



Progress on Environment & Development Policies in China

(2008 - 2009)

AND

CCICED Policy Recommendations Impact

CCICED Chief Advisors & Support Team

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Introduction

The China Council for International Co-operation on Environment and Development (CCICED), a high level policy advisory body approved by the Chinese government, is entrusted with the task of providing policy recommendations in the area of environment and development for the reference of, and implementation by decision makers. At its 2009 Annual General Meeting, both Chinese and International Council Members will deliberate and discuss policy-related issues based on research findings of the Council Task Forces, and formulate policy recommendations that are subsequently submitted to the State Council and relevant government agencies and departments. CCICED Council Members and funding partners are very concerned about the level of impact the Council's recommendations have had on China's formulation and adjustment of policies influencing environment and development. Therefore, since 2008, the CCICED Secretariat has entrusted the Chief Advisors Group with the task of tracking policy shifts concerning China's environment and development, and where possible assessing direct and indirect impacts of CCICED policy recommendations on policy formulation. This effort is to be prepared as an annual written report.

Of course the formulation and readjustment of major policies by governments everywhere is a comprehensive decision making process. Therefore it is hard to attribute the formulation of a particular policy to the recommendation or suggestion of a single agency or organization. Due to the complexity of policy development, it is also difficult to directly connect a specific CCICED policy recommendation submitted in the previous year with a specific policy formulated the next year. This Report does not seek to assess how many CCICED recommendations are being implemented by the government, but rather it aims to report on overall progress and achievements China made in environment and development in the past year, and to provide the readers with a policy context in which they could make their own judgments in terms of practical impact of those policy recommendations.

By doing so, it should become relatively easier to see the impact the Council recommendations have had on particular policy formulations. Although it is still a difficult task, the report will make an effort to draw connections between certain important policy developments in the past year with the Council's recommendations. This is being done in the hope that it will demonstrate to what degree the recommendations are being considered or implemented, and which ones might help China realize long-term environment and development policy targets, even if they are not applicable in the near future.

This Report consists of two parts: Part I summarizes those major policy developments and changes made since the 2008 CCICED Annual General Meeting that are highly relevant to CCICED policy recommendations; Part II, an annex, gives a brief review of the key CCICED policy recommendations for 2007-2008. The report represents opinions of Chinese experts of the Chief Advisors Group, and it is for the reference of the Council members and stakeholders.

PART I POLICY ACHIEVEMENTS ON ENVIRONMENT AND DEVELOPMENT IN CHINA

A. Background

In 2008, China maintained its rapid economic development in spite of the adverse impact brought by severe natural disasters and the global financial crisis, with a 9% annual GDP growth rate. In the first half of 2009, China's GDP still increased at an annual rate of 7.1% even though the world was badly hit by the financial crisis.

To address the economic crisis, China has adopted a stimulus package, used economic structural readjustment as a major weapon to overcome the economic turmoil, and, in the meantime, continued to push for energy conservation and emission reduction (ECER) as well as protection of the ecological environment.

- China continued to improve energy structure by increasing the use of renewable energies. China's annual energy consumption was 2.85 billion tons of standard coal, up by 4.0% compared to the previous year. China installed wind power facilities of 6.3 million kws, with a total capacity reaching 12.15 million kws, an annual increase of 106%. Hydropower capacity reached 163 million kws, and nuclear 8.85 million kws. Energy consumption per unit of GDP dropped by 4.59% from the previous year. In the first 3 years of the 11th Five-Year Plan (11th FYP), China saw a drop of 10.1% in energy consumption per unit of GDP, saving 300 million tons of standard coal and cutting CO₂ emissions by 750 million tons, cumulatively achieving half of the target set for the five years of the 11th FYP.
- In 2008, COD level and SO₂ emissions dropped by 4.42% and 5.95% to 13.207 million tons and 23.212 million tons respectively. Compared with 2005, COD level and SO₂ emissions decreased by 6.61% and 8.95%. In the first half of 2009, the two indicators further dropped by 2.46% and 5.4%. In July, 2009, ECER List for 31 provinces was released to the public.
- By June 2009, China had increased its urban sewage treatment capacity of 40 million tons per day, reaching 90% of the total target in the 11th FYP; had newly added 1204 desulfurization-equipped coal burning power generators with a total installed capacity of 412 million kws; the ratio of generators with desulfurization equipment to all thermal generators had jumped from 12% in 2005 to the current level of 66%.
- Nationwide, China had closed small thermal generating facilities equivalent to 54.07 million kws, 1.5 years ahead of reaching the target of 50 million kws; had eliminated backward production capacities in cement by 140 million tons, iron by 60.59 million tons, steel by 43.47 million tons, and coal by 64.45 million tons, and pulp and paper by 5 million tons, accounting for 80% of the target of 6.5 million tons. China's automatic monitoring and controlling system for key pollution sources had covered

85% of the state controlled enterprises, and China's desulfurization efficiency in power plants had increased from 50% in 2005 to 80% in 2008.

In terms of overall environmental quality, in the first half of 2009, the average concentration level of MnO_4^- for surface water under national monitoring is 5.3 mg/L, a decrease of 1/3 from the 2005 reading of 8.0mg/L. The quality of the surface waters under national monitoring had a reading of 55.8% belonging in Classes I-III, an increase of 15.3% compared with that in 2005. Of the 113 cities selected as environmental protection priority cities, the average concentration of SO_2 is 0.045mg/Nm³, a decrease of 1/3 from 2005 reading of 0.070mg/L, with fair to good air quality days reaching 91.3%, an increase of 8.2% from that of 2005.

The current year (2009) is critical for implementing the 11th FYP. The State Council submitted to the Standing Committee of the NPC its interim implementation assessment report concerning the 11th FYP. The assessment reveals sound overall implementation of the Plan. The report points out that, looking into the future, there is a need for further adjustment and balance of economic development in order to reach the targets, including those for environment and development. The assessment report indicates that China, with its good record in achieving longer-term targets, may well be in a position both to respond to current global economic slowdown and to achieve longer-term targets set in the 11th FYP if proper policy adjustments are made.

B. Responding to Economic Turbulence and Promoting an Environment and Development Strategic Transition

The year 2008 marked the 30th anniversary of China's reform and opening up. Over the three decades, China has worked a world economic miracle with immense economic and social changes. In his speech delivered at the meeting to commemorate the 30th anniversary, Chinese President Hu Jintao reviewed the achievements and experience in the nation's reform drive, expounded on new problems facing China, and shared his vision as to where China would go. Hu reiterated China's longer-term development objectives: turning China into a well-off society by 2020, and realizing modernization by the PRC's 100th anniversary. However, China is confronted with daunting challenges in its quest for those goals. He also pointed out that China should harmonize human development and nature, innovate development philosophies, change the growth model, pursue sustainable development, promote strategic economic restructuring, enhance independent innovation capacity, and build a resource-conserving and environmentally-friendly society. In particular, President Hu stressed that China would not deviate from its development path as a result of the short-term economic turbulence. China needed to stick to its development course of high productivity, prosperous life, and sound ecological environment, even with the spread of global financial crisis.

