THE CHINA COUNCIL
FOR INTERNATIONAL COOPERATION
ON ENVIRONMENT AND DEVELOPMENT

THE FIFTH MEETING OF THE FOURTH PHASE

Diaoyutai State Guesthouse, Beijing
November 15 - 17 2011

Summary Record

December 2011
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I. Introduction

The China Council for International Cooperation on Environment and Development (“the Council” or CCICED, pronounced “sea-said”) was established in 1992 by the State Council of the Government of China (GOC) in order to foster cooperation in the areas of environment and development between China and the international community.

The Council is a high-level advisory body that puts forth recommendations on environment and sustainable development for the Chinese government’s consideration. It has so far convened five annual meetings in each of its four phases.

The Council supports the development of a comprehensive approach to sustainable development and environment through close cooperation between China and other countries. At present the Council is composed of 25 Chinese members and 25 international members who were chosen for their experience, expertise, and influence.

The Council is chaired by Mr. Li Keqiang, Vice-Premier of China’s State Council and a member of the Political Bureau Standing Committee. It was at his invitation that the members of the Council attended the fifth meeting of Phase IV.

The CCICED Bureau serves as the executive body of the Council.
The Council’s host institution is the Ministry of Environmental Protection (MEP). Previously known as the State Environmental Protection Administration (SEPA), MEP is responsible for the Council and for ensuring inter-ministerial coordination. It has established the CCICED Secretariat (SERI) to support international and domestic contacts. The Secretariat supports follow-up in China to CCICED recommendations, and deals with routine matters when the Council is not in session. The Secretariat is assisted by the Secretariat International Support Office (SISO), directed by Mr. Christopher Dagg. SISO is located at Simon Fraser University in Burnaby, Canada, and is funded by the Canadian International Development Agency (CIDA).

This Summary Record of the CCICED’s fifth meeting of Phase IV was prepared by Patrick Kavanagh for SISO, based on detailed notes recorded during the annual general meeting (AGM). Representing SISO’s interpretation of the discussions, the Summary Record does not necessarily reflect the views of all participants. To encourage frank and direct dialogue, the Summary Record presents an overview of the points made during comments and discussion sessions without attribution to individual speakers.

II. Meeting with Premier Wen Jiabao

The following text is based on hand-written notes taken during the meeting between Premier Wen Jiabao and CCICED international members. They are as close to verbatim as possible.

Premier Wen Jiabao: I welcome you all. I believe this is the 14th time I have met with CCICED. We appreciate your keen interest in China’s environment and in the reform and opening endeavours of the Chinese government. This year you have identified a fitting theme for your AGM — not only promoting growth but at the same time facing the challenge of achieving a green transformation. As you know, in China we have focused on economic structural reform and on transforming the model of economic growth, including achieving green economic development, so people can live a better life, in a better environment.

Ms Margaret Biggs: Premier Wen, it is a pleasure to share once again our observations on the work of CCICED, and to hear your views on the progress and challenges of China’s development. This is a special year for CCICED. It is the 20th anniversary and the end of Phase IV. It is a time for the Council to reflect on progress to date and turn our attention to the future. The global financial crisis is creating pressure worldwide to generate economic growth at any cost. Yet at the same time we are seeing the emergence of new ideas about a global green economy.
Your launch of the 12th Five-Year Plan has opened a new development path for environment and economy. It is critical that China pursue this new path to bring China’s economic progress and environmental progress together so they become mutually supportive.

This year, the China Council has focused on laying out a comprehensive roadmap for a green economy that would see China achieve better development outcomes. Without a green economy it will be very difficult to reach the goal of an environmentally friendly society. Through our task forces and other work, the China Council has explored some specific aspects of this challenge. I am pleased to share highlights of our findings with you.

Green economy is a vehicle for transformative change. We believe green economy is an inevitable strategic choice for China. It requires a combination of effective stewardship by government and well functioning markets. Here are four priorities for urgent action:

• Significant upgrading of environmental legislation and regulations is badly needed. This includes both the basic environmental law in China and sectoral legislation.
• Environmental tax reform needs to be implemented as soon as possible.
• An enabling framework for market mechanisms to operate effectively is key to innovation and sustainability. This will provide the certainty that business requires to make a more significant contribution to green economy.
• Incorporating environmental conditions into performance evaluation of officials, which was important in meeting 11th Five-Year Plan environmental targets, should be strengthened in the years ahead, with more attention to capacity development, especially for those operating at local levels.

WJB: You know China very well.

MB: China has the means and the will to seize new green growth opportunities and is in a position to do so both at home and abroad. But this requires careful thinking about its standards for investment and its image abroad.

China should hold domestic investment, foreign direct investment, and outward direct investment to the same, consistent high standard of environmental management and corporate social responsibility. Indeed, the greening of China’s international brand will be key for future market access and competitiveness. With the greening of the 12th Five-Year Plan, China and its businesses are well positioned to go green globally.

Two years ago, the China Council promoted the need for China to incorporate low-carbon economy concepts into its green development efforts. We are pleased to see the uptake of this recommendation into the 12th Five-Year Plan.
This year, through detailed economic analysis, our task force has identified low-carbon transformation of industrialization as the most strategic way to reduce carbon intensity over the next decade. It will be a breakthrough in economic and environmental transformation. Seventy percent of the 2020 national carbon intensity reduction target could be achieved through gains in energy efficiency and in structural changes in the energy industry. This will also require improvements in the main heavy industries, plus acceleration of contributions from the seven key emerging industries.

The transformation of the economy to include greater emphasis on domestic consumption opens new challenges and opportunities. Green supply chains are beginning to gain traction within China. However, certification processes and standards still need considerable attention, with better cooperation between government and commercial sectors. Palm oil imports is a case currently requiring attention.

WJB: The Prime Minister of Malaysia and I talked about palm oil earlier this year. We discussed a process involving silver nitrate and palm oil wastes.

MB: Green procurement by government is especially important as a stimulus for China’s green economy. It is some years since we first suggested this approach, and we are pleased to see considerable progress. However it is time to upgrade the criteria and to expand the reach to local government, especially cities.

Premier Wen, last year we indicated that we expected to produce a blueprint for management of mercury use in China. We have completed this work. Mercury is a fitting example to illustrate that building China’s green economy will require detailed effort at the level of individual sectors. There are important financial implications for addressing mercury releases in PVC manufacturing, in emissions from coal-fired power plants, and in production of compact fluorescent lights and batteries. China should take major steps to reduce use or emission of mercury in these industries, starting as soon as possible.

I would like to conclude with four points about making green economy work. The first is that one size rarely fits all. The complex economy and ecology of China, consideration of regional needs, and differences in social development levels will require tailored approaches to green economic development. Second, innovation is an essential driver. It requires well functioning markets and supporting institutional changes. Third, a shift is needed to focus on implementation policies. Finally, as you have said, it is time to put people first. It is time to go beyond individual targets and focus on sustainable development outcomes, particularly health and wellbeing.
Premier Wen, as we enter Phase V we are confident that CCICED will be of continued value to China. We look forward to your further guidance and advice. On behalf of the China Council members, I thank you for your attention and I would also like to call upon my colleague and International Vice-Chair of the China Council, Børge Brende, to add a few observations.

WJB: I appreciate your making your arguments in a practical manner and in great detail. Let me make my observations.

First, on the relationship between economic growth and green transformation: global economic growth is on a downward trajectory. The sovereign debt crisis has put global economic development in danger. Now, it is important to have the right balance between achieving economic growth and a green economy. Our goal is to achieve a proper balance between growth and adjusting our structure. We must not follow the old path. We must not achieve growth at the cost of the environment, because this will not be sustainable and will not be in the interests of the people.

This is why in the 12th Five-Year Plan we have targeted bringing down energy intensity by 17% and carbon dioxide by 15%, during the next five years, and a reduction in emissions intensity by 40% to 45% over 2005, by 2020. In addition to these targets, we have also added targets regarding the total discharged emissions of nitrogen gases. All these targets are mandatory. Furthermore we must report these targets to the National People’s Congress and have them reviewed by NPC deputies.

Regarding steps to meet these goals, I fully agree with what you have said. We can sum up as follows:

• We need to adjust the economic structure, increase the share of tertiary industries, and reduce the share of highly polluting and energy intensive industries in the economy.

• For a greener economy, we need to employ economic means and tools for making efforts to save energy and cut emissions. For highly polluting and energy intensive companies, we will consider raising, as appropriate, the price of inputs to keep consumption at sustainable levels. These include coal, electricity, oil, and natural gas. At the same time we will introduce carbon trading markets and carbon taxation on a trial basis.

• We need to make use of legal means, put in place legal frameworks to restrict the release of pollution from any sector, so that we can put saving energy and reducing emissions on a legal footing.

• We need to pursue innovations in science and technology to develop energy saving products. For example, we are now working on solar energy, wind power, and LED lights.
• We agree with your point about the performance evaluation of government officials. They should be obliged to meet environmental targets.

China is under intense pressure regarding population, resources, and the environment. The resources we use are an “overdraft” that should be left for future generations. The pollution we cause will be passed on to future generations. Our generation should think about this and take responsibility.

Moreover, you raised two points on China’s image: keep environment in mind when making overseas direct investments, and keep environment in mind in government procurement and trade. I agree these two points need high attention.

You rightly say, China has a big population and vast land. The regions vary greatly, so we must take a tailored approach. For example, there are places without electricity, without coal to burn, so people must burn firewood for energy, whereas in the cities there are no restrictions on automobiles. So there are tremendous development gaps within China on these issues. We need a holistic approach, helping poor people in poor areas, while putting consumption in affluent areas on a sustainable level.

**Børge Brende:** It’s gratifying to see that China is tackling these matters of environment and development, in spite of the global financial crisis. Also we appreciate your openness regarding these problems. It is an excellent starting point when looking for solutions. It’s important that environmental standards are seen not as a problem, but as part of transformative solutions to economic crisis.

I am impressed by China’s 12th Five-Year Plan and its “decoupling” of growth from environmental emissions.

I see the new CO₂ tax, on a trial basis, being a breakthrough by internalizing the externalities of CO₂. It will change behaviour. The only sustainable way of changing behaviour is taxation. We should tax not only income but also environmental degradation.

So far, China has taken inspiration from environmental regulation in developed countries, but now China will take leadership in this field. It will inspire the leapfrogging of technical developments so that other countries will benefit from China’s developments in the future.

**WJB:** I was also inspired by Margaret Biggs’s remark about mercury. Last year you said it was important to avoid pollution from mercury and other heavy metals in soils. This is the concern of
the Chinese people too. We’ve seen the pollution of our air and water. We must take practical steps to fix these problems.

Regarding certification processes, China must work hard to bring them in line with international standards, so that the Chinese people can enjoy green mountains, blue skies, and clear water. Recently, the Beijing air pollution was very bad, but the measurement figures didn’t match how the people felt. We must revise standards, to bring them into line with how people who live in a place actually feel about it. In this case, different measures are needed, taking into account the size of particles.

Over the past 20 years, CCICED has helped China. I highly appreciate all the views from your experts. Last year, I said I appreciated persistent and abiding calls for reform and opening up, and for environmental development endeavours. We will carefully study every recommendation and suggestion, and act on them. This will give us the groundwork to achieve the targets in the 12th Five-Year Plan, and beyond.

This is a highly meaningful way for us to mark the 20th meeting. I wish you success.

**MB:** Thank you. All of us were very impressed by the 12th Five-Year Plan and its commitment to green transformation. As Børge Brende said, we appreciate your openness and willingness to discuss these issues. Every year it seems the work and studies of the China Council get better. As you said, the model of cooperation between international experts and Chinese experts is a model for the world.

We look forward to our AGM and to producing more recommendations for you and the State Council based on the work of our experts over the last year or two. On behalf of all our experts, members and experts, I want to thank you, Minister Zhou, and our Chinese colleagues for your cooperation and spirit of friendship.

**WJB:** I believe that the Chinese government and the China Council can interact not only during the AGM, but in other fora too. We like to hear your views any time. Thank you!
III. Annual General Meeting

Item 1. Adoption of the Agenda

CCICED Executive Vice-Chair Zhou Shengxian called to order the fifth meeting of the fourth phase. He introduced the Council Chair, China’s Vice-Premier Li Keqiang, the International Executive Vice-Chair and President of CIDA, Margaret Biggs, Vice-Chair Børge Brende, and CCICED Secretary General Li Ganjie. He welcomed guests, Council members, and observers to the 2011 AGM, focusing on the theme of the “Green Transformation of China’s Economic Development Mode.” The Council adopted the agenda, and CCICED's 2011 AGM was declared in session.

Item 2. Awards Ceremony

By way of thanking all international and Chinese Council members for their work during Phase IV, ten members were selected to receive special awards from Vice-Premier Li Keqiang. These members were: Hao Jiming, Sarah Liao Sau Tung, John Forgách, Arthur Hanson, Lars-Erik Liljelund, Lim Haw Kuang, Hau Sing Tse, Roger Beale, Achim Steiner, and Daniel Dudek.

Item 3. Opening Ceremony

Executive Vice-Chair Zhou Shengxian introduced CIDA President and Council International Executive Vice-Chair Margaret Biggs. She highlighted the following points in her address to Council:

China’s 12th Five-Year Plan (FYP) recognizes that the country’s economic and environmental transformations are interdependent, and that we must understand how “green transformation” can be applied to benefit all China’s people. This is the main theme of this AGM.

We recognize the progress China has made on environment and development over the past five years. However, the shift in approach has not yet fully delivered the desired environmental outcomes. The environmental protection situation in China is still described as grave. The critical period for change lies ahead.

This AGM should focus on three points related to our theme: improving the fiscal arrangements, pricing, and market incentives suitable for a green transformation; offering holistic recommendations to promote the role of innovation, especially in the context of shifting from a
coal-based economy; and promoting inclusiveness — of women and girls, the poor, and local people — when solving problems related to environment and development.

Executive Vice-Chair Zhou Shengxian introduced Council Chair and China’s Vice-Premier Li Keqiang, who delivered the AGM’s keynote speech. Here are some of the main points:

At present the international economic situation is complicated and changing. We face financial turmoil, debt crises, and a slowdown in economic growth. Behind these superficial problems are structural problems: the mismatch between savings and consumption, poor coordination between the real economy and the virtual economy in many countries, and unbalanced development in North and South. At the same time, mankind faces global challenges such as energy, resources, and food supplies; climate change and natural disasters; and public health.

On the one hand, countries should cooperate to achieve strong growth in the world economy. On the other hand, to address those deeper levels of conflicts and contradictions it is necessary to accelerate the pace of transformation. Environment and development are closely connected, and both promoting economic recovery and seeking balanced and sustainable growth should occupy an important position on the global agenda.

