approved the establishment of Zhejiang Zhoushan Islands New Development Area on July 7, 2011, a national new development area designated by the CPC Central



Committee and the State Council, following the new development areas of Pudong in Shanghai, Binhai in Tianjin and Liangjiang in Chongqing. It is also China's first national strategic new development area with the theme of marine economy.

With the quick development and utilization of marine resources, marine environmental pollution and sustainable use of marine resources have been put on the agenda. The CCICED established a task force in 2010 on this topic, which pointed out the following in its policy recommendations to the Chinese government:

“China should take full account of the impact of terrestrial, watershed and coastal development on marine ecosystems. With adherence to ecosystem-based principle of land-ocean integration and river-ocean integration, an endeavor should be taken to strike a balance between marine development and environmental protection in order to achieve coordinated eco-social development in coastal areas and river basins. Efforts should be exerted to step up marine and coastal ecosystem protection and restoration, the service capacities of marine and coastal ecosystems, and also international cooperation and exchanges on marine environmental protection at global and regional levels, ensuring the sustainable use of marine resources. Recent attention shall be focused on the Bohai Sea Basin and China's green marine development strategy to realize coordinated social and economic development of marine resources.”

Recognizing those problems, the Chinese government has made more efforts to protect marine environment and this is reflected in the “12<sup>th</sup> Five-Year Plan”: “to coordinate marine environmental protection and land-sourced pollution prevention, and strengthen the protection and restoration of marine ecosystems.” The State Council also expressed its plan to develop a national marine functional zoning plan according to the National Ecological Zoning Plan.

In addition, relevant government departments have also implemented policies and measures to enhance marine environmental protection since 2010, including:

1) For the purpose of preventing pollution to marine environment from ships and related operations, the Regulations on the Prevention and Control of Marine Pollution from Ships and Ship-related Operations was promulgated by Ministry of Transport (MOT) on November 16, 2010.

2) In order to regulate law enforcement for marine environmental protection, further clarify regional jurisdiction, level management and case investigation of maritime surveillance agencies, and raise the overall efficiency and level of marine environmental protection law enforcement, the Implementation Measures for Marine Environmental Protection Law Enforcement of China Maritime Surveillance was issued by State Oceanic



Administration (SOA) on December 22, 2010.

3) In view of the random and excessive land reclamation from the oceans and the consequent destruction of marine resources and environment, Ministry of Land and Resources and SOA jointly issued the Circular on Strengthening the Management of Land Reclamation from the Oceans on December 31, 2010.

4) For the purpose of improving emergency response capacity towards ship pollution accidents, and controlling, reducing and eliminating damages caused by marine pollution incidents, the Regulations on Marine Emergency Preparedness and Emergency Response towards Marine Environmental Pollution from Ships was promulgated by MOT on January 27, 2011.

5) In order to guide and promote the preparation of provincial island protection plan, the Comments of State Oceanic Administration on the Preparation of Provincial Island Protection Plan was issued on January 28, 2011.

6) To effectively prevent and curb serious accidents and promote continuous and steady improvement of safe operation of offshore oil production, State Administration of Work Safety (SAWS) issued the Notice on Special Supervision and Inspection of Offshore Oil Production Safety on April 12, 2011, with an enforcement schedule for late April to early July, 2011.

7) Dynamic ocean surveillance and monitoring is an important established system in the Sea Area Use Management Law, it is also a major means for “informationized”, standardized and scientific sea area management. For better operation and application of national marine monitoring and management system, the Comments on Advancing Dynamic Surveillance and Monitoring of Marine Waters was issued by SOA on April 18, 2011.

8) In order to regulate operations in inspection and acceptance of ship-induced marine pollution, prevention capacities of ports, terminals, loading and unloading stations, as well as operating units engaged in ship repair, salvage and dismantlement, the Implementation Rules for the Special Inspection and Acceptance of Capacities in Ship-induced Marine Pollution Prevention and Control was promulgated by China Maritime Safety Administration (CMSA) on June 9, 2011.

While Chinese government departments began to pay attention to marine environmental protection, two severe oil spill incidents in the Bohai Sea have once again sounded the alarm. A serious oil spill at sea in Dalian in July 2010 shocked the world following the BP oil spill in the Gulf of Mexico, and caused very serious ecological damage to the sea area near Dalian. However, relevant government departments still do not have a clear view on the compensation for damages to the marine ecosystem. The Penglai 19-3 oil



spill that occurred in June 2011 was not made public until two weeks later and sparked public outcry. The ConocoPhillips enterprise responsible for the accident is slow in action, and has not yet completely cleaned up the oil spill as required by the national regulatory authorities.

Two severe oil spills at sea within a year have forced the Chinese government to take marine environmental protection seriously. Such events once again have exposed many problems for China in handling marine pollution incidents, including weak awareness of corporate responsibility, delayed information disclosure, light punishment for the responsible party, low-level government emergency response capability, and lack of effective damage compensation mechanism and system. Fundamentally, China's marine environmental management system still needs fundamental reform.

## *(2) Heavy metal pollution prevention plan approved*

Heavy metal pollution is a major environmental problem attracting attention during the "11<sup>th</sup> Five-Year Plan" period, and has aroused wide concern from decision-makers to the general public. According to the CCICED special report on soil protection strategy in 2010, "the severe soil pollution in some areas has become a hazard to ecological environment and food safety, which poses a serious threat to public health." The Task Force recommended measures including improving regulations and standards, introducing plans, enhancing prevention, rehabilitation and technological innovation, setting up a regulatory system, improving fund-raising mechanisms, and so on. Since 90% of soil contamination in China is associated with heavy metals, enhanced prevention of heavy metal contamination is of vital significance in addressing the current soil pollution in China.

In early 2011, the State Council approved the "12<sup>th</sup> Five-Year Plan" for the Comprehensive Prevention and Control of Heavy Metal Pollution, the first thematic plan that underlines the high national attention to soil pollution prevention and control.

The "12<sup>th</sup> Five-Year Plan" embraces a series of actions to enhance heavy metal pollution prevention and control. It includes the introduction of technological standards, policy measures and management regulations on heavy metal pollution prevention and control related with lead, mercury, cadmium, chromium, arsenic, etc.; the preparation of a directory on products causing high pollution and posing high environmental risks; the comprehensive investigation and remediation of heavy metals polluting industries; optimization of heavy metal-related industrial structure; the improvement of the three major regulatory systems, namely heavy metal pollution prevention and control system, emergency response system, and environmental and health risk assessment system, all of



which will lay a solid foundation for the effective control of heavy metal pollution. It is stipulated in the “12<sup>th</sup> Five-Year Plan” that, by 2015, the discharge of main heavy metals in key regions, such as lead, mercury, chromium, cadmium and arsenic, will be reduced by 15% from the 2007 levels. Heavy metal pollution prevention and control is prioritized in the thematic environmental protection action jointly conducted by nine departments in 2011.

### *(3) Keeping a balance between speed and safety supervision of nuclear power development*

With the accelerated development of nuclear energy, nuclear safety regulatory capacity building has also been strengthened. In recent years, seeing the boom of low-carbon economy and new energy development, CCICED has been reminding the Chinese government of the safety issue. Especially in 2009, CCICED warned in the policy recommendations to the government that, “the policy to actively promote nuclear power development is beneficial to improving environmental quality, reducing greenhouse gas emissions and addressing global climate change. However, the government should ensure nuclear energy be developed with the consideration of safety, stability and health”.

In 2010, the technical support unit of the national nuclear safety regulatory authorities recruited more than 600 people. After the Fukushima nuclear accident in Japan, the state has paid a lot of attention to capacity building, and the number of relevant divisions under the Ministry of Environmental Protection has expanded from one to three, adding dozens of administrative staff. The nuclear leakage after the Fukushima earthquake on March 11 has caused public concerns about the hidden high risks of vigorous nuclear power development.

The government has also turned its attention to the balance between speed and safety supervision of nuclear energy development. Five days after the nuclear accident, Premier Wen Jiabao chaired a State Council executive meeting and decided to suspend the approval of new nuclear power projects, to expedite the preparation of nuclear safety plan, and to undertake the adjustment and improvement of medium and long-term nuclear power development plan. The State Council has also called for the immediate overall safety inspection of nuclear facilities, and strengthening safety management of nuclear facility operations. China is taking a more cautious attitude at the national strategic level towards the development of nuclear power.

Previously, MEP and the General Administration of Quality Supervision, Inspection and Quarantine jointly issued the Regulations for Environmental Radiation Protection of Nuclear Power Plant (February 18, 2011). It made explicit requirements on the siting of nuclear power plants. Geological and seismic features, and other possible natural or



man-made factors within the area that could affect the safety of nuclear power plants, must be taken into consideration. In addition to natural factors, such as earthquakes, the Regulations suggest that, non-residential and restricted areas should be established around the nuclear power plant, with delineation taking into account the radiological consequences of hypothetical accidents. By the end of August, the inspection report on China's nuclear power operation safety was finalized and submitted to the State Council. The Nuclear Safety Plan is still under preparation and a draft will be released before the end of the year for comments.