In 2008 and 2009, economic turmoil resulting from the global financial crisis has presented adverse impacts and uncertainties for environmental protection in China and in other nations. The 2008 CCICED annual general meeting was held at a time when the impact of the crisis was spreading. In its Policy Recommendations, CCICED, while commending the Chinese economic stimulus package, raised its concern of *preventing environmental protection from becoming a sacrifice of the crisis*, and also proposed recommendations such as *translating challenges into opportunities, promoting scientific approaches to development and achieving sound and rapid development; tightening regulation to ward off the risk of economic growth at the cost of environmental protection in some localities; increasing green government purchase and fostering development of environmental industries; changing growth models by speeding up innovation in clean energy and production processes, nurturing clean industries and developing low carbon economy; and accelerating reforms in resource and energy pricing.*

At the 2nd session of the 11th National People's Congress convened in March 2009, Premier Wen Jiabao pointed out in his Report on Government Work that in addition to responding to the ongoing economic recession, China needed to pursue ECER and ecological and environmental protection vigorously. The government work report highlighted the relations among economy, energy and environmental protection; took into full account energy conservation, clean and renewable energies, emission reduction, and identified rural environmental protection and adaptation to climate change as priorities. The following areas were stressed by Premier Wen:

1. Focusing on energy conservation in industry, transportation and construction sectors, continuing the development of ten major energy-saving projects, and implementing conservation measures in areas such as motor, furnace, automobile, air-conditioning and lighting, among others.

2. Pursuing circular economy and clean energy; continuing to economize on the use of energy, water and land; proactively developing nuclear, hydro, wind, and solar power, together with other clean energies; facilitating the industrial application of clean coal technology; enforcing national standards concerning energy consumption and environmental protection, promoting energy-saving technologies and products, and strengthening the comprehensive use of resources.

3. Fine tuning policies on energy-saving and environmental protection, and enhancing implementation of those policies in accordance with indicator, assessment and monitoring systems.

4. Launching ECER action for all, with government departments and agencies, SOEs and non-profit public organizations taking the lead.

5. Stepping up pollution prevention and control in major river basins and regions; controlling desertification; speeding up development of ecological projects such as major green shields, protection of natural forests and controlling sand storms in Beijing and Tianjin;

protecting ecological environment in waters, forests, grasslands and wetlands; pressing ahead with overall control of rural pollution; putting mineral resource exploration and development in order; and properly using marine resources.

6. Carrying out national programs responding to climate change and enhancing response capacity; investing more in basic research and capacity building in meteorology, earthquake, disaster prevention and relief, and mapping.

In June 2009, the National Task Force for Responding to Climate Change and the State Council Task Force for ECER convened a meeting, at which the commitment to further institutional reform and achieving ECER was reinforced. Proposed measures include: (a) strictly limiting the development of industries featuring high energy consumption and emission; (b) focusing on major projects and major areas, increasing fiscal investment in major projects and attracting private input, and encouraging ‘old for new swap’ in automobiles and household appliances; (c) pursuing Circular Economy; (d) promoting the use of energy-efficient products; (e) furthering reform by improving economic recovery policies and management policies in environment; (f) stepping up regulation in ECER and stressing accountability; (g) strengthening capacity building through accelerating improvement of statistical, monitoring and assessment systems concerning ECER, training more qualified employees and using more advanced technologies; (h) actively participating in international cooperation, and particularly strengthening bilateral, regional and multilateral cooperation in energy conservation, new energy and low carbon technologies. The meeting also registered China’s commitment to a constructive role in facilitating the achievement of positive results at the upcoming Copenhagen UN climate change meeting when hard choices will be made regarding the very survival and development of human beings.

The Ministry of Environmental Protection (MEP) also identified 6 priorities for this year at the 2009 National Environmental Protection Work Conference: (a) zeroing in on pollution reduction; (b) expanding domestic demand and taking environmental infrastructure development as an effective means to accomplish reduction targets; (c) speeding up the initiation of treatment and control projects in major river valleys, by seizing the opportunities presented by proactive fiscal policies; (d) taking rural environmental protection as a new priority area; (e) clinging to environmental security and making environmental monitoring as a top priority for capacity building; and (f) stressing reform and innovation and improving environmental economic policies. China is speeding up the reform of pricing on resource based products and environmental protection levy, which has provided a good opportunity for improving environmental economic policies, a policy support for innovative environmental protection mechanism.

From the 2009 work plan for both the central government and its departments, it can be seen that China needs to achieve a strategic shift in environment and development while simultaneously responding to the economic turmoil. Reflected in the work plan are some of the Policy Recommendations by CCICED in 2007 and 2008, including *translating*

challenges into opportunities to achieve sound and rapid development, avoiding new pollution and damage to ecological environment as a result of new projects, properly balancing government regulation and market mechanism and innovation and stability, and stepping up rural environment management.

C. Major Policy Developments in Environment and Development over the Past Year

(1) Strengthened Environmental Protection within Economic Recovery Efforts

To address the adverse impacts of global financial crisis, China has adopted measures to expand domestic demand. The 4 trillion RMB stimulus package will focus on livelihood projects, infrastructure, ecological development and post-disaster reconstruction. China will also readjust and rejuvenate ten major industries, promote corporate consolidation and reorganization, support enterprises in their efforts to effect technological upgrading, phase out outdated capacity, enhance industry clustering and resource allocation efficiency. In particular, ECER and ecological protection have become part of the stimulus package, with an investment of 5.25% of the 4 trillion RMB, or 210 billion RMB in total.

In the stimulus plan, China has put ideas like Green Governance, New Trends in World Industrial Revolution, Technological and Institutional Innovation into policy practice, many of which are also the focus for CCICED. In its 2008 Policy Recommendations, CCICED proposed that *China needs to speed up its shift in economic growth model, increase innovation in clean energy and production techniques, nurture and develop clean industries, develop low carbon economy, enhance capacity to deal with pollution and climate change, all aimed to achieve long-term prosperity in China.* At the roundtable meeting in April 2009, CCICED proposed again that China needed to promote green development by pursuing green and low carbon economy. In May 2009, Vice Premier Li Keqiang attended a MOF meeting that aimed to support emerging industries such as new energy and energy conservation, stressing the need to keep up with the trends in green economy development worldwide; to combine maintaining growth and expanding domestic demand with structural readjustment and upgrading; to facilitate the development of emerging industries to address new economic problems in China, and to foster new growth area for rapid development in the long run.

Large-scale investments in development projects promised in the stimulus package pose great pressures on environmental regulations. The economic growth and environmental protection once again face off as rivals. Initiation of new projects intended to maintain growth without compromising environmental well-being is the key to delivering on the pledge of economic recovery without damaging the environment. This approach also will determine the outcome of environmental projects in the package and the success of the development model shift.