Since implementing its policy of reform and opening up, China has achieved great social and economic development. We have always taken economic development as the top priority, and resource conservation and environmental protection as basic state policies. For instance, in the past three decades the gross domestic product (GDP) average growth rate was 9.9%, the energy consumption per unit of GDP dropped by 4% annually, and the forest coverage growth rate exceeded 2%.

In China, about 700 million people live in backward rural areas. Public health, education, and cultural services are underdeveloped, and the share of manufacturing and service industries remains low. Economic growth is attained at a high cost to resources and the environment, so in these areas we have a problem of unbalanced, uncoordinated, and unsustainable development.

We seek development with transformation. Transformation promotes environmental protection and energy conservation, but it also fosters new economic growth points and promotes new industries. Last year, for example, energy conservation and environmental protection output value exceeded 2 trillion yuan. By the end of 2015 this value will exceed 4.5 trillion yuan.

Transformative development features expanded domestic demand and is driven by innovation. We need to make full use of the human resources and talents in China to increase the technical content of economic growth. And we will adjust the structure of industry and establish a long-
term mechanism for expanding consumption so that economic growth will be based on domestic demand.

Transformative development is inclusive and harmonious, and benefits people. We take a people-centred approach, and we aim to implement projects that have a direct bearing on livelihoods. We will build a safety net so that the living standards of urban and rural residents can be further improved. And with the improvement of environmental quality, the quality of people’s lives can be enhanced too.

We realize that the intensive mode of development must be changed. Otherwise we won’t have enough resources, and the environment will suffer. By aiming to save energy and protect the environment, we will push technical innovation and upgrade industry, and as a result the economy will improve.

Between China and the rest of the world are huge gaps in energy efficiency. We must improve energy efficiency at the source, and phase out backward capacity and discourage energy intensive and highly polluting industries. At the same time we will make efforts to develop an energy saving economy — a circular economy — using low-carbon technologies. With integrated measures, the energy consumption per GDP will be decreased by 16% and the value added service industry will be increased by 4% within the next five years.

For the economy to be guided onto the right track, pricing is the most sensitive signal to send to the market. Therefore the pricing of resource products will be an important part of our reform process. Finance and trade are powerful levers for changing the behaviour of enterprises, and we hope that the transformation of development can be deeply rooted in people’s hearts.

**Item 4. Special Remarks, Issues Paper, General Debate**

**Vice-Chair’s Opening Statement**

With International Executive Vice-Chair Margaret Biggs presiding, Vice-Chair Børge Brende addressed the Council, emphasizing the following issues:

The world is at a moment of extreme volatility and uncertainty that has far reaching implications for sustainable development. We must develop a long-term vision of how to create synergies between economic growth and environmental protection.

Over its lifetime the Council’s focus has changed from single issue concerns with off-the-shelf advice drawn from experiences in more developed nations to complex and coupled issues that
typically require transformative and innovative changes in society. Here, more developed nations have less to offer in terms of experience. Climate change, river basin management, and biodiversity maintenance are only some of the grown-up challenges that the Council in later years has advised on. Increasingly the advice has been that China must show the way to the rest of the world through concrete actions, pilot schemes, and innovative coupling of environmental and development policy issues.

When it comes to that new breed of coupled and complex issues, the challenge is increasingly being met by an approach reflected in the saying, “In China the future is not studied in order to discover what lies ahead; instead the future is decided.”

The “capital approach to sustainability” considers the total wealth of a society, not only real capital like infrastructure, buildings, and other assets, nor financial wealth, but also wealth in the forms of natural resources and services from the environment, plus human and social capital. To achieve sustainability, a balanced approach is needed where sound management of all the different types of capital are secured.

We need to be aware at the global level of complex systems — oceans and climates, and trade and financial processes — which are more vulnerable to disturbances and abrupt changes than had been previously understood. Current governance systems struggle to cope with these complex risks while many of our institutions are designed to respond to the challenges of another age. We are especially bad at developing coherent responses to crosscutting social and economic environmental threats and have few examples of real policy coherence to point to.

**Special Report by the Minister of Environmental Protection**

International Executive Vice-Chair Margaret Biggs invited Executive Vice-Chair and Minister of Environmental Protection Zhou Shengxian to brief the Council in a special speech. Minister Zhou underscored the following themes:

In recent years China has made remarkable progress in environmental protection. For example:

- The emission reduction targets of main pollutants, such as sulphur dioxide (SO₂) and chemical oxygen demand (COD), have been surpassed. During the 11th FYP, desulphurization units for coal-fired power plants with a capacity of 578 million kilowatts have been put into operation. And the rate of municipal sewage treatment has increased from 52% in 2005 to 77% now.
• During the 11th FYP the MEP rejected, or refused approval, or postponed 822 projects that did not conform with environmental requirements. These projects involved investments of RMB3.2 trillion. One result of these refusals is that over 215 million rural people now have safe drinking water.

• Pollution prevention and control in rivers and lakes has been stepped up, and an assessment system for transprovincial boundary water quality monitoring has been established. (At times, the measured improvement in environmental quality doesn’t match what we may notice as individuals. Within the MEP our criteria for the atmosphere are now under review, and we will try to bring them into line with international criteria.)

• The GOC has allocated RMB4 billion to protect rural environments by applying performance-based bonuses, in place of general subsidies, to promote pollution treatment. The State Council has approved China’s new biodiversity protection strategy. 192 new natural reserves have now been set up, taking up 14.9% of total land mass.

• Environmental quality has improved. For example, the proportion of grade 3 water quality in seven major river systems has been raised from 41% in 2005 to 59.9%, and the average annual concentration of SO$_2$ in urban areas has decreased significantly since 2005.

Despite these advances, we must remember that we are faced with extremely severe environmental challenges. The GOC is fully cognizant of the situation, and recently the State Council adopted an 5000-character opinion on environmental protection. This dense and extremely rich document proposes ways we can improve our environmental protection work. It points out key tasks and methods to guarantee their accomplishment.

The State Council will also issue a national environmental protection plan for the 12th FYP, and it will convene, soon, the seventh national conference on environmental protection.

Actively exploring the “new path for environmental protection” has become the will of the government and of the people, and has been elevated to the level of a national strategy. It is a flag guiding environmental protection work in China. This new path is characterized by low cost, high benefit, low emissions, and sustainability.

This new path must promote the integration of environmental protection and economic development. In the past, the law said that “environmental protection needs to be compatible with economic development.” But I suggest we change it to “economic development needs to be
compatible with environmental protection.” That is, we want to institutionalize the relationship between environmental protection and economic development in law.

The core of exploring new paths for environmental protection is to improve the lives of the people. After ensuring adequate food and clothing for the people, creating a good environment has become the new task for social development. We need to solve the environmental problems that have a direct bearing on people’s lives, for example heavy metals, chemicals, and hazardous materials.

Exploring the new path for environmental protection aims to establish six major systems:

• a national environmental protection system that integrates environmental protection with economic and social development.
• a comprehensive and highly efficient pollution prevention system.
• an environmental quality assessment system, with scientific and reasonable indicators so we can solve the problem of the gap between people’s perceptions and the results of the assessment.
• a system of laws and regulations, policies, and scientific criteria related to environmental protection.
• an environmental management, supervision, and enforcement system.
• a social action system of environmental protection involving all the people. Green and appropriate consumption behaviour should be pursued by the whole society.

During the 12th FYP we need to carry out four major undertakings: improve the theoretical system based on the practice of exploring the new path of environmental protection; amend environmental protection law and build a better legal framework; reorganize the MEP and revise its functions; and, taking energy reduction and conservation as the main task, promote an obvious improvement in environmental quality.

At the same time, we need to complete three tasks: improve the supervision and management of environmental protection; solve the environmental problems that affect development and that damage people’s health; and reform and update the institutional arrangements for new environmental protection work.

To attain green transformation, we must focus on these five areas:

• Develop a green, circular economy and bring about an economic transformation by promoting low-carbon development.
• Enhance the reduction of pollution emissions so as to force economic restructuring and further improve the statistics, monitoring, and assessment system for these reductions.
• Deepen the environmental impact assessment system so as to promote industrial upgrades and reduce pollution and ecological degradation at the source.
• Amend and improve environmental laws, regulations, and criteria, reform taxes and fees, and study financial and pricing policies which may benefit environmental protection.
• Guide market demand and enhance environmental and technological innovation so that environment-related industries will develop into new economic growth points.

**The CCICED Issues Paper**

Vice-Chair Margaret Biggs introduced CCICED Chief Advisors Arthur Hanson and Shen Guofang who outlined the 2011 Issues Paper to Council. During their presentation, the Chief Advisors focused on the following key findings:

We face a dilemma. On the one hand, China has made a huge effort toward improving its environment and has achieved some important successes. On the other hand, as the Minister of Environmental Protection has noted on various occasions, China faces a “very grave” situation. An awareness of this paradox should be our starting point.

The idea of a green economy is coming at the best time and at the worst time. If we take seriously our own rhetoric, we should insist that, regardless of global economic turmoil, we must continue the struggle to deal with the environment and the economy. In fact achieving a green economy will be one way to lead us to a better place even in this time of financial uncertainty.

It is important to note that China has already aligned its actions — shaped in part by the work of CCICED — toward the objectives of Rio+20 (the United Nations Conference on Sustainable Development), the United Nations Environment Programme’s concept of a green economy, and the emphasis by the Organisation for Economic Co-operation and Development on green growth.

We can consider the prospects for a green transformation in terms of five challenges and five opportunities. The challenges:

• We need to shift the relationship between China’s environment and its economy by 2020. Although already China has set out 2020 goals for its social and economic development, it has not defined long-term objectives for the environment. Understandably, most countries find it difficult to improve the environment during periods of high economic growth. We also need to develop better tools for mainstreaming environmental decisions into economic decisions. And we need to optimize the environmental and economic
mutual benefits — the “co-benefits” — so that, for example, health benefits flow from reduced pollution.

• We must turn targets, such as for pollution reduction, into real environmental outcomes and genuine improvements in people’s health. To be effective, these targets should be expressed in terms of total reductions rather than intensity levels. At the same time we must beware of creating new environmental problems; for example, with the introduction of large numbers of autos, the composition of China’s urban pollution shifted from SO\textsubscript{2} to nitrogen. And we must always ensure we have reliable statistical information about what’s happening in the environment.

• We should promote green business, better corporate governance and corporate social responsibility (CSR), and financial sector participation in greening initiatives. Although China has been dealing with large enterprises (for example, it moved Beijing’s giant steel complex Shougang outside the city) it should also be closing backward capacity in small- and medium-sized enterprises, with consideration also of how some might be brought up to a better standard.

• We must optimize transformative change during China’s 12\textsuperscript{th} FYP. Much work is being done on this idea, but the key point is that we must link this change to sustainable livelihoods and new jobs. We also need to tailor regional green economies to local needs — one size doesn’t fit all.

• We must link Chinese and international efforts. Since the tasks ahead are difficult and expensive, more international partnerships are needed. Also, China can now play a larger role in providing green development assistance to other parts of the world. And since China is bordered by some 14 countries, it needs to step up its transboundary agreements relating to environment and trade.

The opportunities:

• We must integrate social, economic, and environmental sustainability policies, and link these policies to the global green economy, to regional and functional ecological zoning, and to the greening of rural and urban development. One area where progress is feasible is the “blue economy.” Oil spills in the Bohai Sea and damage to aquaculture could take advantage of the fact that effective integrated response strategies have already been developed in other parts of the world and are available for China to use.

• We need a low-carbon industrialization strategy sooner rather than later. This strategy will link existing heavy industries with emerging industries based on innovative technologies. It will stimulate China’s shift toward an innovation economy, and help China boost its international competitiveness.

• We need to achieve sustainable consumption. China has a genuine opportunity to meet public demands for better, safer, healthier products, and to shape the domestic stimulus
toward sustainable rather than conspicuous consumption. China’s decision not to approve purchase of the rights to the Hummer automobile brand is one example of embracing the sustainable approach to consumption.

- China’s outward direct investment (ODI) needs to be environmentally friendly in order to benefit China’s overall brand in the world and to secure its access to markets and resources. This is an opportunity for China to improve its overall international situation.

- We need to develop a medium- and long-term plan for the green economy for the period 2015-2030. This is an important project the Council itself should consider taking up.

In conclusion, more effort is needed on transformative economic and environmental action, and on the bridging and linking of the two. International cooperation is an essential component, and we need to be thinking about stronger Chinese efforts internationally. And we must always remember that green development is a catalyst for other benefits.

**General debate and comments**

China is now the dominant producer of photovoltaic panels and wind generators. This has been an important part of China’s domestic energy supply, but it has also had a transformative effect globally. It has helped other countries achieve climate targets in a much more efficient and lower cost way. When Premier Wen Jiabao spoke about jointly pursuing sustainable development and contributing to world economic recovery and the fight against climate change, this is a good example.

By the middle of this decade there will be over a billion people in some form of emissions trading schemes in the world, including the Chinese. If we can get practical action among these countries and link these schemes it will be an enormous step toward encouraging one element of green development.

At this conference, senior Chinese officials have all mentioned the importance of reform of the pricing of resources, fossil fuels, and electricity, and of creating appropriate and coordinated incentives for changing behaviour, particularly business behaviour. If you truly want a green transformation, you must have consistency of signals to enterprises, to consumers, to economic actors in society, and you must speak to these actors in the language in which they make decisions, which is market signals and prices.

In many countries, people have doubts about the credibility of green transformation. China’s dynamism in this area could foster more global confidence that a green economy is the way to go, and it could help reduce uncertainty by gathering and publicizing data demonstrating that green transformation is possible and not that costly. And countries that have doubts about going alone
with this transformation can agree to move forward together to give impetus to the kind of momentum that will create general confidence.

China needs a better system of environment impact assessments. Currently, these assessments are not always scientific but sometimes are decided by local leaders, and some projects that shouldn’t be approved have been approved. For example, some polluting projects have been passed in water source areas, or in areas with complicated geological conditions, or in localities that do not really need these projects. Furthermore we need more sophisticated assessments conducted for large projects.

Item 5. Task Force and Policy Research Reports

CCICED Secretary General Li Ganjie chaired the presentation of the task force reports.

Task Force on the Development Mechanism and Policy Innovation of China’s Green Economy

In presenting their findings (which are set out fully and formally in their report) task force Co-Chairs Lars-Erik Liljelund and Yang Chaofei underscored the following points:

What is needed for the development of a green economy is green investments, eco-innovation, the mainstreaming of green policy-making and business decision-making — in other words an integrated approach to the development of the whole country.

Among international experiences that can inform the Chinese context, it is important to include government leadership and strategic planning as the political foundation for green transformation and leapfrogging. This will include moving beyond traditional indicators of economic growth, such as GDP, toward mainstreaming green development into an integrated policy-making framework. It is the responsibility of government to provide public services, to set an appropriate regulatory framework, to send clear price signals, and to establish an effective incentives structure.

