China Council for International Cooperation on Environment and Development (CCICED)

2014 Annual General Meeting

Policy Recommendations to the Government of China

The 2014 Annual General Meeting of the China Council for International Cooperation on Environment and Development (CCICED 3rd AGM of Phase V) was held from 1 to 3 December 2014 in Beijing with the theme of *Management and Institutional Innovation for Green Development*.

Over the past year, CCICED members have noted the progress of comprehensive reforms in China, such as those for decentralization, the *hukou* system and family planning policies. With decisions of the 4th Plenary Session of the 18th CPC Congress in October 2014, CCICED members believe that "comprehensively deepening reform" and "rule of law" together can provide an appropriate pathway and a strengthened institutional framework for an Ecological Civilization.

In the field of environment and development, China has achieved impressive economic progress such as a reasonable growth rate with steadily growing employment and implementation of policies for restructuring and stimulation of markets. A strictest-ever Environmental Protection Law revision has been issued, the Air Pollution Control Action Plan is showing some preliminary achievements, and most mandatory targets in the 12th Five Year Plan (FYP) are being achieved within the planned schedule. A national strategy of new urbanization has been developed with considerable focus on environmental protection and management.

The recent success of the APEC meeting has indicated the value of China playing a proactive and important role concerning regional and global environmental, economic and social development agendas. Furthermore, the air quality control actions taken during the APEC meetings confirmed that China's pollution control strategy have the potential to achieve desired effects—but only if very strong efforts are put in place on a more continuous basis. CCICED members also observed that the APEC *Beijing Declaration* fully embraces green, circular, low-carbon development with green supply chains, as well as showing commitment for GHG emission reduction by the USA and China. All these green approaches are topics on which CCICED has provided policy recommendations to the government of China. We are pleased to see the advice translated into action.

We believe that China's government has made great efforts to move China towards a green transition and has achieved some promising results. However, generally speaking, the green transition in China is still in its early and very challenging stage with unprecedented and complicated situations both domestically and internationally. Internationally, the pace of global economic recovery is slow, the new order of international politics is yet to be formed, and there are difficulties in reaching consensus on the post-2015 sustainable development agenda and climate change objectives.

Within China, it is critically important to address multiple challenges, including adjustment of the structure and growth rate of the economy, absorbing the effects of previous stimulus policies, handling emerging social conflicts while respecting the limits set by natural resources and the environment. The overlap and interaction of both national and international issues is becoming a "new normal" situation for environment and development in China. And so is the gradual reduction in economic growth.

In the context of these "new normal" conditions, the problem of environmental protection lagging behind economic development still has to be solved. Some of the environmental problems have been accumulating towards tipping points which once reached will inflict significant damage. The smog pollution in recent years is an example of such a tipping point. Similar trends are also found in terms of water and soil pollution, with the potential to seriously damage ecosystem services. If not timely and effectively addressed, such problems will become key obstacles and risks for the achievement of a well-off society. Thus, the challenge is to turn the tipping into turning points by continuously improving political willingness to solve environmental issues, maintaining comprehensive and deepening reform, and enhancing strict environmental protection enforcement.

We emphasize the coming 15 years as the time frame required for a Green Transition Strategy in China. This period spans the 13th FYP to 2030. It is a period when energy and material use will peak, and when new "clean tech" opportunities will abound. It is the critical time for completion of major infrastructure and urban development projects. Importantly, it is the time when globally and in China it is possible to achieve significant improvements in the War on Pollution, protection of ecological services and biodiversity and to reduce the risks associated with climate change. If this window of opportunity for successful environmental protection is lost, there can be little guarantee of long-term prosperity.

Over this 15 year period we believe it should be possible to reach turning points: in the War on Pollution, and particularly on air pollution; on adjusting the fossil-fuel-dominant energy mix; on very significant improvement within a decade for protection of ecological services and biodiversity through mechanisms such as ecological red lines; and, by 2025 to 2030, full utilization of improved environmental technologies now under development. Beneficial results over the coming 15-year period will depend highly on success with green urban development, implementation of green market-based instruments, green supply chains, and the emergence of an environmentally sustainable domestic economy.