CCICED 2008 Policy Recommendations noted that *the global financial crisis has fundamentally exposed the immense risks accompanied by overconfidence in the market in the absence of effective regulation. The market needs to play a positive role in environmental protection. The functioning of market measures cannot do without effective regulation and capacity building such as emission monitoring, data standardization, emission reduction appraisal and noncompliance penalties.* MEP has tightened the review and approval process for new projects, imposing EIA upon all projects featuring High Energy Consumption, Emission and Resource Reliance (HECERR), thus emphasizing environmental control strictly from the very source. MEP has postponed or withheld the approval of 14 projects with potential environmental risks in chemicals, petrochemicals, steel, thermal power, pulp and paper, with a total investment of 104 billion RMB.

Noncompliance penalties have been made more severe. In April 2009, MEP and NRDC, together with 6 other agencies announced a plan to launch joint environmental actions, restricting industries with HECERR characteristics, and conducting checkups in iron and steel and arsenic-involving industries. The action plan also deals with noncompliance in sewage treatment plants and landfills, in an effort to reduce emissions from those facilities. In June, MEP terminated construction projects by China Huandian Corporation and China Huaneng Corporation; granted the most severe EIA penalties in China's history against the two power giants; and suspended approval of construction projects proposed by the two corporations other than those involving new energy and pollution control.

The National Audit Office has strengthened environmental audit of SOEs and made public EICER information of 41 SOEs whose performance in this regard has been fair, although still having such problems as lower effectiveness in energy conservation, over-discharge of SO₂ and major pollutants. There are eight underperformers listed by the Office, i.e., Sinopec, China Huaneng, China Huadian, China Guodian, China Datang, China Aluminum, Baogang Steel, and Angang Steel.

In the past year, environmental enforcement, monitoring and inspection have all been strengthened, with improvement in cooperation and coordination among central and local governments. This helps to address increasingly complicated environmental problems and boost effectiveness of environmental policies and measures.

The establishment of Northern China Regional Environmental Supervision and Investigation Institution (RESII) marks the completion of China's environmental supervision system, with the Inspection Bureau under MEP at the national level and 6 RESII sub-offices in 6 regions (South, Southwest, Northeast, Northwest, East and North regions). The system will conduct enforcement inspection in response to local governments' non-performance on environmental responsibilities in favor of local economic growth. Multi-ministerial and multi-provincial cooperation in dealing with water pollution has been strengthened. In 2009, cross-ministry joint meetings have been held many times, involving MEP, NRDC, MOF,

MLR, MOHURD, MOA, MOC, and MWR, with focus on water pollution control in Taihu Lake area, Songhuajiang River, and the middle and upper reaches of the Yellow River.

(2) State Policy to Develop Low Carbon Economy and Respond to Climate Change

Responding to climate change is another focus of CCICED. In the Policy Recommendations of 2007 and 2008, CCICED stated that *China needs to make new contributions to addressing climate change and sustainable development under the principle of common but differentiated responsibilities, translate international environmental cooperation into sustainable development cooperation, and enhance South-South cooperation; in the long run, China needs to develop a low carbon economy, on the one hand to solve domestic environmental and resource problems, and on the other to strengthen its capacity to address climate and to boost its international competitiveness; thus, more attention is needed in low carbon economy on the part of the Chinese government; China needs to make technological and policy preparations, set targets for low carbon economy in the 12th five-year plan and integrate it into current strategies and actions.*

In March 2009, the working meeting of the State Council presided over by Premier Wen addressed climate change issues. The meeting stressed that China, as a responsible developing nation, was fully aware of the importance and immediateness of addressing climate change issues, and it believed that real and effective international cooperation was needed to address this common challenge faced by all countries. China would adhere to the principle of common but differentiated responsibilities to pursue sustainable development, fulfill its international obligations commensurate with its development stage and capacity, and play its due part in addressing climate change. The meeting made the following requests:

(a) Integrate climate change response into national economic and social development plans; take greenhouse gas emission control and climate change response targets as key criteria for longer-term development strategy and plans at all levels of government;

(b) Implement the national climate change program; strive for the targets of 20% reduction of unit GDP energy consumption and 10% increase of renewable energy use set in the 11th FYP; continue to improve and implement the national program in the 12th FYP;

(c) Develop a green economy; in light of the strategy of obtaining growth by expanding domestic demand, foster new growth areas featuring low carbon emission, and build low-carbon industrial, construction and communications systems;

(d) Strengthen capacity building to fight climate change; formulate strategies and plans to advance technologies; conduct low-carbon pilot programs; promote energy-conserving, environmentally-friendly production, lifestyle and consumption; increase monetary input to back the implementation of climate change policies and measures;

(e) Improve legal systems to fight climate change; establish supporting laws and

regulations, formulate standards, monitoring and assessment framework, and improve regulatory systems and supervisory mechanisms;

(f) Actively engage in international exchange and cooperation; continue to conduct policy dialogue and exchanges in responding to climate change; expand cooperation channels; speed up introduction of funds, technologies and human resources into China; and absorb advanced low carbon technologies and technologies in dealing with climate change from other countries.

In August 2009, the Standing Committee of the NPC adopted a resolution concerning climate change, recommending integration of adaptation of climate change into legislative proposals. The resolution calls for more efforts by China to conserve energy and cut emission; enhance capacity to adapt to climate change; fully utilize technologies; develop green and low carbon economy; integrate climate change response into sustainable development and national economic and social development plans, with specific goals, targets and requirements; raise public awareness and encourage public participation; and mobilize all citizens to be part of the cause.

In September, President Hu Jintao participated in the UN climate change summit, noting that China would integrate climate change response into its economic and social development plans and take forceful measures: (a) to pursue energy conservation and boost energy efficiency to achieve notable reduction in unit GDP energy consumption by 2020 compared to that in 2005; (b) to further develop renewable and nuclear energy, with a goal of making non-fossil energy account for 15% of the primary energy consumption mix by 2020; (c) to increase forest carbon sinks, with an objective of increasing forest coverage by 40 million hectares by 2020 over that in 2005, and a rise of 1.3 billion cubic meters in stock volume; and (d) to develop green economy, low carbon economy and circular economy, and promote climate-friendly technologies.

(3) Legislation Reform on Resources and Environment

Emergence of new environmental problems requires new laws, regulations and standards, or revision of existing ones. In 2009, legislation proposals, laws and regulations concerning resources, energy and environment in need of revision include: the Laws on Energy, Renewable Energy (revised), Air Pollution Prevention and Control (revised), Coal (revised), and Mineral Resources (revised); and the Regulations on Environmental Monitoring, Pollution Prevention and Control in Animal Farming, Management of Ozone Depleting Substances, Water Saving, the Management of Taihu Lake, the Protection of Wetlands, the Discharge Permit, and the Regulation on Urban Water Discharge and Sewage Treatment.

According to MEP statistics, MEP completed the development and revision of 123 national environmental standards in 2008. Currently there are 1100 national environmental standards.