In the transformation toward a green economy, the conditions that favour China are: strong political commitment, including clear policies in the 12th FYP leading toward an inclusive, green, and competitive economy; broadened and deepened actions supporting energy saving and emissions reduction; a comprehensive policy framework for green innovation capacity building; and the massive fiscal capacity to support green investments.

Market size, manufacturing capacity, innovation environment, and infrastructure constitute a “combined catalyst” to transform China into an emerging global green innovation hub.
It is important to reduce government interference in the market. The government should not make decisions for enterprises, nor use administrative measures to affect market price, nor send the wrong signals concerning resources and environmental protection. The government should not overuse fiscal resources to set up demonstration projects nor fund superfluous projects. Instead the government should be a supervisor and a regulator for protecting the environment, conserving resources, and ensuring safe production and equitable competition.

Economic policies should be formulated to give more incentives to those enterprises that save energy and help protect the environment. For example these should enjoy favourable pricing for resource inputs. Environmentally friendly enterprises ought to be listed and they should enjoy tax preferences, fiscal subsidies, and favourable loans.

We need to establish assessment or evaluation mechanisms that reflect that sometimes we protect the environment but we don’t necessarily conserve energy, for example with the use of alkaline manganese batteries or with desulphurization facilities that can’t make the best use of the residue heat.

We also need a greening of fiscal policy and the tax system. We should increase financial support for green development, deepen tax reform, and further strengthen price reforms. We hope that, with these policies, enterprises will become more aware of environmental risks and will meet their corporate social responsibilities.

Regarding the transformation of traditional industries, we found that in the short term the cost is higher than the benefits, but in the long term the benefits are higher than the cost. And we must take an integrated approach so we can achieve co-benefits. For example the cement, steel, and charcoal industries can treat their own wastes and slurry, so it is not necessary for the government to build extra waste treatment centres. This means that the government should give priority to these industries.

Green transformation should be an inclusive and empowering process. Society and government should regard a green economy as important for increasing employment. Furthermore we need to bring into full play the role of women in green transformation and particularly the benefits to women of this process.

Task Force on China’s Low-Carbon Industrialization Strategy

Task force Co-Chairs Feng Fei and Bernice Lee expanded upon their report by emphasizing these points:
Following the global financial crisis, industrialized countries have taken steps to revive their manufacturing sectors as a way to promote economic recovery. The United States, European Union, and Japan all announced renewed manufacturing strategies in recent years, with particular attention to the development of emerging industries. This suggests that soon we will see a “new world order” for manufacturing competitiveness.

At the same time the world has seen a trend toward a green and low-carbon transformation. Many countries have increased their support for research and development for new energy — especially renewables — and have taken measures to improve the energy efficiency of autos and reduce their CO₂ emissions.

China should adopt a low-carbon industrialization strategy in order to conform to international trends in development, but also to position itself favourably during the new round of global economic transformation. Such a strategy will also help China solve some of its own domestic resource and environmental problems, and will contribute toward China’s development of a low-carbon economy.

During the 11th FYP period, China’s emission reduction mainly relied on industry. In the transportation and construction industries, energy consumption is increasing fast, so their contribution to emissions reduction and energy intensity has been negative. During the 12th FYP period we need to turn this negative contribution into a positive one.

China is in the medium term of industrialization. The country’s secondary industry accounts for about 47% of its total GDP, much higher than the world average of 28%.

China has many advanced businesses but also some backward and obsolete production capacities and equipment, especially in the small business sector. The energy consumption of small businesses per unit of output is 36% higher than that of large businesses.

China has made great progress in developing its emerging industries. In renewable energy, for example, China plays a leading role globally. In 2010, China ranked #1 in the world in the overall installed capacity of wind power, accounting for 22% of the planet’s total, and its newly installed capacity was almost half the world’s total.

By 2020 the potential emission reductions for industry is about 8.11 billion tons of CO₂. The most effective ways to achieve this target are to introduce new technologies to improve energy efficiency, to improve China’s energy structure or energy mix, and to adjust the industrial structure.
The heavy chemicals sector is the most important sector in China’s industry. According to our research, by making improvements in energy efficiency, in management, and in technology it is possible to reduce this sector’s CO$_2$ emissions by 3.6 billion tons by 2020.

The research also showed that if 79 key energy conservation and emissions reduction technologies, in different industrial sectors, are introduced and applied, then there is potential for a further CO$_2$ reduction of 1.22 billion tons.

Another path toward achieving low-carbon industrialization is the promotion of so-called strategic emerging industries. These can be categorized as energy saving, environmentally friendly, new energy, biological, information and communications, high-tech, and so on. The State Council has decided to develop seven of these emerging industries which, by way of both direct and indirect effects, can achieve further billions of tons of CO$_2$ reductions by 2020.

On the basis of our analysis we offer these policy recommendations. China needs to:

• establish energy intensity reduction targets in the major chemical industries.
• vigorously develop strategic emerging industries and combine this with green and low-carbon transition.
• accelerate low-carbon technological innovation, which includes building a world class national level energy laboratory.
• establish and perfect laws, regulations, and standards, and strengthen their implementation. Standards should be in line with the international system, and should serve an incentive function for industries to develop and apply new technologies.
• improve energy pricing mechanisms and establish a green financial tax system. In particular, in the latter part of the 12$^{th}$ FYP period we need to introduce a carbon tax.

Getting low-carbon industrialization right is a global problem, not just a Chinese problem. It is not an area where there have been enough international experiences. As a result, everyone needs to be involved in finding a global solution.

During our task force engagement we encountered recognition all over the world that low-carbon industrialization holds the key to 21$^{st}$ century competitiveness. Finding the right policies will help us deal with serious challenges around resource and energy security, employment, and the overarching threat of climate change.

We are encouraged that our recommendations are in line with points Premier Wen has endorsed. These include economic restructuring and the development of higher-value-added industries; an emphasis on innovation; regulation, taxation, and pricing that will set the right incentives; the
importance of the circular economy; and the need to bring Chinese standards in line with international standards.

Comments on the Green Economy and Low-Carbon task force presentations

Inevitably, the world will be constrained by resource limitations and by pollution. If you want to be a successful economy in that world — if you want to win the “green race” — you have to deliver resource-efficient, low-polluting solutions. You achieve that by transforming your domestic economy. You have to create demand for these solutions domestically, and thereby build competencies and scale for exports. China’s FYP is very much in line with that. It is a game plan for winning the green race.

If you do seek to transform your internal economy, to boost markets and consumption and build exports, then obviously the Chinese business community will play a major role in this effort. Therefore, future meetings of this Council should invite representatives from leading Chinese companies to take an active part in its dialogues. Such participation would help signal to the business community that the government is serious about pushing for a green transformation. Recent studies examined the employment impact of phasing out fossil fuels, particularly coal-fired power, and replacing it with wind energy. These studies found that roughly 2.5 million jobs will be created by this transition toward a cleaner power production model, while 800,000 jobs will be lost, mostly in smaller coal-fired power stations. This is an argument to accelerate the transition — not only in China but in most nations — as opposed to arguing that you might lose jobs.

The transformation toward a low-carbon or green economy involves both existing and emerging sectors. This dual pathway makes this transformation more attractive and feasible. With the former comes the concept of “decoupling” from the emissions footprints and resource consumption patterns that make this economic pathway increasingly vulnerable. On the other hand, the new emerging sectors can play an important role in enabling that overall decoupling.

Premier Wen’s comment—that China will experiment both with carbon taxation and cap-and-trade systems — is encouraging. In some industrial sectors, the reduction of energy and carbon use is extremely difficult or expensive. These sectors should have the capacity to make investments elsewhere in order to achieve lower costs with similar degrees of carbon reduction and energy use improvement.

When you put internal price signals into the economic calculations, you stimulate engineers and change behaviour and ways of thinking. But we must also bear in mind the negative impacts of
price signals. In the United Kingdom, for example, increases in fuel costs have caused hardship in poor and rural communities, and you reach a point where social unrest may be the result.

Regulatory approaches and standards setting are other effective ways to achieve targets. In the European Union, for example, setting clear emissions objectives with a gradual reduction over time has probably had a greater impact than straight price signals. Although China, like other countries, sometimes has difficulties enforcing regulations, such standards should be easy to impose because they involve manufacturing.

The green transition effort needs to focus on those activities that have the most significant environmental impacts. In Europe, 80% of impacts today stem from just three economic sectors: transportation, food and agriculture, and building and construction. This may not be the case in China, but the question is worth analyzing.

Innovation plays a key role in transforming toward a green economy. But which policies are needed to foster and drive innovation? Research is an effective “push” measure, but research needs to be combined with a demand side, with robust “pull” measures that create markets for innovative products and new solutions. In addition there are drivers such as skills training, partnerships with business, procurement, international cooperation, and the role of regulation in fostering innovation.

Fiscal instruments such as environmental tax reforms and emissions trading schemes can both play a role in fostering a low-carbon economy. Europe’s experience suggests that trading schemes are best placed to address big point source polluters, while taxation works with smaller and more diffuse challenges. Both types of regulation can and should work together if carefully designed.

Regarding the suggestion to establish a new national energy research laboratory, perhaps we should go one step further and target this research toward those areas where China already has expertise, for example, lanthanide metals as applied to battery development, and photovoltaic technologies.

Targeted research in this way can sometimes be constrained by principles of freedom of academic research, but usually we can allocate resources in specific areas, in this case to help advance the green economy. To encourage researchers it is also essential that we offer patent and intellectual property rights protection.

The business community will help take these low-carbon research products toward commercialization. In other words, the process will be market driven. But the market is imperfect.
and inefficient, and is riddled with hidden subsidies which may put green products at a disadvantage. One way to increase transparency would be to require all publicly listed companies to disclose their carbon emission levels.

We should be protecting important ecosystems such as wetlands, natural forests, and grasslands. These are carbon capture agents that are important to our fight against climate change. We should bear this in mind in the context of issues related to local urban development and agricultural development.

Among measures to stimulate green development, one that has not yet been mentioned is an exchange rate that is allowed to appreciate more naturally. This is an effective tool for redressing structural imbalances both in the domestic and the international economies.

Coal provides about 70% of China’s energy today. Whatever efforts we make toward introducing renewable or cleaner energies, coal will clearly be an important part of China’s primary energy mix for the next 50 years. Therefore it is important for the government to accelerate its efforts on research into cleaner coal, including solutions like carbon capture and storage.

In addition to coal, natural gas will continue to be an important factor in China’s energy consumption. It is a cleaner fuel, and China is believed to have abundant supplies, particularly unconventional gas in the form of coalbed methane and shale gas. More research should be done to ensure a systematic and structural approach to developing natural gas in China.

In following up on Premier Wen’s commitment to experiment with carbon taxation and carbon markets in China, we should be mindful of the European experience with the role of pricing as a tool to induce transformation. In particular we encountered difficulties arriving at the right price signals for the power sector and for the heavy industries sector, each of which presents a very different dynamic.

Any economic modelling, in China and elsewhere, will conclude that a green transformation is a winner in the end, because the prospects for business and job creation are good. But the high short-term transition costs cannot be ignored. It is the financial sector that makes transition possible — or not. This sector can be a powerful engine to achieve transition, or it can be an obstacle. The role of the financial sector and the problem of short-term costs versus long-term benefits is an area where the Council can do more research.

In the past, China applied differentiated carbon reduction targets at the provincial level. We need them now at the sectoral level. Although the industrial sector has achieved a lot in recent years, the transportation and construction sectors have not contributed much to the reduction of CO₂.
environmentally friendly policies and technologies can be applied in these two industries, the green transformation will be accelerated.

In the private sector, especially in the big food industry companies, the old concept of green sustainable value chains is being replaced by a new concept which is “shared value.” Shared value is concerned with gender issues. A better gender balance improves the margins of business and improves the stability and sustainability of a business. So, when you are looking at implementation alternatives and options, you should consider gender.

Task Force on Investment, Trade, and Environment

Task force Co-Chairs Pan Jiahua and John Forgáč emphasized these points in the presentation of their report:

China is a latecomer to ODI. China’s ODI has encountered many misunderstandings and misperceptions. As an emerging global economy, China should not only participate in international rulemaking in a passive way, but China should also share its own experience with green transformation so as to promote sustainable development in the whole world.

Industrialization and urbanization are moving fast in China, so the country needs to maintain high economic growth. Energy consumption and emissions will only increase, which means that China needs to transform its economic development mode. This represents a big opportunity, and investment and trade are the most effective means and tools for this kind of transformation.

Forty years ago, China’s economy represented less than 1% of the world’s total. By 2010 China has already become the second largest economy, accounting for 9.6% of the world’s total.

China’s growth relies on three pillars: investment, trade, and consumption. During recent years, investment and trade played the dominant role. This growth boosted energy consumption — in 2010 China’s total consumption was 10% higher than that of the United States — which meant that China’s greenhouse gas (GHG) emissions, in 2007, ranked #1 in the world despite our efforts to control it.

China’s participation in international affairs serves as a new driving force for China’s green transformation. Thanks to foreign direct investment (FDI) from developed regions, new technology and management expertise have helped China improve its energy efficiency. This FDI has been mainly in manufacturing sectors, which explains why China so rapidly reduced its pollution and GHG emissions. That is, this environmental success was due in part to China’s integration into the world economic system.
In terms of China’s ODI, our research leads us to recommend that we must focus less on the quantity and more on the quality of our investments. In particular we must deepen the green shift and stimulate the development of resource-saving and environmentally friendly industries.

There are many myths and misperceptions about China’s ODI, so China needs to establish the credibility of its enterprises overseas. When Chinese businesses go global, they need to abide by the laws and regulations and to understand the language, culture, and social governance of the destination countries. It is necessary to improve dialogue and communications so as to remove negative perceptions and misunderstandings.

Regarding ODI in the energy and mining sectors, we must establish new guidelines on CSR. After resources are depleted there will be many environmental and social challenges. Therefore it is necessary at the start of the investment to set up a sustainable development fund that will help mitigate the impact of China’s resources procurement activities.

China is the new global player, the agent of change in the world today. China’s strong engagement with greening its economy makes it unique. While the rest of the world suffers from economic, identity, or political crises, China, in a way, remains alone. It is strong, rich, hungry, and aggressive — basically fighting for its sustainability.

Most people who live outside China don’t visit China. Instead, they see Chinese products or investments in their own countries, or companies extracting resources. China’s trade and investment are the projections — the face — of China in the wider world. Most of these people, however, do not know that China is going green. The global misperception of China is a problem. It is encouraging therefore to hear the Premier say that communicating China’s intentions will become a government priority.

In the three countries where we did field research, Chinese capital and business were warmly welcomed. But people don’t just want more volume of investment from China, they want better quality. In particular they would like China to share its green principles and ideas, and help establish South-South standards in these areas.