This year's theme of *Management and Institutional Innovation for Green Development* is the next step in CCICED's examination of policy needs to place China on a path towards becoming an Ecological Civilization. Two task forces were established under this theme: *Institutional Innovation for Environmental Protection in the Context of Ecological Civilization,* and *Evaluation and Prospects for a Green Transition Process in China*. In addition, four special policy studies have been conducted, including: *Performance Evaluation on the Action Plan of Air Pollution Prevention and Control and Regional Coordination Mechanism; Good City Models under the Concept of Ecological Civilization; Institutional Innovation of Eco-*

Environmental Redlining; and *Chinese Environmental Audit System for Government Officials.*

As 2015 is the last year of the 12th FYP and a critical time for developing the 13th FYP, CCICED is forwarding six recommendations that we hope will be useful for the new plan as well as for other purposes. Policy Recommendation 1 addresses an overall environment and development strategy for the 13th FYP. The other 5 recommendations relate to our work on several priority topics leading from the 3rd and 4th Plenums of the 18th CPC National Congress.

RECOMMENDATION 1. The Chinese government should grasp the current window of opportunity within the 13th FYP to comprehensively deepen reform, strengthen enforcement, and accelerate the green transition progress.

(1) Decision makers should be made aware of the serious consequences of delays in addressing the environmental crisis and understand that a window of opportunity has emerged.

For the 13th FYP period, decision-makers at all levels should develop a strong awareness that "unresolved crises will create more crises" and that it is possible to "achieve overall improvements if the current window of opportunity is used well". Under the "new normal" situation, with economic development shifting to a new form and pace, environmental targets should be further tightened so as to accelerate the green transition.

(2) The Five Year Plan title, "National Economic and Social Development Plan", should be changed to "National Economic, Social and Environmental Development Plan".

Change of the title of national five-year plans and the incorporation of greatly strengthened approaches to environmental and ecological management will give clearer signals for environmental protection, and will help ensure concrete implementation of the provision for "harmony between economic and social development and environmental protection" as noted in the new Environmental Protection Law. An independent chapter on "the construction of ecological civilization" should be included and address environmental and ecological protection with emphasis on the targets of environmental and ecological improvements and public health.

(3) Develop a longer-term roadmap for a Green Transition Strategy.

China's green transition overlaps very significantly with its economic, demographic and social transitions. The task of green transition in China has to be centred on the "greening" of traditional economic and social transitions. This will be a long-term task which requires the Government of China to develop a roadmap and timetable for a green transition over the next 10-20 years, including issues like air, water, and soil pollution, peaking of greenhouse gas emissions by 2030 at the latest, safeguarding and enhancing ecosystems and ecological services, and achieving various environmental quality turning points as soon as possible. This roadmap also should

provide insight into China's needs for improved environmental spatial planning and sustainable domestic consumption, especially in China's rapidly expanding urban areas.

(4) Speed up institutional development and reform for Ecological Civilization and improve environmental governance capacity.

a) The first task deals with the establishment of high-level leading and coordinating mechanisms. A Central Ecological Civilization Construction Leading Group and a State Council Environmental Protection Committee are possible options for such mechanisms.

b) The second task is to clarify the responsibilities for the establishment of an efficient eco-environmental management system with adequately allocated functions, optimized structures, and properly-matched power and responsibilities. Pollution prevention and control functions that are currently scattered across various departments should be integrated and unified supervision be carried out for all pollution sources, pollutants and environmental media.

c) The third task is to reinforce integrated supervision responsibility for environmental protection and independent enforcement power with improved implementation capacity. The national supervision of local environmental protection performance should be strengthened; and environmental quality should be treated as an important part in the local government's performance appraisal system. Third party independent evaluation of the performance of sectors should be organized periodically, with the results publicly disclosed.

d) The fourth task aims for changes in economic, social and cultural fields to accommodate eco-environmental protection reforms, following requirements put forward by the "five-in-one" approach. Innovations should be sought that will boost coordinated development of environment, economy and society.