In addition to all of above, the State Council promulgated the Regulation on the Environmental Impact Assessment for Planning in October 2009. Governed by the Regulation are areas including land use plans, development and exploration plans for regions, river basins and marine areas, and special plans concerning agriculture, industry, animal husbandry, forestry, energy, water resource, communications, urban development, tourism and natural resource exploration, all subject to EIA, in a bid to prevent pollution and ecological damage from the very beginning and to secure sustainable development.

(4) Energy Efficiency and Pricing Policies

To achieve the binding target of cutting unit GDP energy consumption, two main measures were taken to reduce GDP energy consumption per 10,000 RMB by 20% in 2010 compared to that in 2005, i.e., boosting energy efficiency and restructuring the energy portfolio. CCICED 2008 Policy Recommendations calls for boosting energy efficiency, developing clean energies, and technological innovations. The Council proposed that to stimulate demand and markets for innovative environmental technologies, it would be necessary to *provide incentives such as subsidies to businesses and individuals using environmental technologies and products and cut promotional cost,[and] increase state monetary input in environmental innovations by setting up an environmental innovation fund to support major clean technologies.*

To have an effective and standardized energy conservation inspection system that ensures implementation of measures and realization of targets, NDRC has enacted the Rule for Energy Conservation Inspection to enforce the Law on Energy Conservation. Twenty-four provinces and municipalities, including Shanghai, Beijing, Zhejiang, Shandong and Liaoning, have established their own inspection agencies to achieve conservation targets.

Over the past year, China has cut taxes on energy-efficient technologies and increased fiscal support for energy-saving products, covering areas such as industrial equipment, household conservation, transportation and construction. The newly revised policies regarding value-added tax provides tax favors to businesses that use new energy-efficient and conserving technologies to phase out those high in energy consumption. China also presses ahead with the '10 major projects', supports technological upgrading by enterprises, promotes conservation-oriented renovation of public and residential buildings, and encourages the use of contracted energy management. It also provides subsidies to consumers using environmentally-friendly products and has reduced purchase tax for low-emission automobiles.

China also provides subsidies to promote the use of efficient lighting products, and

supports conservation and new energy auto pilot programs in 13 cities like Beijing, Shanghai and Chongqing. New energy sources and renewable energy are developing quickly, with booming hydro, nuclear, wind and solar power stations. By the end of 2008, installed wind power capacity had exceeded the 11th FYP target, ranking fourth in the world. In March 2009, MOF and MOHURD jointed launched the Solar Energy Roof program, awarding 20 RMB per Watt to homeowners installing solar power generators. MOF is now developing the Golden Sun Program to open the solar PV market in China. It is projected that installed solar PV capacity will reach 20 million KWs by 2020.

The 2008 CCICED Policy Recommendations suggested that *China speed up the reform of resource and energy pricing and internalize the environmental cost resulting from the use of resources and energy, given the price falls in mineral resources and crude oil*. In December 2008, the central government working meeting on economy proposed to conduct further pricing reform and to establish a pricing mechanism that reflects supply and demand, scarcity, and environmental damage cost. In January 2009, MOF, NDRC and MWR jointly issued the Rule for Water Resource Fee Collection, covering hydro and thermal power plants directly under the central government. An extra 50% of the water resource fee will be imposed on enterprises featuring high energy consumption and pollution. For water used beyond the quota, a progressive pricing system will apply.

(5) Environmental Economic Policies and Market Measures

Market-based environmental economic policies have become an indispensable part of China's environmental management. Over the years, CCICED has stressed the importance of such policies in its Recommendations. The 2007 version emphasized the historic role of economic measures in promoting environmental protection, and proposed to *fully leverage market-based economic policies to achieve strategic transition in environment and development, with environment tax, resource and energy tax, green credit, environmental insurance, ecological compensation and emission trading as major measures*. The 2008 version also stressed the importance of regulation on top of economic measures.

Over the past year, a number of measures used in China deserve attention.

The environmental pollution responsibility insurance pilot is progressing steadily. Initial results have been achieved in Hunan, Jiangsu, Hubei, Ningbo, and Shenyang. China's first claim settlement in pollution responsibility insurance has been completed successfully, signaling the initial progress in green insurance practice. In early September 2008, a pesticide maker in Zhuzhou, Hunan province bought an environmental responsibility product from Ping'an Insurance that in late September compensated more than 120 households for a chemical leak from the maker that polluted the vegetable land in its vicinity. Jiangsu Province initiated ship pollution insurance. The city of Wuhan set aside 2 million RMB to subsidize those insurance policy holders to up to 50% of the premium paid.

Four insurance companies in Ningbo city have conducted business in pollution liabilities, and pilots are being carried out in transportation of hazardous substances and chemicals. Shenyang city has taken the lead on incorporating environmental liability insurance into local legislation: the Regulation on Prevention and Control of Hazardous Waste Pollution in Shenyang City, effective as of Jan. 1st 2009, provides that ‘the city supports and encourages insurers to offer hazardous waste pollution liability products; and enterprises dealing in the production, collection, storage, transportation, use and disposal of hazardous waste to buy such products’.

Emission trading is developing. Cross-regional cooperation is strengthened based on emission trading pilots. Shanghai Environmental Energy Exchange has signed a cooperation agreement with Hangzhou Property Right Exchange to build an emission trading platform in the Taihu Lake area. The two parties hope to explore new ways to promote cooperation among regional exchanges. In 2008, the Taihu Lake area became the first area in China to introduce pre-paid use of emission rights and a trading pilot. On August 5th, China’s first voluntary domestic carbon emission trade was settled: Tianping Automobile Insurance from Shanghai paid 277,699.6 RMB to purchase the 8,026 tons of carbon emission reduction target achieved by Beijing’s Green Transit during the Olympics, in order to offset the carbon emission resulting from the company’s operations since its establishment in 2004. It became China’s first company voluntarily purchasing emission reductions to offset its own emissions.

Green purchase by the government has been boosted. China is improving policies concerning government purchase by giving priority to energy-conserving products, making green government procurement a key factor in promoting circular economy. State Council agencies have issued purchase lists of energy-saving products and green products. In 2008, green purchase by the Chinese government accounted for over 30% of government’s total procurement; some 150 billion RMB out of the total 500 billion RMB of government purchase fund will go for green procurement.

(6) Environmental Innovation and Policy Support System

The 2008 Policy Recommendations points out that China’s *only way out at this critical moment of meeting challenges is to innovate. Given its reality of less innovations in the environmental area, China needs to strengthen innovation capacity, solve institutional problems hindering innovation, increase monetary input, protect IPR and strengthen all-round impact assessment in the process of innovation*; and suggests that *China develop and initiate a National Environment Innovation Action Plan 2010-2020*.

In January 2009, Premier Wen noted at the State Council technology task force meeting that the extensive growth model has presented huge pressures on population, resources and the environment. Rapid and steady economic development, upgrading of industrial structure,

shift of the growth model, and a resource-conserving, environmentally-friendly society all rely on technological advances and improvement in workforce qualifications.