This is a crucial moment of opportunity for China, but also a moment of danger. China can play a huge role in greening the global economy by helping transform countries which cannot afford to do it themselves. But China must get this right, or it will see many doors closed. China cannot afford to have other large economies wary of its intentions. It needs to communicate its good will and to make an active effort to change its global image.
Task Force on Policy Mechanisms towards Environmental Targets for the 12th FYP

Task force Co-Chairs Wang Jirong and Dan Dudek presented the first stage of their group’s research, its assessment of pollution reduction during the 11th FYP period. The Co-Chairs highlighted these points:

During the 11th FYP, China exceeded its emission reduction targets even though the environmental pressures from strong growth rates also exceeded the expected scenarios. China targeted an annual GDP growth rate of 7.5%, but in fact achieved 11.20%. Over the same period, China’s emissions reductions exceeded their targets, with COD falling by 12.45% and SO₂ by 14.29%.

These successes were achieved mainly through pollution reduction projects and, to a lesser extent, economic restructuring. Urban sewage treatment has resulted in a huge reduction in COD, and desulphurization facilities in coal-fired power plants have brought about a similarly large decline in SO₂ emissions. The central and eastern areas of China have mainly pursued reduction products, whereas western areas have mainly sought restructuring.

In assessing the competence of various pollution reduction policy measures, we applied a range of criteria and arrived at a breakdown using the “traffic lights” model. In the end, 38 measures received a green light (yes), 16 a yellow light (maybe), 8 received red lights (no).

One effective policy measure is to allocate responsibility to provinces and local governments to mobilize their participation. In fact a number of provinces have achieved reduction targets to a greater level than that required by the central government. Another effective measure is a comprehensive pricing regimen for desulphurized electricity that encourages energy saving and emissions reductions. This regimen includes taxes, wastewater fees, and other kinds of levies.

Emissions reduction projects have been assisted also by substantial inputs, from various sources, of hundreds of billions of yuan during the 11th FYP period to support construction and operating costs.

Pollution reduction has achieved co-benefits. The permanganate index in surface water, the land area affected by acid rain, and the SO₂ intensity in key environmental protection cities have all declined. Efforts to meet pollution targets have spurred the upgrading and modernization of heavy industrial infrastructure such as thermal power generating units and blast furnaces.

Our analysis has reached this fundamental conclusion: the responsibility system has worked well, and during the 11th FYP, while focusing on SO₂ and COD reductions and improvements in
environmental quality, we have applied economic, administrative, and other measures and ahead of time we have reached our target of reducing overall emissions. This is a good basis for the work of the 12th FYP.

Measured against China’s past, our performance has been improving — for example, energy consumption is declining. But this consumption remains at twice the world average. This means that several issues still need attention:

- We must control newly added emissions and maintain the achievements from the 11th FYP.
- We need to focus on “upfront” emission reduction, such as raising the standards for production permits or increasing the use of pre-treated coal.
- The overall restructuring of industry needs to advance, with the phasing out of obsolete capacity and the improvement of clean production.
- We should find ways to consolidate multi-stakeholder actions involving government, enterprises, and society.
- Our analysis shows that pollution reduction has been achieved largely by “throwing money at the issue,” so we need to find ways to achieve these goals more cost effectively.

The success of the 11th FYP has raised expectations for a similar good performance during the 12th FYP period, yet we must remember that a large number of the underlying root causes of China’s environmental problems remain unsolved. For example, the investment in pollution control equipment and projects was massive and accounted for most of the emissions reductions. In most cases these investments were backed by subsidies, which can be difficult to design and apply properly. One instance is the use of subsidies in the area of flue gas desulphurization and coal, which may bring the undesired effect of locking in the use of that type of energy while China is trying to shift toward other energy sources.

Subsidies also need to be linked to environmental performance rather than to specific technologies. For instance, prior to reform of the green pricing program, subsidies were paid simply if an enterprise installed a scrubber. At that time there was no requirement to actually operate the scrubber, so emissions went up even while the subsidies were collected.

Setting clear, mandatory, enforceable targets in the areas of environment, energy, and carbon is essential for setting expectations for industry and government performance. Since an investment horizon of five years is too short, targets need to be specified for a longer term, say up to the year 2030. Over this period we need to demand ever tightening requirements as a spur to innovation.

Targets need to be linked to real environmental outcomes. Has human health protection been improved? Has environmental quality increased? Are sensitive ecosystems protected? As
development proceeds to the interior of China, are the people and resources of those regions being protected from the ill effects of that new growth?

Although one effective compliance tool is the responsibility system for local officials, MEP also should be ready to apply permitting sanctions vigorously. Another badly needed tool is revision of the non-compliance penalties. Currently, for some types of pollution violations the maximum penalty is RMB200,000 — a mosquito bite to most enterprises. There must be strong incentives to comply, and compliance should be cheaper than non-compliance.

General comment on task force presentations

With respect to all the reports, we must consider the changing role of private companies in China. Soon, many large Chinese companies — like Shell, Nike, Adidas already — will enjoy a high public profile internationally. With that higher profile will come greater responsibility to be transparent and accountable, to provide reliable figures about their operations, and to let us know whether they are doing a good job environmentally.

Vice-Chair Børge Brende presided over the presentation of the special policy study reports.

Special Policy Study on Practices and Innovation of China’s Green Supply Chain

Special policy study Co-Chair Gwen Ruta presented the findings of the group’s research. She emphasized the following points:

In recent years China has seen several high profile incidents of supply chain mismanagement, involving for example contamination of foodstuffs. Incidents like these can damage the reputations of large enterprises at the top of the supply chain when their reliability is jeopardized and consumer confidence is eroded.

As China seeks to create greater global confidence in the quality and safety of its products, it must be able to show that its factories comply with environmental and health rules, meet international standards, and are well managed. The way to demonstrate these things is to foster green supply chain management (GSCM).

An effective GSCM program will help China achieve the environmental goals of its 12th FYP because it will allow the government to share the burden with private enterprise. Furthermore the program will improve China’s global competitiveness by ensuring that its factories will be seen as desirable links in multinational supply chains.
GSCM initiatives have been shown to create value for the companies that join in them. We estimate that if China’s information technology sector adopted the Dell computer company’s green packaging system, its resource and shipping costs would fall by US$45 billion.

What is GSCM? Because of domestic environmental laws, consumer preferences, and government purchasing rules, large enterprises are under pressure to reduce the environmental impact of their products and services. In response they pass these pressures to their suppliers, and to the suppliers of those suppliers, and so on, in the form of programs to cut emissions and energy use, increase recycling, reduce waste, and limit the use of hazardous chemicals.

Four key institutions should govern any GSCM program: the government enforces regulations for private enterprise but also observes procurement guidelines for itself; enterprises implement the programs; the market, in the form of large customers and industry associations, offers more business volume to greener enterprises; and the general public rewards success by patronizing those companies that perform better on GSCM.

Our research learned a number of lessons:

- GSCM ideas are just making their way into the Chinese economy
- Monitoring, reporting, and verification (MRV) puts everybody on an equal footing and acts as an insurance policy for brand reputation.
- Applying GSCM to first-tier suppliers is easy, but it gets harder as you go down the pyramid to the second or third tier.
- Individual consumers have started demanding greener products, but this will never be the sole driver of progress.
- Applying GSCM principles can spur compliance with current laws.

Our team came up with a set of recommendations for each of the major players:

- In government, MEP should be the primary driving force behind GSCM policy and regulations. MEP should develop product stewardship or take-back programs for certain categories of products, as well as a producer liability law so that all members of a supply chain are held accountable for environmental or health incidents. MEP should offer tax incentives to help enterprises invest in efficiency and in environmental protection, demand public disclosure of harmful emissions, and enforce industry-specific performance standards.
- Furthermore, government should enact a green procurement law, and should apply its own weight as a major purchaser. It should enhance green product labelling and certification, plus create a database of GSCM information that can be shared by all procurement officials. The government should train Chinese enterprises on international
GSCM practices, monitor lifecycle carbon emissions of imports and exports, and establish pilot regions in China.

• Enterprises on the other hand should be implementers, a role that can be promoted with a Star Enterprises for Green Supply Chain program. We want to strengthen coordination and learning among corporations so they can share best practices. Enterprises should allow third-party MRV, and they should adopt and execute GSCM policies and existing environmental laws.

• In the case of markets, we suggest that industry associations establish a promotion centre to provide GSCM training for members so they can better compete in a market that rewards green practices. Similarly we recommend establishing a GSCM foundation to support small- and medium-sized enterprises that wish to compete in this market.

• Finally, the public should exercise an oversight role and encourage better practices on the part of both government and enterprises. And members of the public can reward firms that practice GSCM through their purchasing choices.

Special Policy Study on Mercury Management in China

Special policy study Co-Chairs Chai Zhifang and Barry Stemshorn presented the key findings of their research:

Mercury is persistent, bio-accumulative, highly mobile, and toxic. Although China has reduced its mercury use and release, China remains the world’s largest producer, consumer, and releaser of mercury to the environment. China’s 12th FYP is an opportunity to revise and improve its mercury policies and management. This change will be spurred further by international trade negotiations and treaty obligations.

In China, the biggest atmospheric emitters of mercury are coal-fired power plants, non-ferrous metal smelters, and cement production. The polyvinyl chloride (PVC) production industry, which uses mercury as a catalyst, is the biggest global consumer of mercury. China’s total mercury use is about 50% of the world’s demand.

The local mercury pollution issues arise from contaminated sites and small inefficient smelter operations. Pollution can be greatly reduced by applying new processes and technologies. For example, in the production of PVCs we can gradually introduce mercury-free catalysts.

China needs a comprehensive mercury strategy and action plan. One key element is a mandatory national pollutant release and transfer registry. This system requires every facility to report annually all its releases or transfers of mercury. This public repository is essential for the credible regulation and management of mercury pollution, both domestically and internationally.
Our proposed action plan is complex, so we have set priorities among the various industrial sectors that are sources of mercury pollution. Our analysis considered these factors: the quantities of mercury involved, the opportunities for early action, the domestic and international benefits to health and the environment, and co-benefits for other heavy metals.

This analysis led us to make four clusters of recommendations:

- **Take early actions that offer public health and environmental benefits.** Close small, inefficient, but highly polluting non-ferrous metal smelters. Reduce emissions from coal combustion by introducing the proper control equipment. And protect people who are at direct risk of mercury contamination, for instance workers at PVC plants, artisanal gold miners, even children who play with mercury-laden toys.

- **Make major reductions in mercury emissions and releases.** We suggest a number of technical standards involving coal-fired boilers and power plants, non-ferrous smelters, and the cement sector. If these standards were adopted, we estimate that emissions could be brought down from 542 tons annually to 295 tons by 2020 — a reduction of 55%. The opportunity for early improvement in the non-ferrous smelter sector is particularly dramatic. There, the current 116 tons of emissions could be reduced by 111 tons — a reduction of 96% — simply by adopting a moderately stringent standard which doesn’t even use the best available technology.

- **Reduce mercury use and demand.** Achieve cost-effective mercury-free PVC production, for example, by shifting from coal to oil or natural gas based processes. Apply closed-loop systems — that is, recycling — for mercury-consuming industries. Improve standards for mercury-added products, such as batteries and medical instruments. Our analysis estimates that if these measures are implemented, mercury use could be cut by 84% by 2020.

- **Build a strong foundation for a mercury-free economy.** Strengthen management and the regulatory lifecycle, all the way from policy-making to implementation to enforcement. It is especially important to have effective engagement and dialogue with industry. And in China, where often there are large gaps in information, it is crucial to have access to good data and to foster heightened public awareness.

**Comments on the special policy studies**

Regarding GSCM, the presentation was perhaps too optimistic. What after all is “green” or “not green”? Pollution or resource intensity is usually a relative, not an absolute matter. And how do you measure GHG for a product, service, company? This is a highly technical issue. Where does a value chain start and end in a particular sector? One can come up with principles for doing it broadly, but then you have to get into the specific details in different sectors.
We must remember that when you look at green standards then you quickly get involved in issues related to competition. For example, there’s now a fight going on to settle who decides product standards — major retailers like Walmart and Tesco, or branded consumer goods companies?

The greening of supply chains has many trade implications. China cannot look at this issue in isolation. Since China is a major exporter, it must be aware of what is happening internationally on these matters.

Indeed there are no timelines for greening the economy. This is an evolving process with many grey areas. However it is important for China to be involved in the discussion and be part of the process of determining what a green supply chain looks like.

There are practical ways of fostering GSCM. For example, the Shell corporation maintains a global procurement centre in Shanghai that links Chinese enterprises with Shell’s worldwide operations. One effect of this centre is that Chinese suppliers are becoming aware of international safety and environmental standards, and thereby are boosting their own competitiveness overseas. If the Chinese government were to adopt the same approach in its own procurement — that is, insisting on specific environmental standards from its suppliers — the multiplier effects would be tremendous.

Going slowly on GSCM is too conservative an approach. In fact China already has a whole system set up for certification and standards, ready for application to environmental issues. And many people — for example, importers of palm oil — are already eager to ensure that their activities are sustainable. If we say “let’s go slowly” we may actually stimulate unsustainable domestic consumption. Instead we should be pressing to accelerate the GSCM process.

Defining “green” need not be challenging. It means simple practical measures like reducing energy and water use. The main result of GSCM has not been burdensome new requirements on enterprises, but major cost savings for them. GSCM has become the handmaiden of efficiency and profitability, which is the real driver for private enterprise. The co-benefit has been the environmental result for society and the government.

When we talk about greening the supply chain, labelling, producing a lot of information, we are kidding ourselves to believe this is a simple process. People underestimate the challenge it is to obtain numbers and measurements in a big company. If, in a big company, you decide you want to measure something new, it can take years before you have numbers you can confidently show the public. These are always costly and complicated processes in complicated organizations.
In response to that concern, it is important for us to remember: Don’t let the perfect get in the way of the good. In China many useful measures can be implemented more widely right now, but perfection will take a much longer time.

To advance GSCM, the EU has established a European Retail Forum to help consumers reduce their ecological footprint. It has also launched a global platform where anyone can access information about the lifecycle impacts of different materials and products. And it continues to promote ecological labelling, and in fact some 125 Chinese products already apply EU eco labels.

**Item 6. Draft AGM Recommendations and Discussion**

*Draft recommendations for submission to the State Council*

With Vice-Chair Børge Brende chairing, Chief Advisor Shen Guofang introduced the draft 2011 CCICED AGM recommendations which, once finalized, will be submitted to China’s State Council. Each of the five proposed recommendations is followed by a number of items or components:

**Recommendation 1:** Rebuild social values, adjust government roles, and develop human resources so as to fit the green transformation of our development pattern.

i) Incorporate the concept of ecological civilization into overall social and cultural development in a more operational fashion, and reward healthy social ethics and environmental values.

ii) Shape the government role in ways that strengthen its management of public goods and social service functions for green development.

iii) Build a better performance evaluation indicator system and mechanisms that strengthen the accountability of government officials for a green transformation.

iv) Establish a human resources development system that supports green development, for example by training scientists in green thinking.