#### *(4) Strategic emerging industries vigorously promoted, such as energy saving and new energy*

The Decision on Accelerating the Cultivation and Development of Strategic New Industries, issued by the State Council on October 10, 2010, pointed out that strategic new industries are an important force to guide the future economic and social development. Speeding up the cultivation and development of strategic new industries is the inevitable choice for building a moderately prosperous society and sustaining development, and also an important indicator of China's economic restructuring.

The "12<sup>th</sup> Five-Year Plan" has clarified the positioning of strategic new industries and relevant development strategies, devoting Chapter 10 in Volume 3 to "fostering seven strategic emerging industries", among which are "energy saving and environment protective" industries and "new energy" industries as pillar industries. The energy saving and environment protective industries will focus on key technologies and equipment, products and services that are energy efficient, advanced, environmentally-friendly, and resource recycling. New energy industries will prioritize the development of next generation nuclear energy, solar thermal power, photovoltaic or solar thermal power generation, wind power technology and equipment, smart grid and biomass energy. Major government departments have also introduced development plans targeted at the two sectors.

As a complementary measure, the National Plan on Science and Technology Development during the "12<sup>th</sup> Five-Year Plan" Period (MOST [2011] No. 270) released by MOST states that, as far as the energy saving and environment protective sector is concerned, great efforts will be made to boost the development of critical technologies, equipment and systems that are energy efficient, advanced, environmentally-friendly and resource recycling. Programs on semiconductor lighting, clean and efficient use of coal, waste recycling, as well as the "Blue Sky" project will be implemented. Also, technology integration and promotion will be enhanced to rapidly raise China's overall technological

competence and industrial competitiveness in the field of energy-saving environmental protection. The new energy industries are encouraged to develop key technologies, equipment and systems, such as wind power, solar photovoltaic, solar thermal, next generation biomass energy, ocean energy, geothermal energy, hydrogen energy, next generation nuclear energy, smart grid and energy storage systems. A new energy technology innovation system will be established to step up the research and development of advanced technologies and models conducive to new energy application, and moreover, effective convergence of new energy production, transportation and consumption should be realized to sustain rapid industrial development.

MEP has outlined the important development direction of environmental protection during the “12<sup>th</sup> Five-Year Plan” in its Guidance on Further Pushing Ahead Energy Saving and Environment Protective Industrial Development within the Environmental Protection System (MEP [2011] No. 36).

Prioritized areas for development during the “12<sup>th</sup> Five-Year Plan” include nitrogen and phosphorus facilities upgrading in sewage treatment plants, sewage treatment in medium and small towns, treatment of concentrated non-biodegradable industrial wastewater, nitrogen oxides, submicron particulate matter and air pollution control, sludge disposal, heavy metal pollution prevention and control, large-scale municipal waste incineration, hazardous waste treatment, electronic waste dismantlement and disposal, integrated control of rural and agricultural nonpoint source pollution, contaminated sites and ecological restoration, environmental monitoring and early warning, etc. The overall package of environmental services, specialized services on operations, consultation and engineering are also highlighted.

Meanwhile, MEP has called for environmental protection departments at all levels to serve the transformation of economic and social development, vigorously develop circular economy and clean production, and promote green development. Efforts shall also be made to control greenhouse gas emissions and develop low-carbon technologies, provide support for compliance of environmental conventions, improve people’s livelihood and raise scientific awareness of the public, advocate green consumption and green procurement, promote equality in basic environmental public services, and achieve and share the balanced development of regional, urban and rural environmental infrastructure.

“Develop environmental economic policies to guide the green transformation of traditional enterprises and nurture emerging and environmental protection industries” is an important recommendation provided by CCICED to the Chinese government on advancing the green transformation of economic development mode. Judging from the formulation and



implementation of above environmental policies, the Chinese government has determined to expedite the development of strategic emerging industries, such as energy saving and environmentally friendly industry and new energy industry, and has accomplished great achievements. Industrial associations and experts have predicted that, by 2015, the total output value of energy-saving and environmentally friendly industry is expected to exceed RMB 3 trillion, accounting for 8% of GDP. By 2020, the installed capacity of new energy power generation in China will reach 290 million kW, accounting for 17% of the total installed capacity. To break it down, wind power, solar power and biomass power will contribute an installed capacity of 150 million, 20 million and 30 million kW respectively. The above prediction has demonstrated a very bright prospect for the two strategic emerging sectors, which will give confidence to future investors.

***(5) “Energy saving and emission reduction” had a good start in the first year of the “12<sup>th</sup> Five-Year Plan” with efforts from all departments***

“Energy saving and emission reduction”, a major task in the “11<sup>th</sup> Five-Year Plan”, demonstrates the government’s determination to practice “green development”. Its emission reduction targets had exceeded the expectation while energy saving targets reached the set targets. The “12<sup>th</sup> Five-Year Plan” has included more specific binding targets for energy saving and emission reduction, a “top priority” in environmental protection. According to the Plan, the emissions of four major pollutants (sulfur dioxide, chemical oxygen demand, nitrogen oxides and ammonia) in 2011 shall be reduced by 1.5% over the 2010 levels.

On the morning of July 19, 2011, Premier Wen Jiabao, also the leader of National Leading Working Group on Addressing Climate Change, Energy Saving, and Emission Reduction (NLWGACC), chaired a leading group meeting, at which the participants reviewed and agreed in principle a comprehensive program for energy saving and emission reduction during the “12<sup>th</sup> Five-Year Plan”.

The meeting determined that, the priority for energy saving and emission reduction during the “12<sup>th</sup> Five-Year Plan” includes:

① Promote energy saving and emission reduction in key fields. Specifically, the industrial sector should focus on the replacement of backward production capacity with advanced energy production capacity. The transportation sector should emphasize the development of public transport and optimize the use of multi-mode transport. In the field of building construction, efforts should be made to modify existing buildings, develop green buildings and smart buildings, while saving energy, land, water and materials to the largest extent. In daily life, cost-effective energy efficient products are recommended, and energy

saving and environmentally friendly consumption patterns and lifestyles shall be cultivated.

② Further adjust and optimize industrial structure, develop a modern industrial system, encourage the tertiary industry and strategic emerging industries to use advanced technologies to transform traditional industries. Energy production and use patterns shall be adjusted for a safe, stable, economical, clean and modern energy industry system.

③ Implement major energy saving projects. Focus should be placed on projects concerning energy, environmental governance and circular economy.

④ Promote the use of advanced technologies. A proper mechanism to select, evaluate and promote energy saving technologies should be established, while foreign advanced technologies should be actively introduced, digested and absorbed; and technology development, demonstration and application expedited, so as to effectively improve energy efficiency and reduce emissions.

⑤ Strengthen energy conservation management. The energy efficiency assessment review system shall be improved and national standards for energy-consuming equipment developed and implemented. Enterprises are encouraged to establish energy-saving measures, ledger and statistical systems and implement various management approaches, such as demand-side management, energy efficiency labeling, and government procurement for energy-saving products.

⑥ Improve long-term energy saving and emission reduction mechanism. Tax incentives shall be introduced, resource taxes and environmental tax reform expedited, import and export tariffs adjusted, as well as high energy consuming and high emitting exports curbed.

The meeting also highlighted the need to actively carry out international cooperation on climate change. On the basis of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, with the principle of “common but differentiated responsibilities” and the principle of fairness, efforts should be made according to the Bali Roadmap to constructively push ahead international negotiations on climate change based on Copenhagen Agreement and Cancun Agreement to achieve further positive results in Durban Conference on UNFCCC, and the comprehensive, effective and sustained implementation of the Kyoto Protocol.

Central government departments have also put forward a series of energy saving policies to facilitate the realization of the goals set in the “12<sup>th</sup> Five-Year Plan”.

Firstly, energy saving and emission reduction should be intensified in key industries and key fields.