Over the past year, China has further increased input in major technological innovations in resources, environment and sustainable development. The MOST has initiated major technology research projects in energy conservation, new energy source automobiles, water pollution control, urban sewage treatment, comprehensive environmental control in rural area, recovery and rehabilitation of soil in polluted industrial sites, and biomass fuel use. Meanwhile, national sustainable development demonstration zones, resource-conserving and environmentally-friendly community pilots are expanding. The strategy of environmental protection and sustainable development innovation is spreading from the central level to local and corporate levels.

In July 2009, the MOST assessed the implementation in the 11th FYP period of the Longer-term National Plan for Development of Science and Technology 2006-2020. One major assessment area is the supporting and guiding role of technological innovation in structural readjustment, changing growth model and improving livelihood, and particularly its positive role in responding to financial crisis, fostering strategic and emerging industries.

With the challenges of pollution reduction targets and technical requirements of controlling pollution sources, emissions compliance, and improving ecological environment, MEP has proposed setting up a national technical supporting system step-by-step for emissions reduction, especially for supporting the standards for cutting and controlling NO_x emissions, and the policies concerning pollution control technologies. Priorities for environmental technology in 2009 are the promotion of environmental technology innovation, the establishment of systems for environmental standards and for environmental technology management; strengthening the capacity for environmental technology innovation and strengthening scientific decision-making mechanism. MEP will accelerate the establishment of innovation projects and set up technological support projects. In terms of environmental standards, the existing standard systems for air and water quality will be improved, and new systems for noise and soil will be established. For major industries like iron and steel, non-ferrous metals, pulp and paper, and power generation, existing national standards for pollutant discharge need to be revised and raised for tighter emission control. Standards for emerging key industries need to be developed. In promoting environmental technology system, the National List of Advanced Pollution Control Technologies and the List of State-encouraged Environmental Technologies will be renewed.

(7) National Action Plan for Environment and Health

The 2008 Policy Recommendations suggest that *China adopt effective precautionary measures to ward off environment and health risks; establish a government-led environment and health management system with extensive participation; strengthen*

legislation; increase fiscal input and boost capacity building; make public information concerning environment and health and encourage public participation; and focus on key regions and major problems.

In September 2009, MEP and MOH convened the 4th National Forum on Environment and Health which identified human health as a core part of environmental protection. MEP has taken actions in the following areas: (a) conducting comprehensive treatment and control of environmental problems in major river basins, urban air and rural soil. More than 500 million RMB was set aside for rural environmental efforts, and 600 villages with severe environmental problems were dealt with; (b) strengthened capacity building in monitoring. In the past 2 years, MEP invested over 15 billion RMB in environmental monitoring capacity building; (c) conducted national survey of soil pollution and census of pollution sources. By 2008 year end, 78940 samples of soil and crops have been obtained, and 78852 have been analyzed; and around 3 million effective survey figures have been collected; (d) promoted the implementation of the National Action Plan for Environment and Health 2007-2015, which has been jointly developed by MEP and MOH. MEP has initiated research work on the impact of water, air, and soil pollution on human health, and further improved the air quality assessment standard system, laying down the foundation for updating the Action Plan.

In 2009, in light of health problems caused by heavy metal pollution, MEP has convened working meetings for heavy metal pollution control to identify countermeasures and made follow-up plans for action. MEP proposed to develop the Implementation Program for Comprehensive Control of Heavy Metal Pollution, through conducting overall inspections, preparing control plans, putting in place special control funds and providing information and public education. It also recommended that a special environment and health survey in major regions and river basins be initiated, followed by development and formulation of relevant regulations and laws, after a baseline is obtained, with an effort to establish a comprehensive monitoring system for environment and health. A prevention, early warning and emergency response system should be established for environmental damage to human health, with the improvement of risk prevention level in this area. Information sharing and public education should be strengthened to help raise public awareness and foster self-protection consciousness.

(8) Local Actions: Experience from Green Olympics to Green Shanghai Expo

The 2008 Policy Recommendations stated that *a successful green Olympics leaves precious environmental protection legacy for China: on the one hand, green construction projects have served as role models and urban infrastructure has improved environmental quality and served public interest; on the other hand, deeply-rooted ecological awareness and ideas, enhanced environmental management, information disclosure and public participation have all exerted far-reaching impacts on economic and social development.*

The 2010 Shanghai World Expo would provide a wonderful opportunity to spread Green Olympics experience, and China needs to make the Expo greener.

Following the Beijing Olympics and Paralympics, many measures adopted during the Games have been retained, such as vehicle bans. In addition, Beijing has intensified environmental efforts, such as the accelerated phase-out of vehicles failing to meet new emission standards, and the development and promulgation of supportive policies to eliminate vehicles causing severe pollution.

Shanghai is striving to stage a Green World Expo by drawing on Beijing's experience. The host city is now implementing a 3-year environmental action plan centering on ECER and environmental quality improvement, with noticeable results in pollution control in key regions, including continued drop of total pollutant discharge and steady improvement in environmental quality. The Environmental Assessment Report on the 2010 Shanghai World Expo released by UNEP in August 2009 points out that, in 2009, Shanghai's investment in environment has tripled that of 2000 to reach 42 billion RMB or 6 billion US dollars. The UNEP Report notes several positive aspects related to environment and development. The number of days during a year with a rating of Excellent Air Quality has reached 101, up by 68% from 60 days 5 years ago. In terms of transportation, Shanghai will build a rail transit system of 400 kms prior to the Expo opening. Shanghai's management philosophy of 'Prioritizing Public Transit' is worth promoting worldwide. Despite challenges common to all cities, Shanghai boasts experience worthy of learning for cities in China and across the world. Environmental efforts in preparing for the Expo will not only benefit 70 million Expo visitors, but leave a green asset for the city's 20 million residents.

(9) Information Disclosure and Public Participation

Promoting information disclosure and public participation has always been a key proposition of CCICED to improve China's environmental governance over the years. One 2007 Policy Recommendation points out that to realize the historic transformation in China's environment and development strategy, ***China needs to increase public participation for all to play a role in achieving that change, and encourage the participation of NGOs.*** The 2008 version reiterates the importance of information disclosure and public participation to other policy recommendations, and it suggests that ***for China's environmental decision making to have a sound public basis and confidence, China must effectively enforce environmental laws and regulations, adopt more economic measures in environment, and put in place reliable information disclosure mechanism. Behavior change resulting from law enforcement will play a decisive role in fostering technical innovation and improving environmental and health conditions. Likewise, credible information disclosure will form a basis for positive change.***

Over the past year, new progress has been made in China's environmental information

disclosure and public participation. Both in terms of scope and extent, improvement has been considerable in information disclosure. Hearing of cases involving public environmental interest by local courts marks the historic breakthrough in public participation. No doubt, this has opened a new chapter of public participation in China's environmental protection.