**Recommendation 2:** Take a systematic approach to establishing a green economy and advance green transformation of the existing economic development pattern.

i) Set strategic targets and an overall framework for green economy in China.

ii) Implement “customized” and balanced green development strategies in different regions of the country.

iii) Prioritize strategic emerging industrial sectors, and focus on the greening of all three traditional industries to promote a green economy.

iv) Establish the legal, regulatory, and policy system for a green economy.
v) Promote green innovation.
vi) Enhance international cooperation on green economy.

*Recommendation 3*: Build a low-carbon industrial system that will push forward the green transformation of the economy.

i) Map out a development plan for low-carbon industrialization in China including a strong emphasis on existing heavy industry.

ii) Increase support for strategic emerging industries, the driving force for low-carbon transformation.

iii) Promote technological innovation and application to support low-carbon transformation.

iv) Improve the regulatory and voluntary standards system for low-carbon production and products.

*Recommendation 4*: Develop a green trade and investment system, establish green supply chains, and push goal-oriented green transformation.

i) Promote an environment-friendly strategy for improving FDI in ways that better serve green transformation in China.

ii) Promote sustainable ODI and share the fruits of green development.

iii) Promote sustainable development of green trade and investment through greater participation in international rulesetting.

iv) Set up and improve green supply chains in China and support green transformation of the whole production system by promoting green consumption and fostering green markets.

*Recommendation 5*: Develop a plan for managing mercury use in China in order to reduce its impacts on public health and the environment.

i) Develop a national strategy and action plan on mercury management.

ii) Strengthen technical support, risk control, environmental supervision, and pollution reduction of mercury related industries.

After the presentation of the recommendations by Shen Guofang, Chief Advisor Arthur Hanson added these points:

CCICED’s recommendations are widely circulated, on websites for example, and are well archived. If one looks at all our recommendations over the past 20 years, one can see patterns. One can see how our proposals have moved into policy and then into progress. This is encouraging to us.
This year’s set of recommendations are among the most coherent and complex that CCICED has ever produced. It is a bold step to say: we are mainstreaming environment into the economy, and here’s how we think China should go about it. So, this proposal is a breakthrough for CCICED, which means we have to get it right. We want to offer practical, implementable recommendations.

Comments and discussion on the draft recommendations

For the past 20 years, CCICED has developed 140 research reports and put forward more than 200 policy recommendations. State Council leaders, in particular the premier and vice-premier, pay close attention to these recommendations, and the adoption rate of these proposals is high. Good examples are the decision by the National People’s Congress to establish MEP, and by the Chinese Communist Party to address environmental protection in the 12th FYP.

When revising the recommendations related to low-carbon industrialization, our advisors should bear in mind the tension between vertical or sectoral policies, and policies that can be more crosscutting or market-based, or based on energy performance standards. Additional thought should be given to harmonizing these alternatives.

Draft recommendation #1 calls for “adjusting government roles.” We should be talking about changing the focus of government intervention in the market in order to deal more directly with market failure. This means we ought to concentrate on the reduction of the real social costs, such as pollution, that are associated with resource use.

China achieved dramatic results from the accountability system during the 11th FYP period. The link between requirements for accountability and those for granting permits for local projects provides a bridge between accountability on environmental targets and accountability on development targets. Also from the standpoint of incentives we need to consider whether the environmental impact assessment is properly applied at the local or provincial or even higher level.

Absent from the draft recommendations is any mention of financially effective compliance penalties. This is a key issue. Compliance should be cheaper than non-compliance, and unless we establish that fundamental equation, it will be difficult to change business decision-making.

Also absent from the recommendations is sufficient discussion of the administrative infrastructure that will be needed if China does begin experimenting with carbon taxes and carbon trading. These measures will have real implications for existing MRV systems and for the capacities of MEP in terms of reporting and certifying reductions.
The draft recommendations would benefit from some added wording to describe the green transformation globally. We have a world that because of higher populations and living standards and increasing urbanization will inevitably be resource constrained and polluted. Furthermore, the business models for electricity, utilities, auto companies, and other sectors will all look very different a decade from now. Our text is missing the dynamism in this transformation and the pressure this will put on all countries, including China.

The draft could say more than it does about the enormous consequences of increased urbanization, because the actions that municipal governments take will be decisive.

Our recommendations already say a lot about international cooperation on the green economy. However, it is not just cooperation between governments that is necessary, but also within industrial sectors. Chinese companies also have to be seen to take part in that international effort.

Draft recommendation #4 includes a suggestion that new guidelines on CSR should be introduced to bring Chinese standards into line with international CSR standards. We should add wording to emphasize there is no point having these standards unless companies are reporting openly and transparently against them. This is how they entrench their brand and build trust with international investors.

Perhaps we need a separate recommendation about the role of business and enterprises, because we are seeing a real shift in the kind of advice that CCICED offers. We are no longer talking only about advice to governments, but more and more about enterprises — about their accountability, the role they should play in the world, how they must deal with public awareness, and so on.

Regarding mercury, the draft document could reflect our earlier presentation and add material emphasizing the need for a facility-based and transparent inventory, specific health protection measures, and recommendations about the PVC, non-ferrous smelting, and cement sectors which are priorities.

On the question of whether the recommendations should include a lot of quantitative information, we don’t want to swamp readers with numbers, but on the other hand some credible figures will convey a sense of magnitude and of the changes that may be possible in the real world.

Numbers are valuable. Numbers can make vivid the points we wish to raise. But they also can invite controversy. Therefore if numbers are used, we should provide citations to the source of
these figures, whether in a footnote or an appendix. Readers should know where the numbers came from and how they were generated.

In the recommendation on innovation we should mention not only technological or hardware innovation (which tends to be the focus) but also software innovation, including development of new business models and institution-level innovations.

Closing remarks

Vice-Chair Børge Brende invited Achim Steiner, CCICED member and Executive Director of the United Nations Environment Programme, to offer closing remarks. Here, condensed and summarized, are the main points of those remarks:

CCICED — this interface between an international community and a Chinese community of professionals and policy-makers — has yielded significant outputs. But also it has evolved a discourse around environment and development over these two decades.

My first two CCICED meetings were characterized by a sense of awe of the level of sophistication at which the Council engaged with fundamental questions of development policy and by the degree of systematic, empirical, and serious interaction with the task forces. The “secret” to the Council has been its rigorous process of validation, of investigation, of analytical work.

This is one of the few places on the planet where sustainable development discourse and narrative are being developed not just in hypothetical terms, but are constantly being challenged by scientific reality — and by political reality. China’s willingness to reflect on its own development path and also to open its books to a body composed of Chinese and international experts gives the Council unique value.

There has been a transition over these two decades in terms of a geopolitical reality. When China first invited the Council to share its expertise, China was looking to scan the world for best practice. But over time the Council has become a vehicle also for correcting a misperception — a misperception of a lack of willingness on China’s part to address issues with global implications.

China’s efforts are not only of relevance to the international community, but the international community itself has to rethink its terms of engagement with China. This is because we now confront a reality where very different historical, economic, infrastructure, and even economic realities determine the political and technical scope for action.
The evolution of the environmental agenda is challenged by the fact that recognition of environmental issues is at a higher level than ever. Public awareness — of climate change, biodiversity, or pollution, or the health impacts of lead, sulphur, and mercury — are at the highest level in the history of humanity. Real life societies, real economies, real businesses are trying to make progress faster than global environmental governance decisions are able or willing to move. There is a great degree of frustration with the stalemate in the negotiation of a globally binding international agreement.

However if you look at the real economy, at real investments, at the actions being taken by governments, businesses, and the investment world, then the story is different. This relates back to China’s role in trying to transform its own economy and thereby also becoming a catalyst, an incubator, a multiplier of the capacity to respond.

The international view of China on environment and development is still caught in the reality of ten years ago. Perhaps CCICED should address the question of how can China — as a mega economy, as a geo-environmental, geo-economic, geo-political actor — be utilized for triggering actions that will lead the multilateral system, regionally and globally. If so, perhaps ten years from now the demand for CCICED may prove to be a qualitatively different one than from where it began 20 years ago.

**Item 7. Discussion and Adoption of Recommendations**

*Recommendations for submission to the State Council*

With Vice-Chair Berge Brende presiding, Chief Advisors Shen Guofang and Arthur Hanson, and Ren Yong, Coordinator of the Chief Advisors’ Support Team, briefed Council members on the revised 2011 CCICED Recommendations. They outlined the following key points during their remarks:

Our revisions to the draft recommendations have been drawn from several sources: the courtesy call on Premier Wen Jiabao, the speech by Vice-Premier Li Keqiang at the opening CCICED session, Minister Zhou’s speech and his other remarks, and comments and suggestions from CCICED members, delivered both in plenary and in writing.

To increase the understanding of decision-makers about the concept of green transformation, the revision now includes more information about such ideas as green growth, green economy, low-carbon economy, circular economy, and green technology. It emphasizes that the ultimate goals of this form of development are to achieve a new balance between environment and resources, to
foster social inclusiveness and harmony, and to enhance China’s status and competitiveness, both regionally and globally.

In response to concerns from Premier Wen, senior CCICED officials, and other members about how to handle the relationship between environmental protection and economic growth under the current economic situation, we have adjusted recommendation #1 to read: “Rebuild social values, adjust government roles, and cultivate human resources to serve the unswerving national will on the green transformation of development mode.”

In a related addition, recommendation #1 now includes this component (inserted at the top as item 1): “Establish a long-term and unswerving national will on the green transformation of development mode, currently under severe challenge by the international economic slowdown in financial markets, instability, debt crisis, and slow growth.” In other words the Chinese government should not yield to economic pressure and loosen environmental controls or lower environmental targets and standards. This kind of reversal needs to be conquered by an unswerving national will and determination.

Also under recommendation #1, we have changed former item 2 (now item 3) to clarify the content on the transformation of government functions. The government should not replace the market, and a clear distinction needs to be made between the roles of government and enterprises. Market mechanisms are needed to optimize the allocation of resources. Government should refrain from taking market resources, setting up unnecessary entrance barriers, forcing new investment activities on behalf of enterprises, and using administrative measures to influence market order and prices.

Also under this item, we say that government should play a major role in environmental protection, energy conservation, production safety, and fair competition. It should reform pricing by introducing environmental pricing which will provide favourable market conditions for those enterprises that invest in a green economy, while reducing the competitiveness of those that pollute or squander natural resources.

Since members have highlighted the role of business and enterprises in green transformation, we have balanced the content of recommendation #1 — which is mainly concerned with the responsibilities of government — by adding recommendations that relate to business. Under item 5 we suggest that enterprises establish environmental information disclosure practices and auditing and reward mechanisms. These will help raise awareness about CSR and transparency about environmental improvement.
Transparency is an issue of general concern to Council members. Therefore, in both item 3 about government and item 5 about business, as well as elsewhere in the recommendations, we have increased the content about this issue.

Members have also raised questions about the wisdom of including quantitative information in our recommendations, and if so, how much. In order to draw the attention of decision-makers to our conclusions, we have decided to introduce some data from the findings of the task forces into the background introduction.

In the case of recommendations #2 to #5, we have not changed the basic structure or increased the number of components, but we did add some content and emphasize certain points.

These recommendations represent a kind of summing up, not only of this year but also of the past five years. They show the progress achieved over that time. But they also serve as the baseline for the fifth phase of CCICED’s work at well — a baseline we can return to during each of the coming five years and compare what China has achieved and where it is headed.

**Comments and discussion on the revised recommendations**

Recommendation #3, item 1, concerning low-carbon industrialization, could say more about the need to better coordinate the sectoral, regional, and national policies in different areas. Currently the text suggests that mandatory carbon reduction targets should be set for steel, chemicals, and other heavy industry sectors. We might add that these measures should be coordinated with cross-sector policies or programs. Otherwise we run the risk of these policies being uncoordinated and then offsetting or duplicating one another.

With respect to transparency, we should acknowledge that the Chinese government increasingly recognizes the importance of involving the public and civil society in helping address its national problems. Therefore we should include the phrase “recognizing the importance of civil society in green transformation” to make the point that information disclosure is essential if the government wishes to harness wider forces in its environmental protection efforts.

Transparency — about the progress that has been made and the standards that are being achieved — is an important change driver. It’s not just a principled thing to do. It’s also a smart and strategic thing to do, if you want to encourage change. It’s also a credibility issue, the key to the greening of China’s international brand. Perhaps therefore transparency should be presented as a separate crosscutting theme and given more prominence and thrust.
China’s official position — that green transformation is the way to go — is rare among countries these days. Therefore China’s own experience could be an example for other countries. Furthermore China itself should take the lead in generating international discussion and building trust among countries concerning the problems and the tools of green transformation.

The recommendations do not yet address the issue of China’s image and the broadly held international fear of China’s expansion and actions. Despite the many environmental initiatives that China has been taking — with notable courage during this economic crisis — the news about its green transformation has not been getting beyond the conference centres or the high level meetings and to the wider public. Correcting this misperception is extremely important for China, otherwise its license to operate internationally might become limited.

The notes accompanying recommendation #4, item 2, in the current draft suggest that one purpose of a sustainable development fund — commonly committed prior to resource extraction — is poverty alleviation. This is not quite accurate: the actual purpose of these funds is to compensate host countries for the loss of their oil or gas or minerals, and help the affected communities prepare for the time when these resources have been exhausted.

In recommendation #2, item 4, concerning legal and regulatory systems for a green economy, we should add some material strengthening the green liability of businesses. Currently, in China’s company law, there is just one article about CSR. Internationally, however, there are many very detailed requirements setting out the responsibilities of enterprises when it comes to environmental protection.

Where recommendation #1 talks about changing the role of government, some of the current Chinese language draft might arouse unnecessary confusion and misunderstanding. Clearly we will need more than market measures to find solutions to environmental problems, and furthermore government has an important role in regulating this market. So it’s not a question of letting the market do whatever it wants, and then all our environmental issues will be solved. Instead the text should clearly say: “the government should play a strong role in guiding and regulating the market.”

On the question whether the recommendations should include detailed figures, perhaps some selective, representative numbers are necessary for the sake of precision about China’s real achievements. For example, we hear about pollution reductions over the 11th FYP period in the range of 12% to 14%. This sounds impressive, but we must remember that this reduction has taken place over five years, so the actual annual reductions are 2.4% to 2.8% — only a medium level compared with industrialized countries. Another important distinction must be made
between pollution from new production equipment and from established capacity, and hard numbers are needed to clarify this.

Every presenter at this conference has mentioned the challenges of implementing these recommendations. Furthermore, most of these proposals are crosscutting, which means there is no single Chinese agency or authority or entity that can deliver results in isolation. Our submission therefore should acknowledge the general significance of implementation and coordination and, in the case of each recommendation, consider what specific steps might be needed in order to move forward.