① Energy saving and emission reduction should be extended to rural areas and small towns. To speed up the development and utilization of renewable energy in rural areas, optimize rural energy structure, promote clean energy and energy modernization in rural areas, Ministry of Finance (MOF), National Energy Bureau (NEB), and Ministry of



Agriculture (MOA) jointly issued the Interim Measures for Managing Subsidies for Building Green Energy Demonstration Counties on April 6, 2011. In addition, in order to promote a healthy, coordinated and sustainable development of China's small cities and towns, MOF and Ministry of Housing and Urban-Rural Development (MOHRUD) jointly issued the Implementation Opinions on the Pilot Demonstration of Small Green Cities and Towns on June 3, 2011. ② Energy saving should be further promoted in public buildings and public transportation. In order to fully tap energy saving potential of public buildings and apply energy saving service mechanisms, such as energy efficiency transaction, contract energy management in the field of building energy saving, MOF and MOHRUD jointly released the Circular on Further Promoting Energy Saving in Public Buildings on May 4, 2011, aiming to reduce energy consumption per unit area of public buildings by 10% during the "12<sup>th</sup> Five-Year Plan", and by 15% in large public buildings. MOT released the "12<sup>th</sup> Five-Year Plan" for Energy Saving and Emission Reduction in Highway and Waterway Transportation on June 27, 2011. Approved by the State Council, the Central Finance will allocate appropriate funds from the general budget and special transportation fund from vehicle purchase tax to support energy saving and emission reduction in highway and waterway transportation during the "12<sup>th</sup> Five-Year Plan". To regulate financial management and improve capital efficiency, MOF and MOT jointly issued the Interim Measures for Special Fund Management for Energy Saving and Emission Reduction in Transportation (CJ [2011] No. 374). ③ Guidelines for energy saving in key sectors are published. Cement industry is an important sector for China's economic development, but also a major energy resource consumer and pollutant emitter. In order to improve energy efficiency and reduce emissions in the cement industry, Ministry of Industry and Information Technology (MIIT) issued the Guidance on Energy Saving and Emission Reduction in the Cement Industry on November 25, 2010, as well as Circular on the Establishment of Industrial Energy Efficiency Monitoring System on May 18, 2011.

Secondly, efforts in energy saving technology research and development, governance tools and pilot demonstration are enhanced. MEP issued the Science and Technology Development Plan for National Environmental Protection during the "12<sup>th</sup> Five-Year Plan" on June 9, 2011. It intends to invest RMB 22 billion at the national level for key technology in 12 fields. Among them, water pollution control will receive the largest amount of input, at RMB 5.0 billion, followed by air pollution control, and solid waste and soil pollution prevention and control with an investment of RMB 3.0 billion and RMB 2 billion respectively. MOF and NDRC jointly issued the Circular on Carrying out Comprehensive Demonstration for Energy Saving and Emission Reduction Fiscal Policy on June 22, 2011.

According to the circular, Beijing, Shenzhen, Chongqing, Hangzhou, Changsha, Guiyang, Jilin and Xinyu are included in the first 8 cities to carry out comprehensive energy saving and emission reduction demonstrations in low carbon industry, clean transportation, green building, intensive services, reduction of main pollutants, and large-scale utilization of renewable energy. Existing policies in support of energy saving, emission reduction and renewable energy development will give priority to the pilot cities. To effectively solve the problem of water pollution in key river basins, a special fund of RMB 5.0 billion will be earmarked from the Central Finance in 2011 for water pollution control in the three rivers (Huaihe River, Haihe River and Liaohe River), three lakes (Taihu Lake, Chaohu Lake and Dianchi Lake) and the Songhua River Basin. Meanwhile, incentives will fully replace subsidies.

Thirdly, the supervision and implementation of energy saving and emission reduction shall be strengthened. MEP issued the Supervision and Inspection Program for the Implementation of Environmental Protection and Pollution Reduction Policy on June 29, 2011, and demanded 14 provinces (regions) including Inner Mongolia, Jiangsu, Zhejiang and Jiangxi, to submit a self-examination report to MEP no later than August 31, 2011. MEP and member units sent an inspection team to carry out the annual supervision and inspection in September 2011.

#### ***(6) National major function zoning plan implemented***

CCICED's recommendations in 2010 stated that the government needs to: "Implement green regional development strategies by taking into account resources and environmental capacity, biodiversity conservation needs, and establish within China regional cooperation mechanisms for ecological protection. It is equally pivotal, however, to strike a balance between regional rejuvenation and green transformation: ① regional strategies and plans should conform to the National Ecological Zoning Plan, and the development direction of a region should be determined by its resource and environmental capacity so that pollution and ecological damage will not come together with the industries that gradually transfer to these regions; ② in the richer eastern region, ecological preservation should be prioritized and optimized development strategy should be implemented; while in the ecologically vulnerable west, a green development strategy should be introduced, focusing on ecological innovation and giving greater attention to biodiversity conservation. These strategies will help build a resource-conserving and environment-friendly society; ③ coordination and cooperation among the localities is needed. It is desirable to establish a comprehensive cooperative mechanism on regional ecological protection and joint pollution prevention,



control and treatment.”

The State Council released the Circular on National Ecological Zoning Plan (GF [2010] No. 46) on December 21, 2010, which is a regulatory planning document on the strategic land spatial development. In the process of building ecological zones, one needs to take full account of population distribution, economic layout, land use and urbanization pattern, and to identify ecological zones in relation to their resources and environmental carrying capacity, existing development intensity and development potential in order to control development intensity and regulate development sequences.

The National Ecological Zoning Plan will divide national land space into zones for optimized development, key development, restricted development and prohibited development.

Optimized development zones are economically advanced, densely populated and intensively developed, but face more prominent resources and environmental issues. For these zones, industrialization and urbanization should be optimized.

Key development zones have a moderate economic base, strong resources and environmental capacity, and sound conditions for population and economic concentration, with great development potential, so the development of industrialization and urbanization should be prioritized in these areas.

Restricted development zones fall into two categories. ① Main producing areas of agricultural products. Being arable land and in good condition for agricultural development, although these areas are suitable for industrialization and urbanization, large-scale and intensive development towards industrialization and urbanization is restrained in those areas due to issues with national agricultural security and sustainable development. The priority for these areas is the improvement of overall agricultural production capacity. ② Key ecological functional zones. Given the fragile ecosystems or important ecological functions, and low resources and environmental capacity, such regions are not suitable for large-scale intensive development.

Prohibited development zones refer to a variety of protected areas for their natural and cultural values by law, as well as critical ecological functional areas banned from industrialization and urbanization development. At the national level, national nature reserves, the world cultural and natural heritage, national scenic areas, national forest parks and national geological parks are all prevented from such development. At the provincial level, industrial and urbanized development is prohibited in a variety of natural and cultural resource protected areas and important water source sites, as well as other areas identified by provincial governments as needed.



The National Ecological Zoning Plan highlights the principle of “natural conservation”. The Plan is based on the following concepts:

① It is equally important to protect waters, wetlands, woodlands and grasslands as well as arable land. ② Industrial and urban development should be based on comprehensive evaluations of resources and environment carrying capacity in the region and be strictly confined within such capacity. Regional planning should also undergo the same evaluation process. ③ In areas with fragile eco-systems, water shortages, small environment capacity and prone to geological disasters such as earthquakes and natural disasters, the industrial and urban development should be rigidly restricted, while other development activities may be subject to appropriate control, in order to ease the pressure on natural ecology. ④ All kinds of development activities harmful to the environment are prohibited. Energy and mineral resource development shall not compromise the environment, and they should restore the original ecological environment the best they can. ⑤ Original river ecological protection shall be fortified through the transition from post-treatment to beforehand protection. A strict water management system will be put into practice, which specifies indexes for the development and utilization of water resources, limits of pollutants in water functional areas and water efficiency. Water resources shall be developed in an orderly manner on the basis of river ecosystem protection, while groundwater exploitation is subject to strict control. Comprehensive treatment and prevention monitoring of soil erosion will also be enhanced. ⑥ Infrastructure construction, such as transportation and transmission facilities should not be allowed to go through important natural landscape and ecosystems, and their passage will be strictly controlled. ⑦ Agricultural development shall be considered with its impact on natural ecosystems. Agricultural development activities, such as land reclamation, the occupation of waters, wetlands, woodlands and grassland, are prohibited, if harmful to natural ecosystems. ⑧ On the premise of no decrease in cultivated land and farmland within the provincial territory, it is encouraged to turn farmland to forest, pasture to grassland, and land to lakes in relevant regions, especially to turn farmland to lakes where agricultural water use far surpasses the regional water capacity. ⑨ Ecological debts due to eco-damage should be repaid as soon as possible. Ecological restoration actions should be conducive to building ecological corridors and ecological networks. ⑩ Natural spaces, such as natural grassland, marsh, reed bed, beach, permafrost, glacier and permanent snow, are all under protection.

Requirements for national main functional zones are included in the “12<sup>th</sup> Five-Year Plan” (Chapter 19). These requirements are specified below.

In accordance with laws, regulations and policies on main ecological functional zones,



the compensation mechanism shall be improved during the “12<sup>th</sup> Five-Year Plan”. Central Finance will step up transfer payments in main agricultural production areas and key ecological functional areas, particularly in central-western regions, and enhance essential public services and environmental protection capabilities. Provincial finance shall improve transfer payment policies. Government investment shall be allocated according to ecological functional zones and fields, with the focus on key ecological functional zones and main agricultural production areas, while the investment by fields shall conform to the positioning and development direction of ecological functional zones. The existing Industrial Guidance Catalogue shall be revised and improved to identify industries encouraged, restricted and prohibited in ecological functional zones. In addition, it is necessary to implement differential land management policies based on scientific evidence on land use scale and control, enforce different pollutant emission control and environmental standards in different ecological functional zones, as well as improve the corresponding agricultural, population, ethnic, and climate policies, etc.