The Rule for Environmental Administrative Review newly revised in December 2008 has further expounded on the application for administrative review, validation period, and conditions, as well as ways and timeframe for environmental agencies to handle administrative review cases. This will help clear access to administrative review and safeguard the rights and interests of citizens, legal entities and other organizations. In June 2009, MEP opened environmental hotlines to receive complaints of environmental emergencies, inter-provincial pollution, and environmental problems falling into the direct jurisdiction of MEP. The public may use the hotlines to report environmental problems not solved at the local level, and check responses to the reported problem via the hotline.

D. Conclusion

Over the past year, China, together with other nations, has experienced a rare financial crisis and economic downturn. China has adopted proactive measures to overcome the adverse impact of the global recession, containing the downturn in the second half of 2008. The economy is now rallying and China is expected to attain its 2009 GDP growth target of 8%. More importantly, such achievement has not come at the expense of the environment. China has fulfilled its macro economic policy goal for environment and development set at the beginning of the crisis, i.e., China would not sacrifice its environment for economic stability.

Currently, the crisis and turbulence are still very much a reality. It is impossible to foretell what changes will take place in the future. But one thing is for sure. Consistency in environment and development policies will guarantee success for China in the future. And, in light of major policy adjustments and trends, it may be positively projected that China is in a position to seize the opportunity presented by the crisis to speed up the strategic transition in environment and development and effect the historic transformation in environmental protection. Some policy developments in the past year deserve attention:

1. Environment and economy have never been so coordinated as in the past year in China's policy grouping. Within the stimulus package, investment in energy conservation and environment has taken up a large proportion. While other industries were struggling for survival, environmental industries, new energy and energy-conserving sectors have received unprecedented attention, being regarded as a key growth engine for economic recovery. Policy ideas like green economy, low carbon economy have been quickly embraced by the government and adopted by top decision makers. All these have shown that China's strategic transition in environment and development has entered an acceleration period.

2. China's environmental governance capacity has been greatly enhanced. At the very beginning of MEP's establishment, there were reserved attitudes towards the effectiveness of MEP's institutional reform. The past year's reality showed that regulatory capacity of the environmental authorities has been substantially improved in such a crisis. MEP has insisted on a stronger environmental protection in the stimulus package, and tougher penalties against non-complying behaviors. Environmental agencies had never before convened meetings as frequently as it did last year to coordinate environmental efforts at the central and local levels. This also reflects the fact that the establishment of MEP and its more powerful operational position have drastically enhanced China's environmental administrative capacity and authority.

3. Policy measures for environmental protection and sustainable development are being used in more areas, at more levels, and through more channels. Economic policies and market measures are finding their way into practice with positive roles. The development process of policy measures, from development at the national level to pilot projects at the local level and back to national promotion of the pilot findings, has been quickened. Flexibility and adaptability of economic policies and market mechanisms are well noted.

4. Public environmental awareness has not faded away with economic growth. More channels are open to public participation. Enthusiasm for environmental protection has not waned. This has laid a solid foundation for strategic transition of the China's environment and development in the future. Raised public awareness means the balance between environment and development, and the days favoring one over the other are gone forever.

5. China has become more intertwined with the rest of the world in environmental protection and sustainable development, attracting more attention in global environmental affairs. China's role is not limited to its being the largest developing country with significant influence in world environmental matters. It is more about a more responsible China in addressing world environmental problems, and a more positive role. In particular, China's stance and proposals in fighting global climate change have demonstrated its willingness to fulfill its international obligations commensurate with its development phase, and to take positive actions.

Looking back at the progress made in China's environment and development over the past year, CCICED should be proud of its work. We would like to see a CCICED that exerts its due influence on the development and adjustment of China's policies in environment and development. We expect that China will effect its strategic transition in a decade or so when the nation still enjoys blue sky, green hills and clear water along with economic prosperity.

PART ANNEXES CCICED POLICY RECOMMENDATIONS 2007/2008

ANNEX 1 : Policy Recommendations to the Government of China (November 2008, Concise Version)

The Second Annual General Meeting of Phase IV of the China Council for International Cooperation on Environment and Development (CCICED 2008 AGM) with the theme of “Harmonious Development through Innovation” was held at a time of great turmoil in the world’s financial markets, with the threat of severe global recession, but also a call for “re-regulation.” CCICED believes that an appropriate mix of incremental and transformative changes through innovation is needed to build a new relationship of environment and development in China and globally. Environmental progress should be intensified over time, first through incremental improvements, and later by leaps and bounds, as the investments now being made in sustainable development innovation produce better technical solutions.

Nowhere is this need for innovation greater than in addressing environment and energy relationships and the global need to address reductions in greenhouse gases. The global environmental situation continues to decline, with direct effects on China through trade, climate change and in other ways. The worsening global economic situation threatens social, economic and environmental progress of all nations, including China. Council members appreciated the Chinese position that the global economic slowdown therefore must not be allowed to stand in the way of environmental progress. And that the economic stimulus package developed by China has incorporated environmental aspects. During this time of rebuilding the world’s financial system and new economic growth paths, China could benefit by positioning its investments towards activities that will allow it to shape the nature of future world growth, for example as a supplier of renewable energy products and services.

The Council’s reports and discussions again underscore the need for effective implementation and enforcement of strong environmental legislation, greater use of credible economic instruments, and a more scientific approach to the development and dissemination of reliable environment and development information as means to build confidence and public trust in China’s environmental decision making.

1. Transform Challenges into Opportunities for Further Implementation of a Scientific Development Approach.

(1) Seek Opportunities in the Wake of the Financial Crisis, and Advance “Sound and Rapid” Environment and Development Initiatives.

It is recommended that the Chinese government should be fully aware of risks and opportunities, and take the following actions:

1) Strengthen supervision and environmental management in the execution of the domestic stimulus plan, so as to prevent regions from boosting economic growth at the expense of environment in their response to the financial crisis.

2) Consider not only environmental protection as one of the investment priorities of the stimulus package, but also carry out examination of supply chain environmental consequences and strengthen green procurement policies. These steps will boost the development of environmental protection industries and convey the strong determination of the government that environmental protection can be maintained even in the wake of the financial crisis

3) Take advantage of the opportunities arising from the financial crisis in order to advance transformation

of the development mode for the domestic economy. This can be done by boosting the development of clean energy and technical innovation, low carbon economy and by strengthening capacities in the area of environmental protection and climate change in the remaining years of the 11th Five Year Plan, and particularly during the 12th Five Year development period.

4) Advance energy price reform and further internalize environmental externalities with the plunge of oil and commodities prices. It is advisable for China to adopt a long term “escalator” approach to gradually raise energy prices. It means small, but periodic and predictable rises of prices or introduction of additional environment or energy taxes, with information transparency to fully prepare the general public and reduce possible resistance.

5) And for the longer-term, develop Low Carbon Economy.

The Chinese government should attach great importance to the development of Low Carbon Economy (LCE) and get prepared for action, particularly in terms of technology options and feasibility analysis. The development of a low carbon economy will benefit China both internally, in terms of addressing resources and environmental problems, and externally by contributing to the fight against climate change and raising international competitiveness. China should consider specifying low carbon economy related targets in the 12th Five Year Plan for economic and social development, and incorporate low carbon economy in current strategies and actions.