(5) Achieve breakthroughs in comprehensive reforms in the field of environment and development during the 13th FYP period.

a) Implement market reforms and economic restructuring towards green transition, and correct the relationships among environment, energy and development; **b**) comprehensively reform and upgrade environmental protection institutions, promote modernization of the environmental governance system and enhance its capacity; **c)** speed up the implementation of the new urbanization strategy, explore urbanization models under the concept of Ecological Civilization, and develop specific policy measures and ensure their full implementation; **d**) develop a more comprehensive regional air pollution control mechanism and enhance synergy of GHG and air pollutants emission reduction; and **e)** strengthen environmental laws and speed up the introduction and implementation of some important governance systems such as eco-redlining and environmental performance audits.

RECOMMENDATION 2. Reform the environmental protection institutional system towards the objective of creating an Ecological Civilization.

Modernization of the national governance system should strengthen the authority of environmental departments through a more powerful environmental ministry. Importantly, the role of environmental responsibilities needs to be clarified for the many sectoral agencies and departments, and where necessary additional capacity must be developed. A government-led multi-stakeholder governance mode should be established to promote transition and innovation in various fields of environmental management. Therefore, we recommend that the Government of China:

(1) Promote modernization of the national environmental governance system and strengthen governance capacity.

a) Build a modernized national environmental governance system, and strengthen national environmental governance capacity. Establish an integrated system of national environmental protection institutions, management system and implementation mechanism during the 13th FYP period according to the principles of checks-and-balance, fairness and efficiency. Develop an effective check and balance mechanism, including balances among the components of the organizational, policy and implementation system, implement appropriate supervision measures and balancing among the key governance actors; and ensure fairness among governance actors and between current and future generations. These improvements should be designed to enhance environmental, economic, social and administrative efficiency.

b) Strengthen the legal framework covering the construction of an Ecological Civilization. First, basic laws related to environmental protection should be revised to incorporate relevant organizational systems, mechanisms and policy tools required for Ecological Civilization into the texts of laws to enhance legitimacy and binding authority. Traditional sectoral laws such as civil, economy, criminal and administrative laws should be revised to embrace basic principles of ecosystem management within the individual pieces of legislation.

Second, reform and improve the functioning of the environmental judiciary system and strengthen the judicial practice. Promote coordination between environmental departments and judicial departments. Strengthen the capacity of environmental courts and judges to increase environmental judicial ability.

Third, speed up the development of detailed implementation rules for the newly amended environmental protection law. Establish a mandatory, authoritative, and independent enforcement system and explore joint-action mechanisms involving environmental department and police department cooperation to improve the effectiveness of enforcement and supervision.

c) Match environmental protection departments' authority, capacity, and resources to their supervision and management functions and tasks. First, implement the provision of "unified supervision and management" as stipulated in the revised Environmental Protection Law. The State Council should formulate relevant administrative rules and regulations specifying the responsibilities, authorities and work procedures of environmental protection departments to supervise the environmental management activities of other departments at corresponding and lower levels of government, and consolidate sectoral coordination.

Second, establish a unified environmental information platform to achieve timely, public accessible and accurate data sharing. Engage the National Bureau of Statistics in reform and improvement of the environmental statistical system.

Third, increase fiscal investments in environmental scientific research, monitoring and information gathering, as well as supervision and enforcement capacities. Increase the overall number and capability of civil servants in environmental protection departments to match their increased workload and statutory responsibilities. Speed up judicial interpretation of due diligence exemption for environmental enforcement personals.