In order to guarantee the implementation of the National Ecological Zoning Plan, both National Ecological Zoning Plan and the “12<sup>th</sup> Five-Year Plan” have provided an innovative assessment mechanism for differentiated evaluation and examination according to different ecological functional zones. The assessment will look at economic structure, technological innovation, resource utilization and environmental protection in optimized development zones, and a comprehensive assessment will look at economic growth, industrial structure, quality and efficiency, energy saving, environmental protection and population absorption in key development zones. In restricted development zones, like major ecological functional zones and main agricultural production areas, performance evaluation will be conducted, with priority given to agricultural development and ecological conservation, regardless of regional GDP and industrial index. In areas prohibited from development, a comprehensive evaluation of natural and cultural resources’ authenticity and integrity will be conducted.

Ecological functional zoning is a major initiative for the Scientific Outlook of Development. It will help economic restructuring accelerate the transformation of economic development mode and realize scientific development. It will enhance regional development, bridge gaps in regional basic public services and raise people’s living standards. It is also instrumental in terms of rationalizing distribution of population and economic layout based on resources and environment carrying capacity. It is conducive to reversing the ecological deterioration trend from the source, enhancing resource conservation and environmental protection, facilitating adaptation to and mitigation of climate change, and realizing

sustainable development. It will help to break the boundaries of administrative divisions and develop more targeted regional policies and performance evaluation system for improved regional control.

### ***(7) Attention paid to eco-environment protection and restoration***

“Ecological conservation” is a core recommendation CCICED put forward to the Chinese government in 2010. Continuous high economic growth and domestic consumption has imposed imminent pressure on ecosystems, which needs our attention. The “12<sup>th</sup> Five-Year Plan” dedicates a chapter to “promoting ecological conservation and restoration”.

According to the “12<sup>th</sup> Five-Year Plan”, protection and natural restoration are given priority in the effort to enhance ecological protection and construction, so as to reverse the ecological deterioration trend from the source. An ecological security barrier shall be established to reinforce the conservation and management of major ecological functional zones. In addition, work should be done to strengthen the supervision of nature reserve construction for elevated management and protection standards; enhance bio-safety management and increase the protection and management of bio-species resources, effectively and proactively preventing the loss of species resources and keeping away alien invasive species; establish ecological compensation mechanism; increase balanced transfer payments in major an ecological functional zones and set up a national ecological compensation special fund. Moreover, the downstream areas, development areas and ecologically beneficial areas are encouraged and guided to implement ecological compensation to the upstream areas, protected areas and ecologically protected areas respectively.

One of the priorities in 2011 has been to strengthen ecological conservation, said Minister of Environmental Protection Zhou Shengxian at the national work conference on environmental protection on January 13, 2011. Specifically, efforts should be made to properly distribute the tasks outlined in China’s Strategy and Action Plan for Biodiversity Conservation (2011—2030); to conduct demonstration on biodiversity conservation and restoration, and poverty reduction; to implement the Notice of the State Council on Better Management of Nature Reserves and strengthen the supervision on the development and construction related to nature reserves; and to start the Periodic Remote Sensing Survey and Evaluation on National Eco-environmental Changes (2000—2010). In order to improve the evaluation of ecological impacts during environmental impact assessment, a national environmental protection standard, The Technical Guideline for Environmental Impact Assessment: Ecological Impact (HJ 19—2011) was issued by MEP on April 8, 2011 and



became effective as of September 1, 2011.

Since 2010, the government has introduced ecosystem protection regulations targeted at two major ecological zones in China—Greater and Lesser Khingan Ranges and the Qinghai-Tibet Plateau region. National Development and Reform Commission and State Forestry Administration jointly issued the Planning for Ecosystem Conservation and Economic Restructuring in Greater and Lesser Khingan Ranges (2010—2020) on December 16, 2010. It points out that, by 2020, the forest area in Greater and Lesser Khingan Ranges will increase by 1.7 million ha over the 2009 level, with the forest coverage up by 4%. Growing forest stock will see a rise of 400 million m<sup>3</sup> and account for more than 30% of new forest stock volume. On March 30, 2011, the State Council executive meeting passed the Planning for Ecosystem Conservation and Economic Restructuring in Qinghai-Tibetan Plateau Region (2011—2030), according to which the Qinghai-Tibetan Plateau Region is divided into ecologically conservation areas, urban environmental maintenance areas, agricultural and pastoral areas, etc.

Subsidy incentive implementation for grassland ecological protection is being carried out steadily. According to the decision of the State Council executive meeting, a subsidy incentive mechanism started to be established for grassland ecological conservation in 8 major grassland provinces (regions), including Inner Mongolia, Xinjiang, Tibet, Qinghai, Sichuan, Gansu, Ningxia, Yunnan and Xinjiang Production and Construction Corps in 2011, according to which herdsmen are entitled to subsidies for banning grazing and stock raising, as well as to incentives for balancing livestock and grassland. To ensure the conscientious implementation of such policy, MOF and MOA jointly issued the Circular on Better Preliminary Work for Building the Subsidy and Incentive Mechanism for Grassland Ecological Conservation on December 31, 2010.

An “ecological compensation” system is critical to strengthening ecological protection. CCICED has recommended in 2010 to “expedite the process of legislation on ecological compensation, and improve relevant policies and mechanisms”. The Ecological Compensation Ordinance, is still under preparation led by NDRC. It is intended to clarify basic principles, main fields and approaches for ecological compensation; the rights and obligations of stakeholders, and various safeguard measures. Specific regulations shall be introduced to cover waters, forests, grasslands, wetlands, mineral resources etc. According to NDRC and the Ministry of Finance (MOF), China’s first “national comprehensive experimental area for ecological conservation” will be set up in Three Rivers Areas, and China’s first ecological compensation scheme, the Overall Implementation Program for Three Rivers Ecological Compensation Mechanism, is also

in the pipeline. China's ecological compensation proceeds simultaneously in regulations, policies and practices.

### ***(8) Rural pollution prevention and environmental protection further enhanced***

Rural environmental protection has long been an Achilles heel for environmental protection in China. CCICED has suggested in the 2010 policy recommendations the need for:

“comprehensively improving rural ecological environment and shortening the gap between urban and rural areas in terms of ecological civilization. At present, the acute environmental problems in Chinese rural areas have become the weak link in China's ecological and environmental protection, which directly impacts the quality of life for most of the Chinese population and the equitable sharing of China's development achievements. During the ‘12<sup>th</sup> Five-Year Plan’, the Chinese government should fully enhance rural ecological environment and strive for a breakthrough.”

Rural environmental protection has attracted the CPC and government's attention ever since the “New Socialist Countryside Construction” was initiated in 2005. In July 2008, the national teleconference of the State Council on rural environmental protection was held, marking the official onset of efforts to protect rural environment.

The “12<sup>th</sup> Five-Year Plan” also includes stipulations on rural environmental protection. According to “promoting the comprehensive improvement of rural environment” (Section 4) in “improving rural production and living conditions” (Chapter 7), efforts should be made to control pollution from non-point sources, such as pesticides, fertilizers and plastic sheeting; comprehensively push forward pollution prevention and control of livestock breeding; strengthen rural drinking water source protection and the comprehensive treatment of rural rivers and water pollution; and enhance supervision and management of soil pollution prevention. In addition, rural sanitation projects shall be implemented to speed up the concentrated treatment of rural garbage and contiguous environment in rural areas. Urban and industrial pollution is strictly prohibited from spreading to rural areas.

According to the Opinions on Further Strengthening the Work of Rural Environmental Protection (MEP [2011] No.29) issued by MEP on March 15, 2011, the general idea of environmental protection in rural areas during the “12<sup>th</sup> Five-Year Plan” is as follows:

Under the guidance of the Scientific Outlook of Development, with improving rural eco-civilization, protecting and improving people's livelihood as the theme, ecological construction demonstration initiatives, pollution reduction, as well as the responsibility system for integrated environmental management targets shall be carried out in rural areas



as the starting point, to enhance treatment while intensifying the “incentives for treatment” policy. An endeavor should be exerted to solve prominent environmental issues undermining public health and sustainable rural development to effectively curb the expansion of urban and industrial pollution to rural regions and to improve environmental quality in rural areas in order to build a moderately prosperous society in rural areas.