(2) Create a Better Mix of Government Regulation and Market-Based Mechanisms, and between Factors Favouring Innovation and Those Favouring Stability.

Some of the most important market based approaches will require significant levels of capacity building for adequate management and supervision, including improved emissions monitoring, consolidation and standardizing of emissions data, designating a legal registry for emissions reductions, and enforcing non-compliance with much stiffer penalties. It is important for the Chinese government to maintain the balance between innovation and stability. Innovation helps encourage public engagement, promotes fairer benefit distribution and betterment of social welfare, it will help promote the development of a harmonious society.

(3) Step up Infrastructure Construction and Quality for Optimized Development and Harmonious Society.

A massive and systematic program is needed to achieve a more balanced development among various social and economic aspects. The foundations for harmonious society should be strengthened, including the moral and cultural basis for scientific development. If environmental factors are built into this more advanced approach to development, the chances for sustainability will be enhanced.

(4) Strengthen Rural Environmental Management and Help Improves Overall Environmental Protection of China.

Against this backdrop, China should create a bigger role for environmental protection as part of the overall

strategic goal of building a new socialist countryside. The environmental priorities of rural areas should include greater attention to rural environmental management system and capacity building, environmental infrastructure, drinking water safety, soil contamination, indoor air quality management, and exploration of an integrated urban-rural environmental management mechanism and eco-compensation. The eco-compensation policies should be expanded to include climate change mitigation and adaptation needs, and damages cost by air pollution. Efforts on these priorities will improve overall environmental protection throughout China.

(5) Develop Innovative Environmental Management Systems and Mechanisms Based on the Successful Experiences of Green Olympic Games.

In its effort to host a Green Olympic Games, the Chinese government adopted successful measures to promote pollution prevention and control planning, environment friendly buildings and infrastructure, environmental information disclosure, public participation, commercialization of the innovation technologies employed in the Green Olympics, control of trans-boundary emissions through the establishment of a regional environmental management system, tail gas pollution control, the phase out of heavily polluting enterprises, etc. China should review these successful experiences and develop standardized and long-term mechanisms of environmental management to improve the environmental quality of Beijing and other parts of the country on a continuing basis. The 2010 Shanghai Expo offers a new opportunity for the implementation of the “Green Olympics” experience, The Government of China should integrate more green measures in the planning and implementation of a “Better city; Better Life” Expo.

(6) Review the Experiences of the Past Three Decades and Continuously Improve the Environmental Management System.

It is now necessary to systematically review the strategic ideas, theories, policies and managerial practices in the field of environmental protection over the past 30 years. The environmental management system reform of the next step should be further integration of environmental responsibilities of different ministries, which optimizes the central government organization and helps raise capacity and efficiency. For the new environmental ministry, current attention should be focused on capacity building and financial resources. Responsibility, power, capacity and efficiency should be integrated in this super ministry, which can put people first and better serve the general public.

(7) Make New Contributions to Global Sustainable Development and the Building of a Harmonious World.

It is the right time for China to make a more substantive contribution towards global sustainable development and a harmonious world. Stabilizing the financial system, sustaining rapid economic growth and resolving environmental problems in China are in themselves great contributions to the world. Meanwhile, based upon the principle of common but differentiated responsibility, China should make new contributions to

the global fight against climate change and sustainable development; and expand its existing environmental international cooperation into cooperation for sustainable development, with strengthened cooperation between China and other developing countries.

2. Introduce a National Action Plan or Program for Environmental Innovation, 2010-2020.

Introduce a *National Action Plan/Program for Environmental Innovation 2010-2020 for China*. The action plan should define the strategic goals, targets, and measures of environmental innovation of China, and address technological, institutional, social and organizational aspects of innovation. The Action Plan/Program should be supported by key projects and increased investment, and consideration should be given to the following two points.

(1) Strengthen Indigenous Innovation Capacity by Setting Up a Special Program for Clean Technology Innovation, National Research Centers for Environmental Innovation, Sectoral Industrial Environment Research Institutes, and a System of Cross-disciplinary Sustainability Innovation Laboratories.

(2) Adopt an Integrated Approach to Address Mechanisms, Institutions and Capacity Development Required for Full Application of Environmental Innovation.

(3) Set Up an Improved National Information System for Environmental Quality, Environmental Pollution and Environmental Science and Technology Knowledge, with an Expanded Scope for Information Disclosure in order to Encourage Wider Public Involvement in Environmental Innovation Activities.

3. Expedite the Establishment of a National Management System for Environment and Health.

On the basis of the National Action Plan for the Environment and Health 2007-2015, that the Government of China should accelerate the development of a national management system for the environment and health as well as an environmental management system based on “putting people first”. In order to achieve this goal, efforts should be made in the following six areas: (1) Stick to Prevention as the Main Approach and Take Effective Measures to Reduce Environmental and Health Risks. (2) The Government Must Bear the Main Responsibility of Environmental and Health Issues. The Government Therefore Should Strengthen its Leadership in the Management System while Encouraging Extensive Public Participation. (3) Establish and Strengthen Legislation for Environment and Health based on the Polluter Pays Principle. (4) Increase Financial Investment in Capacity Building for Environmental and Health Management, Research, and Compensation. (5) Improve Disclosure and Access to Environmental and Health Information and Encourage Public Participation. (6) Undertake Targeted Intervention Measures to Address Prominent Problems in the Field of the Environment and Health

ANNEX 2 : Policy Recommendations to the Government of China (November of 2007, Concise Version)

At the 2007 China Council for International Cooperation on Environment and Development (CCICED) Annual General Meeting, members reviewed the work of several task forces and other inputs, and produced five key recommendations focused on the theme of Innovation for an Environmentally Friendly Society. It is Council's view that China has entered a Strategic Transformation Period, when many shifts in environment and development policy are needed.

In other countries where rapid transformation of environment and development has occurred, the following four key factors often are present: public participation and involvement of institutions from the whole of society; concern for health and environment galvanize action; need for a progression of changes over a 5 to 10 year period (or longer) is apparent; and, international pressures for action exist.

Over the coming years there will be a need to focus the attention of the whole society and government at all levels to create a new relationship of environment and development that satisfactorily addresses problems at local, national, regional and global levels via the use of a broader range of instruments, and with the active involvement of business enterprises. China needs early warning systems that identify problems at an early stage, and creative approaches to tackle problems that have resisted easy solutions. China is at a stage where its ecological footprint is still relatively low, especially when measured on a per capita basis. But China's overall influence on the world is growing, and globalization has important effects within the country. Therefore environment and development policy choices taken within China to a considerable extent need to be integrated with those elsewhere in the world.

The Council believes that innovations in policy, institutions, choice of regulatory instruments, and technology applications are essential at this point in China's environment and development improvements.