(2) Strengthen social governance of environmental protection and develop a multi-stakeholder governance approach and various models.

a) Develop and implement systems for public participation, information disclosure and environmental litigation. Draw on the best and most appropriate international experiences of public participation and multi-stakeholder governance models. Implement open and transparent environmental information reporting and disclosure systems.

b) Encourage environmental protection social organizations and create an enabling social environment. Develop rules and regulations to protect legal rights of social organizations and to provide some basic guidance for their activities. Establish mechanisms to facilitate public or private funding to, and where appropriate encourage governmental service procurement from some social organizations.

c) Encourage grassroots organizations to focus on environmental management issues. Embrace the public's environmental demands, develop community bylaws for environmental protection, and advocate green lifestyles. Draw on international experiences and models of public participation.

d) Modernize corporate governance. First, corporate governance for businesses in China should modernize by focusing on increasing the transparency and comparability of enterprises' financial and non-financial (environmental and social) performance. Second, businesses in China should over time adopt and implement a standardized reporting framework for *Financial and Non-financial Performance* that includes the assessment of climate risk and risk reduction strategies. And third, business enterprises should integrate climate and other environmental risks into their core decision-making tools and practices.

(3) Reform environmental management institutions to improve efficiency and effectiveness.

a) Reform and continue the total emission control system. Study and develop a comprehensive total emission control system for primary pollutants, coal consumption and CO_2 emissions. Explore and implement regional, river-basin and sectoral total emission control systems that are based on each region's environmental carrying capacity.

b) Develop relevant laws, regulations and implementation methods for an emission permit system that covers all pollution discharging entities. Reform the environmental impact assessment (EIA) system to achieve better coordination with the pollution permitting system. A pilot effort might be initiated to integrate EIA and pollution permit approval. Apply the EIA system to a greater extent on strategies, plans and policies, as well as on situations such as cross-regional, coastal zone and river basin projects that may have significant ecological impacts.

c) Improve environment and health related institutions. Include environmental health risk assessment in the making of polices and standards. Improve the environmental public interest litigation system and the ecological environment damage compensation and accountability systems. Strengthen responsibility and capacity of the judicial system to investigate environmental violations that result in injury to people.

(4) Establish incentive mechanisms to promote environmental protection.

a) National fiscal, taxation, pricing and financial policies that encourage environmental protection should be expeditiously implemented. The central government should take the leading role in ensuring that the growth rate of the central fiscal budget for environmental protection is not lower than the national overall growth rate in revenue. Special environmental pollution remediation funds should be set up. For the construction and operation of environmental infrastructure, models of public-private partnerships (PPP) should be used to leverage social capital and technology, make full use of market mechanisms, reduce the cost of investment and improve operational performance.

b) Establish an enterprise environmental credit evaluation system. Reward enterprises that go beyond mere compliance with environmental protection laws and regulations. Strengthen the capability of small and medium sized enterprises (SMEs), through provision of a platform with information about pollution treatment services and access to finance. Actively promote voluntary pursuit of good environmental performance on the part of industries and enterprises. Conduct training on corporate social responsibility and environmental information disclosure.

c) Accelerate and improve the eco-compensation system. Strongly adhere to the principles of "polluter pays", "those who damage must compensate", and "those who protect receive benefits". These principles can help to mobilize greater enthusiasm on the part of local governments towards protecting the environment, especially in those areas experiencing fiscal difficulties.

(5) Implement environmental audits for government and party leading officials.

a) Develop a road map for implementing governmental environment audit. Carry out environmental audits for key regions taking into account the implementation of the Air Pollution Control Action Plan. Develop audit methods and processes and identify key CPC and government leaders at different levels as the objects of environmental audits. Enhance the independency, openness and transparency of the government's environmental auditing system. Explore the possibility of implementing an integrated governmental environment and resource audit system under the National

People's Congress and under the Provincial People's Congress system.

b) Establish and improve the legal basis for government environmental audits. First, revise the existing Audit Law and other relevant auditing guidelines, and improve relevant regulations on disclosure of auditing results. Second, revise existing environmental protection laws and regulations with new provisions related to environmental audit. Third, strengthen communication and cooperation between the Chinese National Audit Office (CNAO) and Ministry of Environmental Protection to jointly issue *Guidance on Government Environmental Audit*. Eventually auditing institutions must assume full and independent control of the environmental audit systems.

c) Develop technical guidelines for government environmental audit. First, study the establishment of various types of governmental environmental audits. Second, develop governmental environmental audit criteria, technical guidelines and methodologies. Third, strengthen coordination between the government's environmental audit system and other environmental evaluation systems in order to improve the efficiency of government environmental audits, including reporting system from governments to the People's Congress, environmental information disclosure system; and public consultation system.

d) Strengthen government environmental audit capacity. First, strengthen the organizational and human resource capacity. Second, enhance the independency and authority of government environmental audit. Third, strengthen capacity in terms of information technology and training and strengthen cooperation with the international audit community. Fourth, initiate a series of government environmental audit pilot initiatives. Increase the investment for capacity building of the government environmental audit system.