Council members adopted the recommendations by acclamation.

**Item 8. Closing Session**

*Secretary General’s report and 2012 work plan*

International Executive Vice-Chair Margaret Biggs introduced CCICED Secretary General Li Ganjie who presented to Council his report and CCICED’s 2012 work plan. Secretary General Li underlined the following issues during his speech:

The Council’s work continues to receive recognition and support. At his November 2010 meeting with international members, Premier Wen said that the Council’s success is thanks to the good cooperation between Chinese and international colleagues. In July 2011 the State Council approved CCICED Phase V, demonstrating the GOC’s determination to implement sustainable development. China’s Ministry of Finance has agreed to support Phase V from the central budget. And a number of foreign governments and international organizations have confirmed their continued funding and intellectual support for Phase V.

Several of the Council’s policy recommendations to the GOC have been fully implemented. For example, its 2009 recommendations concerning nuclear security have played an important role in enhancing China’s nuclear security supervision ability and nuclear security planning. And a 2010 recommendation concerning ecosystem-based management is incorporated in the 12th FYP, which stresses the importance of integrated prevention in the control of land and ocean pollution.

The GOC has further strengthened its practical support for the Council. The capacity building of the Secretariat has been enhanced and its routine operation and management have been standardized. The Secretariat, SISO, the Chief Advisors and their supporting team, are all coordinating well.
Here are highlights of the work plan for 2012, the first year of Phase V:

- We will continue the policy studies approved by the Bureau and already launched. These explore policy mechanisms for meeting the environment and development objectives in the 12th FYP, and the strategy and policies for environment and development in Western China. At the same time we will carry out a study on the environmental strategy and measures for transformation of the development mode in eastern China, and another on the environmental management mechanism in China (case study on oil spills in the Bohai Sea). These four studies will report to the CCICED AGM in 2012. As well we will launch task forces on environmental protection and social development, and on consumption and green development. These task forces will report to the 2013 AGM.

- We will continue the routine work of the Council in preparation for Phase V, including identification and submission for Bureau approval of the proposed list of members, determination of the direction and priority areas of policy research, adoption of the charter and its annex, raising operational funds, and so on.

- We will take the opportunity of the Rio+20 conference to set up a site event to publicize CCICED and its research findings to an international audience.

- We will prepare for AGM 2012. Subject to Bureau approval, the meeting will be held in Beijing 13-15 November 2012. The tentative theme is “regional balance and green development.”

Comments and discussion on the work plan

The work report omits mention that the feasibility study for China Environment and Development Outlook was completed in 2011. This is because the Chief Advisors feel there has not yet been sufficient discussion of this report and so they are not quite ready to submit recommendations to the Bureau. Regardless of the next steps in that consultation process, this report will certainly play an important role in guiding the Council’s activities during Phase V.

In the Council’s next phase we need to go deeper into China’s regions and highlight the wellbeing of the population. This is in line with the people-first policy of the GOC. The concept of a green economy basically means putting people first. But people’s welfare is only one aspect of the issue. At the same time we also have to teach the people that we should not destroy our common environment.

The task force on Investment, Trade, and Environment made a field trip to Indonesia, one of China’s main trading partners in Asia. Out of that very positive experience has come a proposal for a joint CCICED agenda at the Rio+20 conference, involving China and Indonesia. This is an opportunity for the Council at Rio to establish a broader Asian approach, and not just a Chinese one.
One of the themes the United Nations has chosen for Rio+20 is the global governance of sustainable development. The world will be extremely interested to hear China’s view on this topic, and so China’s delegates ought to arrive with carefully considered, well thought-out ideas.

At Rio+20, the best contribution the Council can make is not necessarily the work of specific task forces. Instead it may be to offer its broad perspective of a “development trajectory.” Many countries have been asking: How can you make these transitions happen? We should try to answer this question, and present a theme that speaks to development pathways.

China now has the capacity, and is prepared, to open discussion at the global level on environmental governance issues. Rio+20 can be the starting point where China launches the debate. Many complex environmental issues, such as offshore drilling, means we will need new thinking and new rulemaking. China is well situated to start that discussion.

Closing remarks

International Executive Vice-Chair Margaret Biggs invited Vice-Chair Børge Brende to make some closing remarks. Here are his main points:

In the context of the current global economic crisis, some people have been putting forth the notion that environmental standards are part of the problem. This meeting has shown that environmental standards must be part of the solution.

The three pillars of sustainable development are economic, social, and environmental, and for 20 years CCICED has tried to show how these are interlinked. In my own background with the Red Cross I’ve seen droughts, floods, and other challenges that people are meeting around the world, all of which are strongly interlinked. There is no social development — indeed, there may be no food or water — if you don’t take care of the environment.

The discussion of China’s low-carbon economy at this Council has been a breakthrough. Five years ago it was controversial to mention that topic, even in this forum. Today, China is the world’s leading producer of windmills and solar panels. Similarly it was uplifting to hear Premier Wen show vision and leadership by announcing that China would introduce CO₂ taxes.

Similarly, the Council has demonstrated its ability to be at the forefront of the international agenda with its report on mercury management in China. If the Council had launched such a study even five years ago, it would have been a toxic political issue. Now of course we have this
excellent report, and our Chinese friends say that it should include even more hard data than it does.

I am also happy that we have been able to address the topic of the green economy. We must remember that the concept has been met with much scepticism. Thus it has been impressive to hear the supportive statements from China’s senior leadership. There is little doubt that, on this challenge, China is showing global leadership.

International Vice-Chair Margaret Biggs invited Minister Zhou Shengxian to offer his closing thoughts. He provided a summary of the accomplishments of this AGM, during which he highlighted these points:

Premier Wen has said that China’s environmental monitoring and assessment system should be improved so that the results will match the everyday observations and feelings of ordinary people. Today we announced in the People’s Daily that we will bring our air quality monitoring system up to the international standard. We must remember, however, that China is a big country with a population of 1.3 billion, so this task will take time and we will need to be patient.

CCICED is becoming more influential. The GOC and the State Council attach great importance to its recommendations. But the adoption of these recommendations depends very much on whether MEP pushes for their implementation. We should remember, however, that MEP is not a powerful ministry and we cannot achieve everything we wish to. A website lists MEP jokingly among the world’s “awkward ministries” which is an indication of the challenge we face when pressing for environmental protection in China.

Soon, we will convene China’s seventh national conference on the development of the economy and protection of the environment. This event will mobilize more resources and help make it known to everybody that environmental protection will determine how we will live in the future.

Green development depends on the specific situations in different countries. Each country will explore its own path toward green development. I am happy that all Council members, Chinese and international, made their presentations and remarks taking into consideration the specific situation in China. This has made it more likely our recommendations will be adopted or referred to in the GOC policy-making process.

It is a challenge for us to handle properly the relationships among environmental protection, economic development, and social development. The Council however has given us many good suggestions — and different perspectives — which can be referred to by various ministries and the GOC. Each time I attend a CCICED meeting I feel very much enlightened.
One point I like to repeat at every opportunity is that, in our efforts to protect the environment, we should take preventive measures first. We should curb pollution at its source rather than treat pollution only after it happens.

International Vice-Chair Margaret Biggs offered some final observations:

This has been a breakthrough year for CCICED. The work saw new clarity about the role of government, the role of markets and enterprises, and the transformative power of transparency and disclosure. We focused a lot on implementation. At this AGM we have seen a detailed framework around the green economy, a detailed roadmap around low-carbon industrialization, and a detailed action plan on mercury management.

The research bringing together the domestic and international dimensions of environment and development is pathbreaking, addressing as it does the global impact of China’s development, trade and investment flows, green supply chains, and global public opinion. This material breaks new ground for the Council and it is extremely timely.

With thanks and congratulations to all participants, Vice-Chair Biggs declared the Fifth Meeting of the Fourth Phase of CCICED adjourned.

IV. Recommendations to the Chinese Government

The 5th Annual General Meeting (AGM) of the 4th Phase of the China Council for International Cooperation on Environment and Development (CCICED) was held from November 14-17, 2011 in Beijing. The theme of the 5th AGM was “Green Transformation of Economic Development Pattern.”

The Council members noted that the Government of China has formulated the development strategy for the 12th Five Year Plan period (2011-2015), taking “scientific outlook on development” as the main approach, with “transformation of development mode” as the main mechanism for achieving a “higher level of Ecological Civilization”. In addition to being the first year of the 12th FYP, 2011 also marks the 20th anniversary of CCICED’s establishment. Moreover, global preparations are now underway for the June 2012 Rio+20 United Nations Conference on Sustainable Development. Therefore the green transformation theme is particularly meaningful for the AGM this year. Internationally, there is considerable discussion and rising levels of commitment to implementation regarding new concepts such as green growth, green economy, low carbon economy, circular economy, and green technology. Green transformation has become a favored approach for post-financial crisis economic recovery.
The world over the coming two decades will be characterized by an enormous growth of population, increasing living standards, a growing global middle class and a high level of urbanization. The consequences will be resource and pollution constrained patterns of development, a situation already existing in many places. Competition for resources and green solutions will be inevitable. There is a global Green Race underway—a green competition between countries to become leading suppliers of resource efficient, low polluting solutions, products and services. The 12th FYP is the starting point for positioning China well in this race. Transforming the domestic economy and building demand for green solutions will create the competencies and scale for greener exports.

The evolution to a future resource efficient, low polluting world will be very dynamic. Traditional business models for different industry sectors will be challenged. The future will belong to those who understand this dynamism and can develop new offerings of products, systems and services that are Green in the broad sense of the word. It is very important, therefore, that Chinese businesses adhere to international models of Corporate Social Responsibility (CSR) and other approaches that emphasize concern for environment and social concerns. These approaches can be good for profitability as well, even though there are costs to implement them. China will have to consider how best to stimulate businesses to prepare for this new world. The effort should include Chinese domestic and FDI enterprises, and Chinese businesses operating abroad, including ODI. All need to be brought eventually to an equal and high standard of action for environment and development, and be backstopped by a green financial sector. Much more attention will have to be given to green market supply chains.

China has a choice at this very important junction. Embrace the inevitable Green Race and position itself as a global leader and supplier of resource efficient, low polluting solutions. Or, try to maintain the old role as the supplier of low cost products to a growing world population. While China’s choice may seem obvious, even already made in the case of some technologies such as solar and wind energy, the Green Race is still at an early stage. There are no inherent reasons why China could not chart a Green Transformation course that will support future well-being and wealth creation. The future of China’s positioning is mainly in the hands of its leaders and people—not in the hands of external forces.

In fact, China’s “going green” fits well with the domestic drive toward an environmentally-friendly society and the new scientific development outlook. Green transformation reflects the dynamism of innovation and reform. It should be regarded as an approach to development that emphasizes vigor, balance and sustainability. The ultimate goal of this form of development is to achieve a new balance in the relationship of environment and resources, social inclusiveness and harmony, while enhancing China’s overall status and competitiveness regionally and globally. Green transformation will depend upon a better level of transparency and openness in decisions, and on careful attention to appropriate roles for government and market forces. Government needs to provide a clear regulatory framework to guide the operation of the market, and then to allow the market to operate freely within that framework.

As China intensifies its efforts to change the current development mode, and gains deeper understanding of the process and new needs, green transformation is now understood to be central to the direction and core content of this change. The experience gained during the 11th Five Year Plan, and through the inclusion of environmental objectives within the 2008 post-
financial crisis stimulus package, has set in place a good basis for future efforts. China’s national will and existing experience now must be further drawn upon to create a comprehensive and coordinated approach that can accelerate the pace of change towards sustainable development; and be more efficient and effective in green transformation of economic development.

Participation by China’s citizens in green transformation is essential. Certainly as wealth is created there will be further stimulation of domestic consumption, and it is essential that the patterns of consumption are sustainable in terms of energy, pollution control, environmental impacts and maintenance of ecological services, plus many other aspects related to health, well-being and quality of life. It is essential therefore that a new level of transparency and openness be achieved so that citizens in both cities and the countryside gain a full understanding of the roles they can play as they participate in decision-making and implementation of environment and development matters. Transparency can be thought of as a driver of change, as an incentive, and as an enforcement mechanism. Not only is it important in China’s domestic green transformation, but also in the greening of China’s international brand with respect to exports and also the long-term success of China’s investments abroad.

CCICED members are pleased to see that environment and development considerations have been given considerable attention within the new 12th Five-Year Plan. However it is important to emphasize that environmental transformation and economic transformation need to become much better aligned since they are interconnected in terms of impacts. This alignment becomes a central theme for green transformation. China urgently needs a comprehensive and practical implementation blueprint for green transformation that includes development strategy, concrete approach and supporting policies.

CCICED members believe that China’s green transformation could have significant implications globally. Global environment and development progress has fallen short of people’s expectations, including in many parts of the world the quite limited achievements so far of the Millennium Development Goals, climate change action and ecological protection. It is therefore important to identify new directions for sustainable development, explore a new path and make new breakthroughs. Rio+20 offers one opportunity for China’s contributions and role to be highlighted, and hopefully its role in global environmental improvement strengthened. China should be giving the world a clear and unambiguous picture of its intentions concerning green transformation.

Council members deeply feel that China faces complicated environment and economy problems and unprecedented challenges as it implements green transformation. “Speed first” practices, as shown in a number of serious accidents and scandals, seriously harm human health and the environment, threaten people’s lives, impair social stability and development results, and affect public opinion about governance. These incidents have revealed deep-rooted problems of unbalanced, uncoordinated and unsustainable development—as China’s leaders have expressed. The shortcomings of social ethics and cultural values are reflected in problems with across-the-board impacts. Indeed, green transformation of development pattern is not only a matter of policy, institutional reform and technological innovation, but also one of social ethics and values.

CCICED members have noted that China’s commitment to all-round transformation of development pattern and a green development road was once again demonstrated during the recently concluded 6th Plenary Session of the 17th Party Congress, as well as in the Opinions on
Strengthening Key Environmental Protection Work just issued by the State Council. The Opinions document stressed that “reform and innovation shall be the new driving force for exploring the new path of environmental protection featuring low cost, good returns, low emission and sustainability”. The Session and the Opinions are an important demonstration of China’s continued national will to strengthen environmental protection. Cultural development should also be part of the green transformation efforts. Promoting an environmental culture and ecological civilization in this process will help to build environmental ethics in China. To be fully successful, this effort must be linked to strategy for sustainable livelihoods, and new, more environmentally friendly strategies for economic growth.

There are less than 10 years left for achieving the goal of an all-round well-off society in China, and less than 40 years for achieving a fully mature stage of modernization. For the navigators of this huge ship with the largest population in the world, the journey ahead is filled with challenges. During this journey, China has to strike a proper balance between economic growth and environmental protection, transform environmental targets into genuine and lasting progress on sustainability, propel enterprises to shoulder more environmental and social responsibilities, and assess and guide its own green transition process within a global context. If China is successful in making substantive environment and development breakthroughs during the 12th FYP, a solid foundation will be laid for China’s sustainable future. Otherwise the process of green transformation will encounter even greater difficulties—or worse still, may even see existing gains reversed.