The five recommendations made to the State Council are summarized below. The original wording of each recommendation is provided plus a short summary of important points related to each.¹

RECOMMENDATION 1. Strengthen and add new policies and mechanisms to achieve emission reduction targets.

- (1) Develop a new "Five Shifts" Approach to pollution control by (1) reducing total emissions; reducing pollutants from all industries; moving from total control of single pollutants to coordinated control of many pollutants; shifting emphasis from numbers of environmental protection projects to an emphasis on their quality; moving from administrative to market-based instruments.
- (2) Establish an economy-energy-pollutant emissions reduction technology access platform for improved early warning and response for emissions reduction.

¹ The summary of CCICED recommendations is based on the longer version of recommendations agreed at the AGM and published as Chapter 1 in the proceedings of the AGM (CCICED Annual Policy Report 2007. *Innovation for an Environmentally Friendly Society*) CCICED, Beijing. 208 pp.

- (3) Construct a total emissions reduction system focused on resource and energy inputs, and greater efficiency in production and end-treatment of pollutants.
- (4) Reform performance assessment of local officials to incorporate a simple to apply, locally appropriate consideration of energy and emissions reduction, and of enterprise compliance.
- (5) Improve technical support capacity at central and local govern levels, including a more integrated environmental information system, scientific indicator system, accurate surveillance of emissions reduction, and a more rigid examination and evaluation system for emissions reduction.
- (6) Improve operability of COD (Chemical Oxygen Demand) reduction programs for key polluting industries and non-point source pollution.
- (7) Examine how pollutant emissions can be further reduced most cost-effectively in the 12th FYP, including environmental taxes, resource pricing, emissions trading, appropriate environmental financing, and through high-performing administration and management with upgrading of laws and regulations.

RECOMMENDATION 2. Integrate chemical environmental strategy into China’s overall national environmental and health management systems.

- (1) Establish China’s “Environmentally Sound and Strategic Management of Chemicals System, focused on environmental testing, evaluation, monitoring and management of chemicals.
- (2) Take prevention as the key measure, with strengthened surveillance and regulation, a long-term action plan for risk assessment and give early attention to high risk chemicals, shift to cleaner production and “green chemistry”, and be WTO-compliant.
- (3) Formulate a special law or regulations on chemical environmental administration, covering classification and labelling, notification of new chemicals, environmental monitoring, right-to-know in release of toxic chemicals, and better environmental accident prevention and emergency response.
- (4) Establish a system for release reporting of toxic pollutants and a publication system to inform the Chinese public and to help them become participants in decision-making.
- (5) Promote voluntary measures on the part of chemical enterprises, including Responsible Care, product stewardship, and clarify the legal status of voluntary agreements made under the Cleaner Production Promotion Law.

RECOMMENDATION 3. Seize the opportunity provided by China’s strategic transformation of its environment and development mode.

There is a need to solve three problems: move from top down to more inclusive decision-making that builds better support from stakeholders and among all levels of government; provide detailed and effective policies, capacities and plans that are still missing; and get better value from existing funding, while continuing to increase the amount and flow of environmental investments.

- (1) Build public awareness and participation of the whole society, including on sustainable consumption, environment and health, monitoring of local development, and direct participation in environmental improvement. Participation of environmental non-governmental organizations (NGOs). Training and education for policy makers and administrators, especially at local levels and within enterprises—capacity building for environment and development.

- (2) Accelerate improvements to China's existing environmental protection systems. This effort should include: upgrading SEPA to a full ministry and strengthening local environmental protection bureaus (EPBs) by providing more financial, human and technical resources; rewriting of key laws such as the 1989 Environmental Protection Law; setting stringent standards with enforcement; reforming the penalty systems; providing better enabling mechanisms for sustainable development; and improving the environmental judicial system.
- (3) Making full use of market based policies including environmental taxation, resource and energy taxation, green credits, environmental insurance, ecological compensation, emissions trading, etc.
- (4) Review current levels of environmental assessment to determine amounts actually spent on high priority activities, and where necessary redirect funds to these priorities. Encourage private sector investment for innovations in the industrial sector, and initiatives that support Circular Economy.

RECOMMENDATION 4. Address the challenges brought on by economic and environmental globalization in a more timely and effective way.

- (1) Gradually change the current growth mode of trade to take into account the relationships among resources, environment and trade. Import products and technology with high embodied energy and resource content. Reduce export of goods and commodities with high embodied energy and resources. Substitute goods that require high energy in their production or use. Shift trade towards a mode relying on quality improvement, increase of value-added, and structural optimization.
- (2) Optimize regional structure for manufacturing goods for export, with strict environmental upgrading of industries in eastern areas, and introduction of environmentally friendly processing in the middle and west of China. Levy environmental pollution tax on high energy consumption and pollution industrial sectors, and assign environmental damage costs. Introduce advanced environmental technology, and promote energy saving and emission reduction activities.
- (3) Strengthen environmental aspects of trade in recyclable and waste goods, including better management of these aspects within China and with trading partners. Life cycle analysis for imported recyclables. Enforce strict entry standards. Restrict the re-export of raw materials produced from these imported recyclables. Work with other nations to honour international agreements intended to combat illegal trade in toxic wastes.
- (4) Develop regulations for environmental impact assessments on key market supply chains for raw products entering China, including agricultural products, wood, biofuels and minerals. Take steps to prevent negative environmental influences in the countries of origin, including illegal timber trade, and activities banned under CITES (Convention on International Trade in Endangered Species of Flora and Fauna).
- (5) Strengthen environmental management of Chinese companies that invest or operate overseas, and improve their Corporate Social Responsibility (CSR).
- (6) Enhance China's participation in bilateral and multilateral environmental cooperation. Set up more complete implementation mechanisms within China for those agreements which China has signed. Participate more actively in construction of global environmental regimes. Expand technical cooperation on environment and development, especially with developing countries.
- (7) Combine energy and pollution emissions reduction to develop an industrial system with relatively low CO₂ emissions, thus moving China on a pathway consistent with a Low Carbon Economy.

RECOMMENDATION 5. Construct a “Conservation Culture” through innovation.

This effort will depend upon setting out the right enabling conditions for “eco-innovation.” These conditions include: unleashing creativity within research systems; financial investment oriented to environment and sustainable development innovation (including more venture capital); regulatory frameworks that favour innovation and support development of environmental technology markets; and evaluate/monitor environmental impacts of novel products.

- (1) Mobilize both national and local interests to implement eco-innovation. Take enforcement measures, planning, awareness raising and capacity development. Create regional innovation clusters.
- (2) Strengthen and popularize environmental technology research and development, and remove commercialization obstacles.
- (3) Take action to overcome market failures. Private enterprise should become the major players for an environmental society. Address limited markets for environmental technologies, weak pricing signals, limited sanctions, and strengthen green procurement. Broader use of preferential loans for activities with use of environmental technologies. And denial of loans for activities that do not.
- (4) Raise public quality of environmental science and technology—a scientifically literate public with a social environment where the value of eco-innovation can be demonstrated.