RECOMMENDATION 3. Formulate green transition policies and rebalance the economic structure.

The core of China's green transition strategy must be the green transition of the economy. To achieve a green transition of economy, there is a need for a breakthrough in terms of "structure adjustment" and "pathway choice", especially for energy consumption. According to the GHG emission reduction targets recently agreed upon by the USA and China, China plans to reach its CO_2 emission peak by 2030 at the latest. To achieve this target and others requires more robust restructuring and accelerated economic reform measures. Therefore, we recommend that China:

(1) Correct the imbalance of the economy and industrial structure (low domestic consumption and over-investment in heavy industry) in a way that fully and explicitly takes into account environment and development concerns.

a) Adjust the ratio of savings-investment-consumption structure to a proper level. It is recommended that China should increase the ratio of consumption to GDP by 10 percentage points and reduce the ratio of investment to GDP by 10 percentage points before 2020 to re-balance the economic structure; and should promote sustainable consumption.

b) Adjust other policies to promote a re-balance between investment and consumption. Promote reform of the fiscal and the taxation system, administration system, *hukou* system and social security system to rationalize the expenditure structure of local governments, reduce overinvestment and improve social security and public service. Improve income allocation structure, and reduce the income gap.

c) Promote green transition of industrial structure. Appropriately lower the proportion of heavy industries, and encourage expansion of the service sector. Eliminate or restructure a series of special subsidies to industrial sectors. Ensure equality in pricing for land and electricity, equality in tax and interest rates.

(2) Reform resource taxes and prices, and adopt environmental taxes and other economic tools that can be used to promote green transition.

a) Reform resource tax. Apply a 10 to 15% resource tax for petroleum depending upon resource grades. Apply the same level of resource tax for imported petroleum. A differentiated 10 to 15% tax should be collected on coal and the same rate applied to imported coal. The resource tax for natural gas could remain at 5%, and imported natural gas could be exempted from resource tax. Establish a water resources tax and determine a differentiated tax rate based on prices. Resource taxes should be collected on an *ad valorem* basis.

b) Reform the consumption tax on automobiles. Increase the progressive tax based on the assessed level of vehicle fuel consumption.

c) Reform pricing mechanisms. Except for household electricity and agricultural electricity quotas, all electricity should be sold to end users at the same price, with the price set by the market without exceptions. Water price should be established based on the full life-cycle cost of water consumption.

d) Adopt environmental tax. Adopt an environmental tax based on the level of pollution emissions, following the "Polluter Pays" principle.

(3) Adopt total energy consumption control targets, and build demand-based energy policies.

a) Adopt a total energy consumption control policy. Control China's total energy consumption to below 4.8 billion tonnes of coal-equivalent and coal consumption below 4.0 billion tonnes in order to achieve peaking of greenhouse gas emissions before 2030.

b) Set out strategic objectives for energy structure adjustment. Significantly reduce the consumption of coal below peak level by 2020 and manage the increase of crude oil use so that it might peak as early as 2025. Non-fossil fuel consumption increase should be higher than fossil fuel increase by around 2025, and total fossil-fuel consumption should start to decline by or before 2030.

c) Build demand-based renewable energy development policies. Use mandatory laws and regulations to promote production and utilization of renewable energy. The

proportion of non-fossil fuel should be increased by at least 0.7 percentage points every year, in order to reach the recently announced goal of over 20% of total energy consumption to be derived from renewable sources by 2030. Hopefully it would be possible to do better than this.

d) Establish and implement an energy consumption quota trading system. It is recommended that laws or regulations for a national energy consumption quota trading system be developed. Establish a flexible quality control objective system, and assign energy trading quotas for different regions based on principles of efficiency and fairness; and gradually implement the system nationwide.