The environmental protection targets in rural areas during the “12<sup>th</sup> Five-Year Plan” are: by 2015, to complete integrated environment treatment in 60,000 administrative villages, targeting prominent environmental problems severely harmful to public health in rural areas; to improve water quality and management in rural drinking water sources; to significantly increase the level of pollution control in rural sewage and garbage disposal, large-scale livestock farms (plots) and densely free range areas; to enhance rural soil environmental protection and agricultural non-point source pollution prevention and control; to preliminarily improve environmental quality in rural areas; and to raise rural environmental monitoring capacity and farmers’ environmental awareness.

A national work conference on environmental protection in rural areas was held by MEP on 28-29 March 2011. MEP Vice Minister Li Ganjie attended the conference and pointed out that the work focus of environmental protection in rural areas during the “12<sup>th</sup> Five-Year Plan” could be summarized as: ① to draft and implement a national “12<sup>th</sup> Five-Year Plan” for rural environmental protection, ② to start the legislation process for the Livestock Pollution Prevention Regulations and the Law on Soil Environmental Protection urgently, ③ to intensify environmental law enforcement, environmental monitoring, environmental dissemination in rural areas, ④ to promote environmental treatment through incentives, innovation, emission reduction and inspection, and ⑤ to aim for results in protection of drinking water sources, sewage treatment, garbage disposal, pollution prevention and control in livestock breeding and soil environmental protection in rural areas.

China has a large rural area and a big rural population. Effective environmental protection in rural areas touches upon the interest of each individual and decides the results of environmental protection in China. Most severe environmental pollution incidents in recent years have occurred in rural areas. As urban environmental quality gradually improves, the government is shifting the focus of environmental protection to rural areas. The worsening environmental trend in rural areas is expected to be significantly curbed during the “12<sup>th</sup> Five-Year Plan”.

### *(9) New progress in China's environmental governance*

#### 1) Resources, energy, and environmental laws and regulations

In terms of legislation concerning environment and natural resource protection, amendments have been made to environmental pollution crime in the Criminal Law, as well as Law for Soil and Water Conservation.

The Amendment (VIII) to the Criminal Law of the People's Republic of China, adopted at the 19<sup>th</sup> Session of the Standing Committee of the 11<sup>th</sup> National People's Congress (NPC) on February 25, 2011, has lowered the threshold for environmental crime conviction. The legislative provisions on environmental pollution crimes in China have been modified, which will stipulate sound conditions for the government to step up efforts to combat environmental pollution crimes.

Article 338 of the Criminal Law (Crime of Undermining Protection of Environment or Resources) before the amendment reads: "A person who, in violation of the State's regulations, discharges, dumps or disposes of radioactive wastes, wastes carrying infectious pathogens, poisonous substances or any other dangerous substances to land, water or air, thus causing a severe accident of environmental pollution, shall be sentenced to fixed-term imprisonment of not more than three years or criminal detention, and be concurrently or independently fined, if severe consequences or a great loss of public or private property or bodily injury or death of another person is caused; and if the consequences are especially severe, to fixed-term imprisonment of not less than three years and not more than seven years, and be concurrently fined." Article 338 is amended to read: "A person who, in violation of the State's regulations, discharges, dumps or disposes radioactive wastes, wastes carrying infectious pathogens, poisonous substances or any other hazardous substances, thus causing severe environmental pollution, shall be sentenced to fixed-term imprisonment of not more than three years or criminal detention, and be concurrently or separately fined; If the consequences are especially severe, to fixed-term imprisonment of not less than three years but not more than seven years and be concurrently fined."

Amendments are as follows: ① "thus causing a severe accident of environmental pollution, and if severe consequences or a great loss of public or private property or bodily injury or death of another person is caused" is amended to be "severe environmental pollution". The most important change gives more prominence to environmental protection itself, rather than environmental interests attached to personal interests and property interests. Accordingly, the charge is amended from "crime of major environmental pollution accident" to "crime of undermining protection of environment and resources".



② “Dangerous substances” discharged, dumped or disposed is amended to be “hazardous substances”, and “to land, water, or air” is deleted. It greatly lowers the threshold for crime conviction.

Law of the People’s Republic of China for Water and Soil Conservation (Amendment) adopted at the session of NPC Standing Committee on December 25, 2010 includes the guiding principle of protection first, highlighting priority and scientific management. It further strengthens the legal status of soil and water conservation planning, improves measures on soil erosion prevention and control, and enhances monitoring systems and supervision measures for soil and water conservation. It also increases penalties for violations of soil and water conservation, with the maximum fine raised from RMB 10,000 to RMB 500,000.

The State Council formulated Land Reclamation Regulations and amended Regulations on the Safe Management of Hazardous Chemicals from October 2010 to July 2011. The Administrative Regulations for the Recovery and Disposal of Waste Electrical and Electronic Products, which was adopted at the 23<sup>rd</sup> Executive Meeting of the State Council on August 20, 2008, has become effective on January 1, 2011. As a supporting document, the Administrative Measures on the License for the Disposal of Waste Electrical and Electronic Products, was promulgated by MEP on December 15, 2010.

In addition, MEP and other departments have also developed and revised the Administrative Measures for the Import of Solid Waste, the Regulation on the Safety and Protection of Radioisotopes and Radiation Devices, the Measures for Information Report of Environmental Emergencies Administrative Measures for the Tip-off Hotline for Environmental Protection and the Measures for the Ex-post Supervision of Environmental Administrative Law Enforcement.

## 2) Judicially-driven environmental protection

Encouraging progress has been achieved in the field of environmental justice over the past year. Environmental protection courts have been set up in some places, e.g. in Hainan, and some will be set up, e.g. in Chongqing. Public interest litigation cases and the amount of compensation have gradually increased.

The Xinyi municipal government brought an action against Zijin Mining in October 2010 for damages as a result of gangue dam collapse, and demanded RMB 19.5 million in compensation. The guilty verdict was received on January 30, 2011 that the defendant was guilty of the major environmental pollution accident and sentenced to a fine of RMB 30 million. With an already paid administrative fine of RMB 9,563,100, the defendant still needs to pay RMB 20,436,900. It is the most severe sentence against the violation of



environmental laws in Chinese history.

Meanwhile, two public interest litigation cases in China's southwest provinces marked the beginning of public interest litigation in China. One involved a paper mill in Guizhou Province and the other a company dealing with livestock farming in Yunnan Province. Both cases were brought to the justice system by the local government and environmental protection departments against polluters for damages on behalf of the public. It can be expected that, with the growing number of cases like these, polluters will pay higher costs for the violation of laws. The cases like these will play a positive role in curbing the frequent environmental violations.

#### Information disclosure and public participation

Information disclosure and public participation in China's environmental protection is still mingled with feelings of hope and fear. Environmental Open Information: between Advance and Retreat, an open report on pollution information transparency index in 113 cities during 2009—2010, released by private environmental organizations on December 28, 2010, shows that in 2009—2010, China's environmental information disclosure continued to improve overall, and some cities even saw large improvements. However, progress was unevenly distributed. Information disclosure remains at a low level in some cities.

The recent oil pollution incident in the Bohai Sea makes environmental information disclosure and public knowledge a public focus. The oil spills in CNOOC's oil field in Bohai Sea in June 2011 was not announced to the public until two weeks later, which aroused strong public outcry. The incident has once again sparked public concern for environmental information and indicates there is still a long way to go for environmental information disclosure in China. Nevertheless, the incident was first exposed to the public through the micro-blog, which demonstrates that public participation in new ways of information dissemination will enhance environmental information disclosure and thereby step up public supervision.

In terms of public participation, without a doubt, the adjustment to the Upper Yangtze National Nature Reserve for Rare and Endemic Fish Species and Chinese parasol tree in Nanjing are the most famous events in the past year. In both cases, the "public gatekeeper" played an important role of keeping the public informed of government actions and their environmental implications.

China's information disclosure and public participation in environmental protection have strived forward though still faces difficulties. These are topics concerning which CCICED has made a number of recommendations over the past half-decade.



### 3. Conclusion

In the face of an extremely complex domestic and international environment, China successfully achieved the targets in the “11<sup>th</sup> Five-Year Plan” for energy conservation and emissions reduction. The Chinese government is determined to transform economic development mode, to build a resource-saving and environmentally friendly society and to pursue a new path for environmental protection. The government has learned a lesson from the “10<sup>th</sup> Five-Year Plan”, surpassed most of the environmental targets in the “11<sup>th</sup> Five-Year Plan” and has accumulated valuable experience for reaching the new targets set for the “12<sup>th</sup> Five-Year Plan”.

Looking back at the Chinese government’s environmental and development policies in the past year, we need to pay special attention to some signs of important policy development:

(1) Ecological protection has escalated to equal importance with energy conservation and emission reduction.

(2) Some “strategic emerging industries” as energy saving, environmental protection and new energy industries have become drivers for environmental protection and economic development, but we must be vigilant about their potential environmental impacts on the development process.

(3) The era of balanced environmental protection between urban and rural areas has begun.