CCICED established three task forces linked to the green transformation theme: research on the development mechanism and policy innovation of China’s green economy; low carbon industrialization strategy in China; and trade, investment and environment, focusing on FDI entering China and ODI on the part of China. The Council also carried out special policy studies on greening China’s supply chains, and on mercury management in China. The goal for all of these studies is to contribute to the roadmap for transformative green development in China.

Based upon the research results of these studies and discussions during the AGM, CCICED proposes five policy recommendations to the Government of China.

RECOMMENDATION 1. Rebuild social values, adjust government roles, and cultivate human resources to reinforce and serve an unswerving national will on green transformation of development mode.

Green transformation of China’s development pattern requires significant shifts in social values and behavior. Considering the historical experience of developed countries and today’s economic realities in China, it will be a long, complex and challenging process for China to fully realize such transformation. There is a need to understand root causes, systematically adjust the approaches of the old development mode, and guide both the economic and environmental transformations. The shift requires consideration of some basic ideas and values, such as social, cultural and environmental ethics, the role of government in economic and social development, institutional changes and mechanisms of administration.

1. Establish a long-term and unswerving national will on the green transformation of development mode.
Although under the severe challenges of the current international economic slowdown, financial market instability, debt crisis, and slow growth, the Government of China should not weaken environmental controls, or lower environmental targets and standards to yield to the economic pressures. It is crucial for the national government to step up its guidance and supervision of local governments, especially those which may be inclined to ignore green transformation in favor of strong economic growth. Reversals of this sort may be common. Therefore green transformation will require unswerving national commitment and determination.

2. Incorporate the concept of Ecological Civilization into overall social and cultural development, and reward sound social values and environmental ethics.

Greater efforts should be made to promote ecological civilization and environmental culture, abide by rules of ecology and of social development, and, as appropriate, draw upon traditional Chinese values and ethics. Environmental values need to become part of an overall ethical system. Such a system will help provide strong moral and spiritual support to the green transformation of China’s economic development pattern.

3. Reform government functions, strengthen its management of public goods and social service functions for green development.

China’s economic system has been progressing, but the government has been relatively slow in adjusting itself to societal needs in a market-based economy. What’s more, the global financial crisis to some extent has provided more room for governmental interventions in the economy. During the post crisis period, it is a pressing concern for the Chinese economy to shift from overdependence on policy incentives towards a more spontaneous growth pattern. The boundaries of government’s role should be identified more clearly, and its public service role strengthened.

First, government should not displace the market, and clear distinction needs to be established between the respective roles of governments and enterprises. Market mechanisms should help to optimize the allocation of financial resources and government should help enterprises to play a main role in the green transformation of economic development mode. Government should refrain from taking market resources, setting up unnecessary entrance barriers, forcing new investment activities on behalf of enterprises unless necessary for protection of human health and environment, and using administrative measures to influence market order and prices. Second, government should play a major role in environmental protection, energy conservation, social safety, and fair competition. Third, government should reduce its long-term dependence on administrative measures and reform natural resource pricing and introduce environmental pricing to provide a favorable market condition for those enterprises that invest in green economy and reduce the advantage of those which pollute the environment and squander natural resources.

In addition, government needs to improve its transparency in disclosing matters related to public affairs and in decision-making processes. It is also important for government to build up regionally appropriate emergency response and early warning systems and to strengthen preparedness of the whole society. These measures will help China embark on the road of green development.
4. Build a better performance evaluation system and mechanisms that strengthen accountability of government officials for green transformation of development mode.

It is not enough only to strengthen the understanding of the policy makers on green transformation matters. A better performance evaluation and indicator system with a balance of punitive and incentive measures for assessment of government officials is needed. The performance evaluation system from the central down to the local levels therefore should undergo comprehensive reform. The system should focus not only on achieving economic growth targets, but also on the manner, pattern and quality of development. This requires assessment of the relationship between economic growth and social progress, with better indicators for the quality of economic growth, environmental protection, resource efficiency and green employment. In cases where economic growth is so rapid that environment is not being properly protected, there should be a negative assessment of performance. Monitoring, reporting and verification (MRV) for domestic environmental regulation is still not adequate enough, especially at regional and local levels. An evaluation and indicator system for green economy development should be established, backstopped by an improved system of national accounts modified to consider environmental statistics. Green GDP is a fundamental reform of the national economic accounting system for which the central government should continuously support relevant research and expedite its application.

5. Recognize and strengthen the critical role of enterprises in green transformation, and encourage self-motivated action.

Recognizing the importance of civil society in green transformation, implement environmental information disclosure practices, environmental auditing and reward mechanisms as part of the effort to implement Corporate Social Responsibility (CSR) and to enhance transparency towards environmental improvement efforts. Government should provide a favorable regulatory framework to facilitate enterprises’ green transformation and encourage enterprises’ active participation in international cooperation, through which enterprises’ CSR, green image and sustainable competitiveness can be enhanced.

6. Establish a human resources development system that supports green development.

Knowledgeable and motivated people are the most important factor, and a basic prerequisite for green transformation of the development pattern. A wide range of scientific outlook and green-minded talents should be incorporated into the priorities of national middle- to long-term plans for China’s human resources development. Such talents are needed to strengthen institutions and to raise the standards of human resources development for meeting green development. The need extends across all economic and social sectors so that a sufficient and high-caliber talent pool for green transformation can be fostered. Strong green leadership is needed in all fields, including: entrepreneurs with good understanding of green economy and a well-developed sense of environmental and social responsibility, innovative technological experts that can serve green development, farmer leaders that help promote green transformation in rural areas, and technicians and social workers directly involved in relevant on-the-ground work concerning green development.

RECOMMENDATION 2. Establish China’s green economy system and advance green
transformation of the existing economic development mode.

During the financial crisis, in order to address the multiple challenges in economic, social and environmental fields, the international community put forward the concept of green economy. According to definitions by UNEP and other international organizations, green economy should promote human well-being and improve social justice, minimize environmental risks and resource scarcity, and feature “low-carbon, resource conservation and social inclusiveness”. Green economy is not a synonym of sustainable development, but rather a pillar that supports it. Green economy should align existing activities in all sectors with environmental needs while addressing human well-being and sustainable livelihoods; should minimize environmental damage of human activities, fully recognizes ecosystem services and their value; and should foster new green economic growth engines through innovation and improved planning and management.

The experience of China shows that the core of green economy is to harmonize the relationship between economic growth and environmental protection; the relationship needs to be balanced, coordinated and mutually supportive.

Green economy is an economic development model that integrates such core concepts as high resource efficiency, low pollution, low carbon, and balanced social development, plus the many opportunities associated with innovation. For this reason, green economy should become the most vibrant, promising and inclusive model of economic development. Green economic development is the core driver and important pathway through which green transformation can be achieved. Both at present and over the long run, the benefits of green transformation of industries can be anticipated to exceed their cost, and to achieve extensive, long-lasting economic, social and environmental benefits.

1. Set strategic targets and create an overall framework for green economy in China.

The goals of green economy are to encourage harmonious development between environment and economy; to reduce the environmental and resource constraints imposed upon social and economic development; and, as well, to enhance social welfare and prosperity sharing. A preliminary green economic system that includes green manufacturing, green consumption, green trade and investment could be well-established in China within the next 10-15 years.

The overall framework for this green economic system should give full play to the role of environmental protection in optimizing economic growth. The framework should highlight two main strategies, transformation and innovation, and six main sectors. The strategy of transformation is two-fold: economic development mode and governance structure need to be transformed. Innovation emphasizes institutional, structural, and technological shifts. The six sectors include: emerging new strategic industries, green transformation of industry, agriculture and the service sector, low-carbon and ecological restoration, green consumption pattern, and a more balanced approach to regional development.

2. Implement “customized” and balanced green development strategies in different regions of the country.
Since the regions of China vary in phase and model of development, this regional disparity means that there is no general shortcut to a sustainable development path, and therefore a single set of standards should not be applied to all regions. To give full play to the characteristics and potentials of each region in developing its green economy, it is first necessary to have a good understanding of the context of green economy within a region—as well as the particular challenges and opportunities, the region’s capacity to coordinate national and local policies, and a sense of optimal integration of regulations with market mechanisms.

(1) Based on each region’s comparative advantages and key characteristics, promote specific regional green development and prevent pollution migration and unsustainable resource and environmental uses. Prevent the transfer of outdated technology, equipment and pollution from developed to backward regions, and ensure full environmental consideration of new projects. Recipient regions should strictly implement “Three Simultaneities” (i.e., the environmental facilities shall be designed, constructed and put to use simultaneously with the main body of a project), and should follow environmental impact assessment processes. A record-keeping system for production capacity transfer of heavily polluting enterprises and on-site dismantling mechanism of obsolete and phased-out equipment is needed. Follow-up inspection of polluting enterprises should be strengthened to prevent pollution transfer.

“Customized” green development strategies for different regions should be formulated to take advantage of their respective potentials. For the eastern region, the development of industrial clustering, research and innovation, environmental and financial services should be encouraged. The mid-western region, considering its advantages in infrastructure and human resources, should become a new manufacturing centre, as industry relocates from the eastern region. For the western region, which boasts a large workforce, vast land and rich natural resources, the development of sustainable mining, equipment manufacturing and new energy is appropriate, but needs to take into account significant but often fragile ecological systems and functions.

(2) Stick to green and balanced development between urban and surrounding rural areas; promote green, efficient and centralized urbanization in line with regional development needs. Clustered urbanization should be promoted and current uneven development of middle and small cities should be changed so as to maximize the benefit/cost ratio of urbanization, including environmental benefits and costs. Investment in green public infrastructure should be encouraged in a fashion that promotes city clustering. This does not mean a move towards more mega-cities as a solution to sustainable urbanization. Land allocation should be given to those projects with the highest added-value and ecological service capacity and with land resource value taken into account.

(3) Promote the green transformation of resource-depleting cities by establishing a new mechanism to subsidize their green transformation, and by providing direct and sufficient compensation for resources exploitation. Much of the emphasis should be on conservation planning and practices—for land, water and other natural resources and ecosystem services. With new and necessary subsidies from the central government, local governments should devote more of their limited resources to the protection and restoration of the ecological environment, and should strengthen social security mechanisms and regulatory support for enterprises. Government should rely more on the market for resources allocation and mainly provide policy stewardship.
3. Prioritize strategic emerging industry sectors and focus on the greening of all three traditional industries to promote green economy.

There is a need to simultaneously support the development of strategic emerging industries and to undertake the green transformation and upgrading of the three traditional industries. This will help accelerate the shift of China’s industrial structure from being very capital-intensive and heavy industry-dependent towards becoming more labor-intensive and knowledge-oriented.

(1) Adopt a coordinated and integrated approach to push forward green transformation of conventional industries. Green transformation of conventional industries requires multiple solutions for multiple challenges. More attention needs to be paid to policy coordination and co-benefits, such as emissions reduction and energy conservation, multi-pollutant management, and waste disposal via utilization in cement production. Coal-based pollution and emissions should be reduced as much as possible, particularly by developing a clean, stable, safe and diversified energy structure. The exit mechanism for heavily polluting enterprises needs to be improved. Compliant enterprises should be encouraged to take the initiative of green transformation and spontaneously phase out outdated and polluting equipment and technology. Relevant special funds should be set in place, such as a central incentive fund for phasing out backward, low productivity enterprises; a special subsidy for smaller enterprises that must be shut down; and possibly, a special fund to assist with major pollutants reduction. Financial support should be provided to dirty enterprises that take action to meet relevant environmental standards. Technological upgrading can be encouraged by preferential tax, land and credit policies. For non-compliant, to-be-phased-out dirty enterprises, punitive measures should be imposed. Such measures might include higher power and water prices, suspension of new loans or withdrawal of already granted loans.

There should be further strengthening of mandatory measures of energy saving and pollution reduction, improvement of laws and regulations concerning energy technology and standards, and new combinations of pollution treatment and resource efficiency measures to realize synergies between energy saving and pollution reduction. In addition, there should be more R&D investment to promote and guide the use of surplus energy in the cement, iron & steel, power and non-ferrous metals sectors. Preferential policies could be introduced for the treatment and disposal of industrial waste, hazardous waste, solid waste and urban sludge. Cement kilns designed to treat industrial and urban waste should be encouraged. These actions should be supported by updated policy for resource recycling. The government should issue as soon as possible the Pollution Prevention Standard for Solid Waste Treatment and the Pollution Prevention Standard on Construction Materials Production from Recycled Solid Waste. Related policies and standards need to be promulgated to promote the green transformation of the transportation sector.

(2) Promote green restructuring in the agricultural sector and link this action to food and agro-products security and to rural sustainability. Agricultural land and water use planning should be improved overall, with zones for green agriculture and its leading agro-products should be clearly delineated. The nature of such products should be based on robust, well-trusted certification processes. Monitoring work needs to be carried out for soil pollution, and training should be provided for farmers. There is an urgent need to strengthen non-point pollution prevention and treatment and to promote comprehensive environmental improvement programs, including waste treatment in rural areas. It is recommended that more nutrients be
captured for farmlands to improve soil conditions and that there be active promotion of specialized and non-government services to support green farming.

The government should cancel its subsidies for chemical fertilizer production and guide their rational production and use. At the same time, large-scale production of organic fertilizers should be supported, and increased subsidies for substitution of chemical fertilizers by organic ones where feasible. The surge in animal husbandry deserves particular attention. Some segments of the market require consolidation into holdings of a size where proper waste treatment can take place. Current subsidy patterns require examination to determine how they may be improved or removed in order to create sustainable animal husbandry, including aquaculture. Biomass waste from agricultural crops is not being well enough utilized and more effort is needed to turn a greater portion of the waste into new products such as second generation biofuels. It is also recommended that forest management and other land and water uses be developed as ecological enterprises for services such as carbon sinks.

(3) Develop green service sectors and improve green employment opportunities. China should accelerate the development of green financing, green logistics and the environmental service sector. These “productive service sectors” can help drive the development of both manufacturing and service sectors. Capacity building on green skills of these “productive service sectors” should be promoted. In addition, China should strengthen regulation and guidance on the greening of traditional service sector activities, promote the reallocation of capital and investment and create more jobs in the service sector. For this purpose, the financial authorities should invest more in developing a vibrant and innovative service sector and help further improve the competitiveness and innovativeness of small and medium sized enterprises. The development of green agriculture, green industry and modern service sector will help to create more jobs, and the special role of women in promoting green economy should be given full play. China should introduce policies that promote equal participation and benefit sharing by women and men, and the role of women’s organizations should be strengthened as part of the green transformation.