(4) Build a green finance system to provide financial support for China's green transition.

a) Study the establishment of a China Green Bank. Use green bonds as the main source to establish a green bank under the leadership of the government. The bank should focus on green investment. Fully utilize the leverage effects of green bonds and scale effects of professional evaluation capacity.

b) Improve the fiscal interest-deduction mechanism to encourage green credit. Financial departments, reform and development commissions and bank supervision departments should cooperate with financial institutions to develop a set of scientific, effective and easy to use reduced interest plans for green projects.

c) Establish a risk-based green credit system for banks and appraisal companies. Bank and appraisal companies should introduce environmental risk factors into their loan assessments in order to establish a green credit system. Strengthen environmental risk control for bank loans to reduce the cost of financing for green project.

d) Establish a public environmental cost information system that highlights the use of natural resources and environmental costs associated with industries to provide information for decision-makers and all investors.

e) Enforce mandatory green insurance for certain sectors, such as exploitation of petroleum and natural gas, petro-chemical industries, iron and steel, and plastic sectors.

f) Establish environmental information disclosure mechanism for listed companies and bond-issuance enterprises. All listed companies and bond-issuance enterprises should be required to publish corporate social responsibility reports periodically to disclose their environmental information.

RECOMMENDATION 4. Explore new urbanization models in the context of creating an Ecological Civilization.

China is undergoing a massive and rapid urbanization process with a relatively short window of opportunity for policies. Cities will serve as engines for growth, as models for innovative development, as leaders in creating better environmental protection, and as places that have a high quality of life, prosperity, and health. Good cities can

be built through good governance processes, so that they can take more responsibility in steering China towards an Ecological Civilization. Therefore, we recommend that China:

(1) Use integrated spatial planning to set objectives and limits for urbanization development.

a) Establish a dual provincial and local level spatial regulation system. Establish a spatial regulation system at the provincial level based on ecological security and environmental protection. By drawing on provincial spatial control systems, it should be possible to institute integrated urban and rural plans for mega-city regions and town clusters; determine the urban growth boundaries; and, on the basis of the spatial plans, optimize the ecological, production, commercial and living spaces.

b) Build urban areas that strengthen the health of the environment and of residents. Establish health-centered city planning, construction, and management systems. Instead of continuous sprawl, develop multi-centered urban and town clusters and protect their green cores. Promote development of green transportation.

c) Strictly implement national standards regarding per capita built-up area. For cities of which urban built-up land is projected to exceed 30% over the national standard per capita, the central government should issue a policy to limit new construction sites. Strictly control irrational and disorderly urban sprawl; encourage the use of the existing stock of urban construction land and utilization of old buildings; and strictly restrict urban expansion within the boundaries set by ecological redlining.

d) Promote multi-department cooperation, and enhance regional co-governance and pilot initiatives for testing Ecological Civilization urbanization patterns. Incorporate these urban Ecological Civilization pilot efforts into a national Ecological Civilization pilot system. In particular, introduce regional collaborative pilot mechanisms in the Beijing-Tianjin-Hebei area, Yangtze River Delta region and Pearl River Delta region. Promote pilots of various Urbanization Models for Ecological Civilization.

(2) Plan for a financially sound fiscal and taxation system and an adaptive development mode.

a) Financing for local government operations and initiatives must become independent from selling and developing land. Alternatives should be explored such as transfers from the central budget according to objective allocation rules. Introduce local property taxation or other urban development and construction fees to replace the fiscal source from land revenue. When land markets are set up in China, ensure that environmentally sensitive or high priority green space lands remain in public control.

b) Greater attention should be given to climate resilience. Establish risk assessment frameworks for climate change adaptation and fiscal emergency response fund.

c) Encourage participation of private investment through the green bond market mechanism. Establish long-term effective fiscal and taxation incentive mechanisms, reduce resource and energy consumption in urban living, and address the challenge of an aging society.