(4) The environmental legislation has been further strengthened, and the awareness of and public participation in legal actions for environmental issues are enhanced.

The year 2011 is the first year of China’s “12<sup>th</sup> Five-Year Plan”, and it is also the last year of CCICED Phase IV. In the past five years, the CCICED has focused on building a well-off society, closely linked with the policy demands of the Chinese government for environment and development, and conducted a large number of early warning and forward-looking policy studies in a planned and systematic way. Some of these studies have formed the leading edge in China and stimulated a wave of domestic research (including low-carbon economy, green economy, green administration).

During the period of CCICED Phase IV, China’s development has been closely integrated into the economic globalization process. The CCICED has made important contributions to promoting China’s sustainable development as an important part of global sustainable development, and has fulfilled its mission of propelling China to establish a new relationship between economic development and environmental protection, and of exploring

a new road of environmental protection while pursuing economic development. In addition to providing direct support for some major domestic issues, the CCICED has also responded to a number of urgent and difficult topics, carrying out early-warning and forward-looking studies on issues such as management of chemicals, soil environmental protection, environment and health, climate change, and China's outgoing direct investment (ODI). The CCICED Phase IV has reached a higher elevation in terms of policy research topics, content, methods, and policy recommendations, enhancing its role as a high-level advisory body to the Chinese government.

## Part II CCICED 2010 AGM recommendations to the government of China

This section is reproduced from the Proceedings of the 2010 CCICED Annual General Meeting. It is included in this report for the convenience of CCICED members and others interested in forming their own opinions on the impacts and congruence of CCICED recommendations with the many policy shifts described above.

The 4<sup>th</sup> Annual General Meeting of the China Council for International Cooperation on Environment and Development (CCICED) Phase IV was held from November 10<sup>th</sup> to 12<sup>th</sup> 2010 in Beijing. The theme of the meeting was “Ecosystem Management and Green Development.”

The council members note that, despite the plethora of approaches to promoting green development, one issue in this context has not gained as much attention as it deserves, either within China or elsewhere: the protection of ecosystems and enhancing their ecological function and services. Certainly China has undertaken major initiatives to restore forests, grasslands, wetlands and to designate nature reserves and protect species and other components of the country's natural capital. Yet much more remains to be done and the situation will grow more urgent with rising domestic consumption and continuing high rates of economic growth. The council members voice their special concern over the frequent natural disasters that have plagued China this year, such as droughts, floods, landslides, typhoons and earthquakes. These disasters have rung alarm bells. They have exposed the fragility of the country's ecosystems and, in some instances, the desperate need for enhanced eco-services. In the future, climate change will place even more pressure on already overworked ecosystems.

Both theory and practice show that improved ecological management can help protect biodiversity and enhance ecological services. CCICED has two task forces reporting this year. One studied key ecological factors in terrestrial ecosystems (forest, grassland and wetland), and the second examined the sustainable use of China's marine and coastal



ecosystems. Other studies were carried out regarding soil pollution, conservation of aquatic ecosystem services, the need for mainstreaming biodiversity conservation, and on the status of China's ecological footprint. Based on the discussions during the Annual General Meeting and the results of the task forces and other studies, the CCICED AGM 2010 proposed the following policy recommendations to China's central government.

### 1. Changing views and management approaches regarding ecosystem services and management, and updating the national strategy on ecological protection and rehabilitation

China should change its views and approaches regarding the use of natural capital; set healthy ecosystems and highly functional eco-services as a key goal; and take a holistic ecosystem management approach. The council members further recommend that with these changes, key goal and management approach in mind, China should update the national strategy on ecological conservation and development in an effort to enhance the overall economic and social value of China's natural capital.

(1) Change views and recognize the holistic and multi-functional nature of China's ecosystems from a scientific development point of view. Scientific research and public education about ecosystems should be strengthened to raise the awareness of both policy makers and the general public about the multiple services and high value that ecosystems and their biodiversity can provide. This should lead to greater public participation in ecosystem protection. Of critical importance is the introduction of the ideas that improvement of ecosystem management could bring about multiple benefits of economic development, poverty alleviation, as well as job creation. It is of critical importance that both the quantity and quality of ecosystem services are improved at the same time.

In addition, management approaches should place as much attention on the functions of ecological regulatory processes, cultural enjoyment and ecological support as on the supply function of ecosystems. The former functions should be well protected, improved and given long-term attention. The goal for ecological conservation and development should be a healthy and resilient ecosystem with continuously improved eco-services. Biodiversity conservation should be mainstreamed into development strategies, and into the general efforts for ecological protection. A holistic and integrated view of ecosystem management embracing the linkages from China's mountaintops to its seas should be upheld as a basic approach in ecosystem management.

(2) Introduce National Medium and Long Term Strategic Guidelines on Ecological Protection and Development, and establish a coordinated action framework. During a

nation's development, science and technology provide the driving force, education is the basis, talents are the key, and natural capital the roots. By drawing upon the modality of national guidelines on science and technology, education and human resources development, and taking into consideration the National Plan for Ecological Development (1998—2050), the National Guidelines on Ecological Conservation (2000—2030), and the results of the recently completed Macro Environmental Strategy Study, China should draft National Medium to Long Term Strategic Guidelines on Ecological Protection and Development.

The Guidelines can integrate various functions of the ecosystem and help the government to manage the country's ecosystems holistically. Consequently, the problems brought about by the current separated and jurisdiction-based management system will be resolved. Bearing in mind the National Plan on Ecological Functional Zoning, the Guidelines should incorporate the protection of all ecosystems, including forest, grassland, soil, wetland, rivers, lakes, seas, and groundwater, as well as the endeavors of biodiversity conservation, ecological preservation and pollution control. The umbrella Guidelines should also identify the medium to long term targets and tasks for ecological protection and development in China. Based on the proposed Guidelines, subordinate plans or measures targeting specific types of important ecosystems should be developed.

(3) Establish a more comprehensive cross-sector and trans-regional coordination mechanism and an effective ecosystem management system. For an integrated use and management of ecosystems to be feasible, China should take a long term view and work towards the establishment of an administrative body that holds more fully the powers for regulating ecological conservation and development, with the current need being the establishment of an effective inter-ministerial and trans-regional coordination mechanism. Many problems such as: overlap of mandates; blurred responsibilities, powers and interests; coordination difficulties; and high management costs will have a better chance to be resolved.

At the central government level, a cross-sector and trans-regional coordination mechanism needs to be established that focuses on the entire ecosystem management and trans-regional river basin systems. It is important to streamline the responsibilities between central and local; between different ministries; and between upstream and downstream jurisdictions. At the local level, particularly in middle and western regions of China, it is important to establish an inter-provincial and intra-provincial ecosystem management coordination mechanism that becomes the decision-making body for ecological development, planning and management. This mechanism will facilitate inter-agency coordination and prevent unilateral and uncoordinated decision making.



The responsibility for biodiversity conservation and ecological preservation should not be limited only to national authorities on forestry, environmental protection, land and resources, and water resources, but also should be mainstreamed into the portfolio of the economic, industrial and agricultural agencies.

(4) China should encourage wider participation of the general public, enterprises, communities and NGOs in ecosystem management. Among other means this can be accomplished through education and awareness raising, market mechanisms such as eco-compensation that links their incomes with ecosystem health. Of critical importance is the creation of incentives, such as eco-product labeling and certifying process, to encourage the private sector to get involved and manage certain ecological services, foster certain new sectors, strengthen enterprises' social responsibilities, and reduce their ecological footprint. It is important to engage communities and individuals, especially those living in and directly exploiting natural ecosystems, to raise their awareness of the importance of the ecosystem health, explore sustainable community action mechanisms, improve information disclosure, and alter their behaviors. Ecosystem service and management should be included into school curriculums and education programs. One critical path is to engage NGOs in ecosystem management and ask them to lead, support, monitor and implement the system themselves. A combination of both top-down and bottom-up approaches would help form a stronger force in ecosystem protection.

## 2. Strengthen environmental management and allow key terrestrial ecosystems to recover

China should regard the terrestrial ecosystems as a whole; use systematic and coordinated approaches to improve terrestrial ecosystems management; introduce relevant laws and regulations, plans, policies, and measures; and grant more financial support to ensure success of these measures. The measures will help the important terrestrial and their associated aquatic ecosystems to rehabilitate.

(1) Amend or draft protection and recovery plans on important terrestrial ecosystems. In light of the proposed National Medium to Long Term Strategic Guidelines on Ecological Protection and Rehabilitation, sub-plans on specific terrestrial and freshwater aquatic ecosystems should be formulated on the basis of geographical distribution and ecological boundaries. These sub-plans should be mutually supportive and linked. It is important to establish a dedicated prevention, supervision and rehabilitation planning and management system that deals with social and economic activities with possible serious ecological concerns, such as mining and large infrastructure projects.

(2) Strengthen legislation on ecosystem management. The legal system for ecosystem

management should be continuously improved. The following actions are needed: ① Revise the more than 20-year old Environmental Protection Law, to better coordinate ecosystem management with pollution control, as well as to update principles, views and provisions. ② During the legislative improvement of related laws and regulation, China should safeguard the holistic nature of ecosystem protection. ③ In the legislative upgrading of economic laws and regulations, it is important to factor in the requirements of natural systems and “green” such pieces of legislations. ④ On the basis of a comprehensive review of existing biodiversity protection laws and regulations, facilitate the convergence between international conventions and domestic regulations. An umbrella law on biodiversity conservation should be mapped out in order to fully implement the National Biodiversity Protection Strategy and Action Plan (2011—2030) and to comply with the Convention on Biological Diversity, thus fulfilling China’s international commitment to biological diversity protection. ⑤ Strengthen the enforcement of ecosystem management laws and regulations.

(3) It is important to strengthen the capacity of the society and ecosystem in the event of natural disasters. Natural rehabilitation should be given more priority over human intervention, so as to strengthen the ecosystem’s own capacity in coping with natural disasters. Preservation and protection should start from the beginning of social and economic activities. Where appropriate, watersheds, rivers, lakes should be equipped with more capacity in flood control, with reinforced hydraulic infrastructure. It is important to establish various systems in disaster-prone areas, including assessment and monitoring, emergency response and contingency plans, as well as a post-disaster reconstruction process.

(4) Increase long term input for the protection and management of terrestrial ecosystems. The long term nature of ecological preservation and recovery requires long term financial support and stable policies of the government. China should increase long term financial input by exploring and leveraging multiple investment and financing channels, and formulate a stable policy environment. Existing ecological programs need to be continued, including those aimed at converting farmland back to forest/grassland, at preserving virgin forests, at treating the source of sandstorms affecting Beijing and Tianjin, at restoring grasslands from overgrazing, at conserving water and soil and for protecting wetlands, lakes and river aquatic ecosystems. The channels and total sum of financial support should be guaranteed in order to consolidate the progress achieved so far. Greater attention needs to be paid to refining the ecological objectives of each of these program areas, with better guarantees that the stated goals will be fully met.

For the ecologically fragile regions in central and western China, plans should be



developed, and new ecological programs introduced to cover river basins and their source water areas, seriously eroded areas, key ecological-function conservation areas, and China's extensive network of nature reserves. These new programs should be planned by the central government, implemented by the provinces, and supported by stable financial resources, such as financial transfers by the central government, specialized funds, and ecological compensation schemes.

In addition, China should foster ecologically-dependent industries and markets, and build an evaluation and auditing system to oversee the collection, distribution and use of ecological funds, ensuring the effectiveness of these funds.

### 3. Place marine ecosystem management high on the policy agenda and promote sustainable ocean and coasts development

China should take into account the impacts of development in river basins and coastal lands on China's ocean and coastal ecosystems, and of marine effects on cities and terrestrial areas, the government of China should develop mechanisms to reduce the impact of land-based sources of environmental and ecological problems in the seas of China. China should strengthen marine ecological protection and scientific sustainable development as the basis for all present and future economic development in the ocean. China should also strengthen global and regional exchanges and cooperation on marine ecosystem protection. Only in these ways will it be possible to guarantee sustainable ocean use, with continued growth in the contribution of the ocean economy to China's GDP growth. Currently there is no green development strategy for China's seas. The most obvious and immediate case in need of such a strategy is the Bohai Sea.

(1) Set up and improve the legal system of marine management. The central government should initiate the legislation process for a Basic Law of the Sea of the People's Republic of China as soon as possible. This Law should be designed to serve as the basis for marine development and management, marine economy development and ecological protection of the sea. It should be the fundamental law promoting sustainable use and development of the sea. Moreover, there is a need to draft the Coastal Zone Management Law of the People's Republic of China and the Bohai Sea Environmental Management Law of the People's Republic of China. The supporting regulations, methods, rules and standards of the Marine Environmental Protection Law should be formulated or improved at the earliest date. In all laws concerning use of the sea, China should abide by the principle of holistic ecosystem management and set substantial protection and rehabilitation of marine ecosystems as a goal.



(2) Map out a national strategy and plan on marine ecological protection as soon as possible. Drawing upon the China Ocean Agenda 21, China should consider formulating a new China Strategy on Marine and Coastal Sustainable Development. This new strategy will map out the basic principles, guiding philosophy and strategic targets in the next 20 years, and detail the key tasks for coastal and marine economic development, marine environmental protection and resource preservation. The strategy should prioritize such issues as sea enclosure and land reclamation, addressing marine eutrophication and its impacts such as toxic red tides and green algae blooms, as well as fishery development issues in light of the overfishing pressure.

(3) Establish a coordination mechanism for the marine environment with participation by relevant agencies including those with marine mandates, and some with terrestrial and freshwater mandates. In the near future, there will continue to be multiple players in the field of marine management and it is not yet realistic to set up a unified agency with full powers over marine issues. It is thus necessary and appropriate to set up a National Ocean Committee for the time being, which coordinates and draws upon the powers of relevant authorities in order to facilitate better management of marine and coastal affairs. Considering the current serious marine environmental problems, the main tasks of the Committee should include formulating a national strategy on marine development, promoting communications among relevant agencies, and coordinating major marine affairs that involve different agencies, sectors and regions. Among these tasks, the first priority should be solving the ecological problems in the Bohai Sea.

(4) Introduce an ecosystem-based approach to marine management. The ecosystem should be viewed as a whole, and the following comprehensive measures need to be taken in marine management: ① formulate an ecosystem-based sea zoning plan; ② evaluate ecological safety and environmental capacity of offshore waters, and identify off-limits for sea reclamation, identify ecologically sensitive and fragile areas as well as key regions of ecological safety, and mark the protected areas on the sea; ③ in addition to maintaining existing protected areas of the sea, new marine nature reserves, special protected zones and marine parks should be established for typical and representative ecosystems as well as for protecting rare and endangered species; through this means a network of protected areas on the sea will be formed; ④ in islands and areas rich in typical marine ecosystems, affected by invasive species or sensitive to climate change, ecological recovery programs should be carried out; set up demonstration areas of marine preservation, and recover the capacity of the seas for maintaining biodiversity and strengthening resilience against marine disasters and climate change; ⑤ establish conservation and recovery systems for marine species



under the ecosystem-based ocean management framework; ⑥ expand sea farming in an environment-friendly way, promote the carbon sink functions of fishery and improve ecosystem capabilities; ⑦ introduce the approach of determining an inland pollution cap based on the receiving capacity of the sea, and when technically and economically feasible, formulate upstream-river mouth pollution control plans; reducing agricultural and industrial pollution loads on the ocean should be high priorities; and ⑧ strengthen mud and sand regulation by dams and minimize negative effects of delta erosion caused by sudden decrease of mud and sand volume.

(5) Build up the early warning and emergency response system of serious marine pollution incidents. According to relevant international practices, China should set up and continuously improve the early warning and emergency response system of serious pollution incidents on the sea. Under the proposed National Marine Committee, China could establish a Leading Group on Emergency Response to Major Marine Pollution, with the responsibility for setting up an emergency response mechanism and coordinating actions of relevant agencies in the wake of serious incidents of marine pollution. In the meantime, China should establish mechanisms on notification of major marine pollution, for evaluation of potential environmental risks, and for improving early warning and information sharing issues. China also should improve emergency response mechanisms for regional marine pollution, strengthen supervision and management of potential pollution sources, and ensure the implementation of emergency response measures.

(6) Set up an integrated environmental monitoring and analysis system that covers both the land and the sea. China should combine the work of upstream, river mouth and sea monitoring; set unified monitoring indicators and technical standards; build an integrated monitoring system that covers air, river basins, the sea and coastal areas, and set up an information sharing system. In the short term, China should add  $\text{NO}_x$  as a new indicator for air monitoring and control, and total nitrogen and phosphorus as new indicators for water monitoring and control over the river basin. In addition, China should carry out scientific research on river basin-ocean linked ecosystems and deepen understanding of the marine ecosystems, laying a sound scientific basis for better marine management. In the populous and economically prosperous coastal areas, China should create an integrated research and monitoring network comprised of environmental monitoring facilities, research institutions, laboratories, outdoor observatories, and ecological recovery demonstration projects.

#### 4. Promote scientific innovation, improve technological support, and strengthen capacity building on ecosystem management

China should set up and continuously improve a measurable, verifiable and reportable monitoring and evaluation system on China's ecosystems to cover the whole country and in particular the key ecological regions. More input should be given to scientific research and capacity building on ecosystem management.