(3) Adhere to people-centered urbanization that also fully respects ecosystems, ecological services and green space.

a) Provide administrative officials, especially party secretaries and mayors, more in-depth training on urban development. Enhance their knowledge on green, low-carbon and circular economy development. Establish incentives and performance evaluation mechanisms. Develop Ecological Civilization information and education systems for the public.

b) Let the human scale prevail in urban design. Promote and ensure cities' own identities through deliberate protection of natural and cultural heritage. Encourage small-scale, incremental, multi-stakeholder involvement in urban regeneration. Preserve the historical context and collective memory.

c) Establish a system to monitor and assess urban green development in relation to environmental quality, efficient resource use and quality of life. Projections of future health risks to the urban population from air, water and soil pollution, climate change impacts and adaptation should be regularly updated and made available to the public. Such results should be used as an important basis for performance evaluation and accountability of government officials.

RECOMMENDATION 5. Develop a broader regional air pollution control mechanism robust enough to stop severe air pollution and to restore air quality.

To improve air quality and protect public health, China has adopted an Air Pollution Control Action Plan, with the strictest controls so far seen in the country. In order to achieve the emission reduction targets of the Action Plan, China should carry out coordinated control efforts for multiple pollutants and emission sources in different regions, and adopt control measures that can complement the process of adjusting the energy structure, improving energy efficiency and enhancing end-of-pipe pollution control. Therefore, we recommend that China:

(1) Build an air quality-based air pollution management system.

a) Immediately strengthen the legal status for improved air quality compliance. The *Air Pollution Control Law* should explicitly require the implementation of a compliance-based air environment protection target responsibility system and a performance evaluations system. For non-containment zone areas, significant and quantitative air quality improvement targets within the next five years should be established and made mandatory and enforced according to the new environmental protection law.

b) Adopt a science-based regional approach for atmospheric management. Develop air quality models for air quality improvement, and conduct scientific region

classification for atmospheric environmental management. Within any one region, there should be regional coordination organizations and mechanisms, unified laws and regulations, and unified management and enforcement of air quality to enhance overall regional efforts to meet air quality objectives.

c) Establish a scientific performance appraisal system for air pollution control. Develop pre-implementation, annual and final appraisal systems for the Air Pollution Control Action Plan.

(2) Improve the organization and effectiveness of the regional joint air pollution prevention and control mechanism.

a) Establish a unified standard compliance and enforcement program. Develop regional air quality compliance plans, and define schedules, targets and feasible measures for each defined region to achieve the objective of overall regional air quality compliance.

b) Establish a clear unified and integrated regional air pollution control and management mechanism. Build a regional unified environmental decision and consultation mechanism; promote information sharing and improve communication mechanisms; establish regional EIA consultation mechanism; improve regional joint environmental law enforcement mechanisms; and implement joint emergency response for episodes of heavy pollution.

c) Establish regional decision support and planning organizations. Establish regional planning organizations funded by various ministries and commissions with overall guidance from the Ministry of Environmental Protection. Organize fundamental research on tracking of sources, transport and transformation, and source identification of regional air pollution. Select suitable, widely applied air pollution control techniques to support regional air pollution control.

(3) Improve policies for regional air pollution control.

a) Promote clean, efficient and sustainable use of coal, and accelerate adjustment of the energy structure. It is preferable to use coal only in large-scale facilities with high-efficiency end-of-pipe control technologies. China should make great efforts to improve the energy efficiency of major coal-consuming sectors, such as power plants and industry. China should continue to increase the proportion of coal washing and promote only clean coal technologies.

b) Improve economic incentive policies for motor vehicle pollution control. It is proposed that motor vehicle fuel surcharges should be introduced at a proper time in order to lower the intensity of vehicle use. A new air pollution control fund could be funded from the fuel surcharge to support infrastructure construction such as for expansion of local public transportation and for air pollution mitigation projects. The most stringent vehicle emission standards should be applied under the condition of improved fuel quality. Use fiscal and taxation measures to promote the phasing out of yellow label and old vehicles.

c) Enhance coordinated control over various sources of pollution and

contaminants. In order to meet the air quality and air pollutant emission control goals, China should stick to the strategic concept of "coordination", "integration" and "joint action", i.e., carry out coordinated control over pollutants including SO_2, NO_X, primary $PM_{2.5}$, VOCs and NH_3. Regarding control of various pollution sources, China should launch comprehensive pollutant control of industrial sources, domestic and rural non-point sources, and mobile and non-road equipment sources. China should implement differentiated air pollution control strategies reflecting regional differences.