(1) Set up an improved national observation and research network on the ecosystem. The central government should improve the outdoor observation and research network for regional ecosystems and biodiversity studies, support the network by long-term and stable financial resources, unify relevant technical and data standards, and establish a basic database and national digital atlas for biodiversity and ecosystems. These measures will help provide key scientific data, develop key technologies, and improve management of ecosystems and their services.

(2) Carry out regular evaluation on the status of China's ecosystems, and set up monitoring and evaluation systems for adaptive management of ecosystems in key regions. Comprehensive evaluation of China's ecosystems should be carried out every five years in order to illustrate a full picture of the ecosystem and support the formulation of the "Five-Year Plans." These evaluations should utilize the results of various censuses and surveys on forests, grasslands, wetlands, oceans, soil, water and biodiversity; make use of the national observation and research network on ecosystems, and apply remote sensing, modeling and other technologies. By doing these activities, an objective understanding on the changing ecosystems and their eco-services will be gained. Furthermore, China should establish an air to ground monitoring system for key ecosystems and have systematic and non-stop monitoring in these regions. Such monitoring systems will not only help to follow closely the trends of ecosystem change and record the progress China is making, but also to expose existing problems. This monitoring could then be the basis for developing solutions to the problems and contribute to better protection and recovery of ecosystems.

(3) Carry out basic studies on and develop key technologies of ecosystem services and management, and promote the application of the results gained. China should study the features and regional distribution of the main types of degrading ecosystems in order to define the mechanisms and patterns of their degradation. Based on these studies, key technologies for ecological recovery should be developed, and their application promoted. Technologies for recovering different ecosystems and in different regions should be developed. It is important to establish a green accounting system for ecosystem services,



link this system to the national system of accounts, and incorporate relevant indicators into performance evaluation system. Scientific and technological studies should be carried out to study the impact of climate change on ecosystem adaption and mitigation, as well as the impact on ecosystems from new energy exploitation and new technique applications. Meanwhile, it is necessary to review different management models and apply the management systems that suit the localities best. In this way, the country's ecological preservation efforts can be more effective and sustainable.

### 5. Attach greater importance to weak links, step up efforts in key fields, and help promote the green transformation of economic development pattern during the "12<sup>th</sup> Five-Year Plan" period

China's core mission in the field of environment and development during the next five years is to integrate environmental protection with the transformation of economic growth pattern; to achieve success in both improving environmental quality and promoting green development; and to explore a new path for environmental protection. To fulfill this mission, it is necessary to not only step up efforts on traditional priorities and strengthen policies and programs that have proved to be effective, including the energy conservation and pollution reduction program, but also give more attention to weak links that require immediate actions, including ecosystem management, rural environmental protection, soil pollution prevention, and the inclusion of climate change mitigation and adaptation targets into ecosystem management initiatives. These actions will help give full play to the role of ecological protection in promoting the green transformation of economic development pattern.

(1) Step up efforts in key fields and promote the green transformation of economic development pattern. Efforts should be made in the following aspects: set up mandatory objectives for improving environmental quality and promote nationwide; carry out environmental impact assessments more strictly and systematically; adjust industrial structure and regional distribution; raise environmental standards, tighten environmental enforcement and force the industrial structure to adjust both by improvements in upstream sectors and end-of-pipeline measures; promote environmental product certification and encourage green consumption; introduce environmental economic instruments, guide the traditional enterprises to "green" themselves and foster emerging and green industries; deepen environmental information disclosure programs and encourage public participation in green development; and provide technical and scientific support to green development through environmental innovation and technological application.

(2) Boost rural environmental protection across the board and bridge the gap between urban and rural areas in terms of ecological civilization. Currently, rural environmental degradation stands out as a prominent problem. Compared with the urban and industrial areas, rural areas have become a weak link in China's environmental protection work, affecting the living standards and equitable sharing of development results in rural areas.

In the "12<sup>th</sup> Five-Year Plan" period, the Chinese government must greatly strengthen environmental protection in rural areas and try to make breakthroughs in this regard: ① formulate an environmental protection plan for the rural areas and move rural environmental issues higher on the agenda of national environmental work; ② improve the legal system of rural environmental protection, accelerate the legislative process on animal husbandry pollution control, non-point pollution control, soil pollution control and agricultural waste recycling; ③ step up infrastructure building for rural environmental protection, provide more guidance on environmental management and disseminate pollution control technologies; ④ expand the coverage of "award for treatment" policy (a policy that financially rewards the villages doing a good job in environmental treatment), raise the amount of such awards and study the feasibility of introducing "award for prevention" policy (a policy that financially awards the villages that successfully prevent environmental pollution and degradation); ⑤ set up rural environmental supervision institutions from the central government down to the grassroots level and improve rural management capacity across the board; and ⑥ strengthen education and publicity, raise awareness and recognition of rural environmental issues.

(3) Strengthen soil environment protection and safeguard public and ecosystem health. Soil pollution poses a great threat to food safety, public health and ecosystem integrity. The Chinese government already attaches a great deal of importance to this issue but needs to implement a comprehensive action plan during the "12<sup>th</sup> Five-Year Plan", including prevention, restoration and remediation, and supervision. There is an urgent need to: ① commission a national soil environmental protection plan; ② issue a law on soil environmental protection and pollution treatment, to introduce standards, and to establish national and local guidelines for soil protection and environmental quality; ③ set up a national monitoring system for soil protection, allocate responsibilities and establish a liability and accountability system; ④ establish a funding mechanism for soil pollution prevention and reclamation; ⑤ strengthen scientific research for soil pollution management and study and develop reclamation techniques and equipments; ⑥ establish a pollutant watch list by regions and food products; ⑦ establish, monitor and evaluate the supply chain for food safety; and ⑧ study and act on the carbon sink and water resource protection potential of



soil, and strengthen soil's role in climate mitigation and adaptation.

(4) Focus on priorities, and incorporate the target of improving various ecological services and the principle of holistic ecosystem management into the daily work of ecological protection and development during the “12<sup>th</sup> Five-Year Plan” period. The approach of holistic ecosystem management is something new; there will be many challenges ahead in ideological, institutional and legal terms to be addressed in order to put it into practice in China. With so much preparatory work to be done in order for integrated management to be successful, it will be a fairly long time before full implementation of this approach takes place. In the coming five years, China should first raise the awareness of this holistic and integrated ecosystem management approach among policy makers and stakeholders, and formulate and promulgate the National Medium to Long Term Strategic Guidelines on Ecological Protection and Development as well as specialized plans on key ecosystems. Then China should implement this approach first in key and vulnerable ecosystems like the soil and the sea. Pilots could be first established in important areas such as Bohai Sea and other priority ecosystems and sub-regions. In addition, China should also strengthen scientific research, technological development, management model demonstration, and monitoring system development in order to better support the holistic approach of ecosystem management.

(5) Expedite the process of legislation on ecological compensation, and improve relevant policies and mechanisms. There are many useful tools that can be introduced in China, but among them ecological compensation, which has been studied and piloted for many years and initiated into legal procedure, is particularly important for both ecological preservation and pollution control. China should issue the State Council Regulation on Ecological Compensation as soon as possible, and promote the widespread establishment of ecological compensation schemes. In light of the current status of the country's ecosystems, there are several key tasks in this regard: ① establish a non-profit compensation fund for forests, grasslands and wetlands; ② the central government should grant sufficient budget to national nature reserves under the framework of the national ecological compensation scheme; ③ gradually incorporate the forests and grasslands restored from farmlands into the scheme; ④ establish marine ecological compensation mechanisms, carry out compensation demonstration for key marine programs, including sea reclamation projects, as well as for oil spills and protected areas. Compensation should also be piloted in places where inland activities have affected river mouths and seas; ⑤ establish eco-compensation mechanisms for mining projects; and ⑥ an ecological compensation scheme for freshwater ecosystems.

(6) Implement green regional development strategies by taking into account resources and environmental capacity, biodiversity conservation needs, and establish within-China regional cooperation mechanisms for ecological protection. Over the past two years, China has issued a number of regional development strategies and plans, which will be essential to bridge the development gap among the different regions and to foster new growth engines. It is equally pivotal, however, to strike a balance between regional rejuvenation and green transformation: ① regional strategies and plans should conform to the National Plan on Ecological Zoning, and the development direction of a region should be determined by its resource and environmental capacity so that pollution and ecological damage will not come together with the industries that gradually transfer to these regions; ② in the richer eastern region, ecological preservation should be a priority and optimized development strategy should be implemented; while in the ecologically vulnerable west, a green development strategy should be introduced, focusing on ecological innovation and giving greater attention to biodiversity conservation. These strategies will help build a resource-conserving and environment-friendly society; ③ in light of the current status of the environment, it is not enough for one local government alone to curb the degrading trend of the ecosystem and substantially improve environmental quality, but rather coordination and cooperation among the localities is needed. It is desirable to review experience so far and establish a comprehensive cooperative mechanism on regional ecological protection and joint pollution prevention, control and treatment.