RECOMMENDATION 6. Implement a National Ecological Protection Red Line System (EPRL System).

The 3rd Plenum of the 18th CPC National Congress called for the rapid implementation of an ecological redlining system. In general, the implementation of eco-redlines still faces multiple challenges, e.g., inconsistent understanding of the eco-redline concept and its content; lack of policies, organizations and regional coordination mechanism; and lack of standards for eco-redline protection. Therefore, we recommend that the Government of China:

(1) Set into law the National Ecological Protection Red Line (EPRL) System and relevant systems.

a) Clarify the contents and composition of the EPRL system. An ecological protection red line (EPRL) defines the minimum spatial area within which strict development controls ensure sustainable provision of ecosystem or environmental services vital for national, regional or local needs. The ecological redlining needs to ensure the integrity of the key ecosystems' functions and avoid the fragmentation of the habitats of priority species. Further research is recommended to clarify the concept and system of eco-redline with the aim of achieving a single definition, and start pilot activities on eco-redline identification.

b) Establish a national target of China's appropriate land area to be within an EPRL. Designation should be on the basis of ecological problems, ecological sensitivity and important spatial characteristics of ecosystem services in China. A target in the range of 35% of China's land area is technically justifiable. This total will include some but likely not all of the existing Protected Areas.

c) An ecological protection red lining law should be passed within 3 to 5 years. It is recommended that the State Council develop *Management Methods for Ecological Protection Red line* to specify definition and content of ecological protection red lines, classification method and management system.

(2) Improve spatial land use planning and marine use planning system with clear identification of EPRLs.

a) Improve land use planning system. Add a new category of ecological lands in the existing land use planning system to form a new system including categories such as agricultural land, construction land, and ecological land, but no longer include a category labeled wasteland or unused lands since such lands generally hold ecological

value. Incorporate ecological protection red line into spatial planning to highlight the importance of ecological protection red lines.

b) Identify ocean EPRLs. Identify ocean EPRLs through ocean ecological function zoning classification and other ocean spatial planning to ensure the health and security of ocean ecosystems and coastal wetlands.

(3) Establish a new national coordinating mechanism for ecological conservation and for monitoring and enforcement.

Establish a nature ecological protection management organization to carry out a unified management approach over the major types of nature protection areas such as nature reserves, national parks, ecological function protection areas, etc., and to strengthen supervision on EPRLs.

(4) Improve the nature protection area system, integrate ecological protection red lines and nature protection area system, and establish a management system by departments, types and categories.

a) Improve nature reserve system. Further clarify and integrate various types of protection areas in terms of functions and management system, establish a nature protection area system consisting of nature reserves, national parks, scenic parks, agricultural species resources protection areas and ecological function protection areas.

b) Establish an EPRL management system by departments, types and categories. Integrate EPRL and nature reserve system and incorporate ecological protection redline area into the nature protection area system, and carry out a unified coordination and a management system by departments, types and categories for EPRLs within nature reserve protected area system.

(5) Improve eco-compensation and incentive mechanism based on EPRLs.

Establish a long-term eco-compensation mechanism and directly pay the impacted landowners or operators. Allocate key ecological improvement projects mainly to the ecological protection redline areas. Improve ecological protection fiscal transfer to match with the area and effectiveness of EPRLs protection. The finalization of the red lines will take time. During that period China needs to take appropriate steps to ensure that protection options are not irrevocably lost and that the nation is not subject to unreasonable claims for compensation after a decision is made. This may require a freeze on land development of proposed ecological red line areas so that there is not a rush to develop other uses before they are officially designated.