(4) Promote sustainable consumption and champion green economic development. Sustainable consumption is a driving force for green economy. As people’s income increases in China, the end link of sustainable consumption will be a key factor for the success of green transition. It is also an important and useful approach to advocate that good quality of life does not require the consumption of large amounts of commodities. The establishment of a new sustainable consumption pattern entails lifestyle changes and a social attitude of sustainability. In this process, the government needs to be the first to take action. Green government procurement can be a good reference point for safe, rational and frugal consumption. At the social level, a product life cycle approach that conserves resources and reduces pollution should be established. Such a system will help foster green consumption behavior across the whole society. At the corporate level, green supply chains need to be introduced widely. Market mechanisms such as sustainability certification should be utilized to promote sustainable production and consumption.

4. Establish the legal, regulatory and policy system for green economy development.

Elements of a legal system for green economy are already in place, including the Law on Promotion of Circular Economy, and some of the legislation related to energy conservation. However, much more needs to be done before a satisfactory regulatory system reflecting a proper
balance between use of economic incentives and command and control legislation is in place. Furthermore, success of such a system will depend upon factors such as enforcement, and optimization of the use of economic incentives.

There is a weak legal framework for environmental taxation, and reforms related to pricing and other aspects of market based environmental management and regulation. The same is true for the use of subsidies and other economic incentives meant to shift behavior in land and water use. This matter will become more important during the further development of pollution reduction, energy and climate change, resource pricing, eco-compensation and new programs for environmental restoration. Greater attention is required on the reform of pricing policies and on the removal of some energy subsidies that currently are bolstering unsustainable practices.

(1) Establish a supportive legal framework for green economic development. Many changes in the legal system are needed to better promote the development of green economy, and to help harmonize environmental laws, regulations and institutional arrangements with other elements of the legal systems, including civil and commercial law, administrative law, economic law, social law, litigation law and criminal law, to strengthen overall legal protection of environmental resources.

The revision of the Environmental Protection Law provides a good opportunity to strengthen the responsibility of the government, with an emphasis on drafting relevant laws that clarify responsibilities concerning the regulation of environment matters at each level of the government. The civil liability of environmental damage should be strengthened, and research should be carried out on drafting laws regarding compensation for environmental pollution and damage, in order to better protect public environmental rights and interests, especially with regard to health, safety and a clean environment.

The environmental liability of enterprises also requires better legal definition. As long as it is cheaper to damage the environment than to pay for its maintenance, or to receive only minor fines in case of violations of laws and regulations, then enterprises are unlikely to conform. Furthermore, strict environmental liability will require much more in the way of guarantees for environmental restoration and higher payments to cover health or other damages to people and communities.

The government should move faster in developing and revising relevant laws and regulations that help promote carbon reduction, such as in the fields of energy generation and transfer, energy efficiency, resource saving and consumption. Climate change related laws need to be listed on the legislation agenda, the Energy Law should be developed and promulgated as soon as possible and amendments should be made to the Coal Law, Electricity Law, Energy Saving Law and Renewable Energy Law, etc., in order to further encourage the development and consumption of clean and low-carbon energy. China should make revisions to a number of laws regarding natural resource use, including the Agricultural Law, Forest Law, Grassland Law, Land Management Law, integrated water management, and various aspects related to sustainable use of the oceans.

All these laws will require administrative regulations and rules to help maintain and sometimes increase the productivity of land, water and sea, as well as the carbon sink function of agro-forest ecosystems. In addition, there is a need to revise protection and development plans for forest,
farmland and grassland, to more strictly control cultivation in ecologically fragile regions and habitat important for biodiversity protection, and to forbid destruction of natural forest, grassland and farmland, and critical aquatic and marine habitats under any excuse.

The newly emerging industries in fields such as biotechnology and information technology present additional challenges since some of their environmental impacts and benefits will require regulatory frameworks and possibly enabling legislation.

Obviously the task of fully developing the legal basis of green economy and green development will require years of effort and will need considerable attention to avoid duplication and excessive overlap of regulations. Therefore priorities for immediate-, medium- and longer-term legal reform should be set. China should strengthen enforcement of those laws and regulations relevant to green economy that are already in place.

(2) Establish a comprehensive evaluation system of government policies. Rather than relying mainly on stand-alone decisions, there should be strengthened coordination among related activities, sometimes requiring cumulative impact assessments, and greater use of assessments in the context of integrated regional development, river basin management, regional transportation strategies, etc. A comprehensive evaluation system should be set up for major policies or projects concerning energy efficiency and pollution reduction. When the government develops and implements major policies, projects, or makes major direct investments, the whole process from decision making to implementation should be checked for anticipated and actual results, bearing in mind the overall goal of promoting green economy.

(3) Implement green fiscal reform, including environmental taxes such as a carbon tax, and financial policies designed to improve market-based approaches and establish emissions trading platforms. The leading role of the government should be strengthened in fiscal, taxation, financial and pricing policies. The key need for fiscal and taxation policy reform is to provide an incentive framework that encourages green investment, green trade and green production. This reform will become a major driving force for accelerating green transformation. In the short and medium term there should be a steady increase in fiscal support for green economic initiatives, with a comprehensive set of policies for designated funds, subsidies, rewards, discount charges and guarantees. The government budget should be leveraged to maximize its benefit and establish a joint investment mechanism between the central and local governments. A tax system to promote green development should include accelerating resource tax reform, adjusting consumption tax in light of energy and environmental policies, and introducing environmental tax (carbon tax included). The consumer tax should be adjusted to include high energy-consuming, high emission products. It is also recommended to increase the tax on petroleum and other high energy-consuming products and to provide tax breaks for those certified energy-saving products.

Financial policies can also be improved by introducing relevant credit policy and financial instruments to encourage investment and innovation in energy and environmental areas. Reform of the resource pricing system should fully reflect resource scarcity and environmental costs. Pricing reforms of key resources and products, such as water, electricity, coal, oil and natural gas should be deepened. The existing cross-subsidization policies should be reformed to protect socially vulnerable groups and to provide direct subsidy to these groups using national funds. Market-based instruments should be fully explored and introduced in emission reduction and energy conservation. Markets and exchanges for emissions trading, including both carbon
dioxide and conventional pollutants, should be established to facilitate its implementation, with pilots being carried out as early as possible.

5. Promote green innovation including the establishment of a “green innovation” strategy mainly based on fundamental research, technological R&D, and human resources development. Green innovation strategy should bridge the connection between fundamental research and commercialization. Green innovation should also be achieved through institutional reform and by use of new environmental policy instruments, such as standards, green procurement and innovation reward systems. Green innovation should be more open to international cooperation and provide support for technology transfer for small and medium-sized enterprises, and for public-private partnerships through the creation of an international green innovation and investment platform.

6. Enhance international cooperation on green economy.

Green economy in the context of sustainable development and poverty eradication is one of the two major themes of the Rio+20 Summit in 2012. It is beneficial for China to carry out international cooperation on green economy. This can be done within China and abroad by engaging in green improvements related to economic globalization; by drawing upon advanced ideas and experience of the international community on green economy; and, in cooperation with partner countries, by promoting exchanges and transfer of know-how, information and technology, and by capacity building. However, it should be taken into account that the varied development stages of different countries should be taken into account; and that green economy should not become the source of new “green trade barriers”. China should introduce trade policies that encourage the development of green economy. A challenge for China is to consolidate its cooperation with international partners and push forward international collaboration on sustainable development, including its cooperation with both developed and developing countries, and global transfer and application of green technologies. To encourage commercial entities and enterprises to participate in green economic cooperation, establish cooperation platforms and promote green technology transfer and applications.

RECOMMENDATION 3. Build a low carbon industrial system that champions and supports green transformation of economic development mode.

Historical experience, lessons from the financial crisis, and new development trends argue that manufacturing will continuously serve as the foundation for a balanced and sustainable economy. Low carbon industrialization is the prerequisite of a sustainable manufacturing business. According to some preliminary estimates, heavy industry will play an instrumental role in China’s ambition to achieve carbon intensity targets in the next 10 years or even longer. Specifically, improvement of energy efficiency of heavy industries, optimization of the energy portfolio and sectoral restructuring can account for more than 90% of expected carbon reduction targets, whereas the seven new strategic industries will play an indispensible role in both the enhancement of economic competiveness and delivery of emission reduction targets.

1. Map out a development plan for low carbon industrialization in China with carbon intensity targets set for main heavy industrial sectors.
There is a need to establish a low carbon industrialization plan, to coordinate this plan with other plans, and to develop a comprehensive development strategy for low carbon industrialization. China has already set a mandatory target to “reduce CO₂ emission per GDP by 40 to 45% by 2020 on the basis of 2005 level”. Sectoral carbon reduction targets should be set up for heavy and chemical industries like power, iron and steel, chemicals, construction materials and non-ferrous metals, to take the full advantage of the autonomy and motivation of respective sectors in setting up sector-based policies and develop R&D capacity.

2. Increase support for emerging strategic industries, the driving force for low carbon transformation.

The development of strategic emerging industries is a driving force for green and low carbon industrial transformation. The government should further lower the access hurdles and create a more favorable business environment for strategic emerging industries. The development plans for the seven main strategic emerging industries should be drafted, issued and implemented as soon as possible. A special fund supporting the development of strategic emerging industries should be established. In the emerging industry parks, the central and local governments should provide support to the infrastructure construction, certain key projects, R&D, public service platform and innovation capacity building. Tax and financial tools should be adopted to accelerate commercialization of strategic emerging industries. The government could also consider the joint-stock approach, set up capital and equity investment funds, and encourage more investment in innovative but early-to-middle-stage companies of strategic emerging industries. Moreover, the government should develop relevant policies to encourage private and foreign investment in these industries.

In areas and sectors where pilot initiatives are being carried out, priority needs to be given to ensuring that prices for electricity, energy, and products are allowed to fully reflect the impact of trading or green taxes. It’s also important that they are underpinned by carefully regulated data systems, and in relation to the development plan for low-carbon industrialization. Particular attention is needed to coordination of sectoral initiatives with cross-sectoral policies and programs. This will ensure synergies, and avoid duplication or offsetting effects.

3. Promote technological innovation and application to support low carbon transformation.

More support should be given to low carbon research and its weight in the total R&D budget should be increased. In line with the development trend towards low carbon industries, there should be greater effort to make technological breakthroughs in the fields of carbon capture and sequestration, alternative energy and other technologies, 3R (reduce, reuse and recycle), energy and biological technology, new materials, ecological restoration, and multi-pollutant control technologies. China should set up a world-class national energy lab and support basic and generic research, with open access to enterprises, universities and other research institutions. It is important to develop a new innovation system where enterprises play a leading role. The governmental funds for science and technology should increase their support to enterprises so as to attract more investment from all sectors. More efforts should be made to protect related IPRs. A cross-sector technological union should be formed to promote industrial integration and innovation. Meanwhile, international cooperation should be strengthened on low carbon
technological innovation, making good use of international resources and positioning China to take advantage of international innovation related to low carbon technology.

4. Improve the regulatory and voluntary standard system for low carbon production and products.

First, amend energy efficiency standards of buildings, of transportation equipment, major industrial equipment, and main energy consuming items like household appliances and lighting products. Second, improve energy-efficient label management and accreditation; expand the scope of mandatory energy labeling; explore how to introduce “carbon footprint labels” in a phased manner, carry out low carbon product accreditation, and guide consumption behavior to become “lower carbon”. Third, strictly implement energy efficiency standards and raise access of energy intensive sectors; carry out carbon-reduction assessment for new and expansion/rehabilitation industrial projects and energy efficiency evaluation for new public buildings and commercial housing upon completion. For those projects and buildings that do not meet mandatory standards, project completion approval should be suspended so as to control emissions from the source. Establish energy efficiency monitoring and verification processes and certification policies. Fourth, enhance monitoring, indicator and evaluation systems of energy saving and pollution reduction, strengthen accountability of energy saving targets, and improve incentive-disincentive mechanisms.

RECOMMENDATION 4. Develop a green trade and investment system, establish green supply chains, and champion a goal-oriented green transformative strategy for China’s trade and investment.

Investment and trade have been the driving force behind China’s economic development, as well as many environmental concerns. In an increasingly globalized world, investment and trade have a profound impact on sustainable development and green transformation of China and the world. China needs to be more prudent with the current and potential environmental impacts from investment and trade activities. Green transformative change of investment and trade requires rules that are applicable across all types of enterprises, whether under FDI, China’s domestic investment, or ODI involving Chinese firms operating abroad. Green investment should provide guidance, often with the participation of the banks and other institutions in the financial sector. Green trade will be a driver with both push and pull aspects, and sometimes environmental aspects of trade will be driven strongly by factors outside of China as well as domestic sustainable consumption concerns. Thus China will have to pay considerably more attention to green supply chains and green government procurement.

1. Promote an environment-friendly strategy for improving foreign direct investment (FDI) in ways that better serve green transformation in China.

China’s foreign investment policy should be adjusted and improved to encourage more FDI in strategic fields, such as high-tech, environmental protection and other strategic emerging industries. China should implement the “Decision on Accelerating the Development of Strategic Emerging Industries” promulgated by the State Council in October 2010 to attract more FDI in middle and western regions and inland cities in an orderly and sustainable manner. The current Catalogue of Industrial Guidance for Foreign Investment should be updated to encourage green
investment in China. By drawing upon the advanced experiences of FDI source countries, especially those with high environmental standards, the FDI legal framework of China could be further amended and improved.

2. **Promote sustainable outbound direct investment (ODI) and share the fruits of green development.**

China should make good use of the China-Africa Summit, China-ASEAN Summit and other mechanisms to carry out policy dialogue and cooperation on sustainable investment, and strengthen sustainability and security of Chinese investment in foreign countries. A complete evaluation and supervision system should be set up so that the government can keep an eye on the operations of enterprises that invest overseas, including both state-owned and Chinese private enterprises of all sizes and types. China should promote capacity building for sustainable investment and strengthen mutual trust between Chinese investors and the public and private institutions, civil organizations and the people in recipient countries.

A new Guideline on Corporate Social Responsibility (CSR) should be introduced to make the Chinese CSR standards consistent with internationally recognized ones. Chinese and foreign companies should report their performance openly and transparently using approaches such as the UN Global Compact Communication on Progress, or the Global Reporting Initiative reporting guidelines.

China should also create, together with the host country, Sustainable Development Funding financial instruments to mitigate the impact of China’s natural resource procurement activities, particularly when they result in the depletion of non-renewable mineral, oil and gas, natural forest, and other biological resources, either domestically or abroad. There are a number of such funds in the world, some of which have served to offer alternative development options to the populations affected by these extractive activities. Others have created a savings account instrument to be used by future generations, when these resources will have been depleted. Such funds must be structured jointly between the host state, its local community, and the investor with strong stakeholder participation. They can be capitalized through payment of royalties levied on the resources that are being explored and should be managed by third-party professionals as independent trust accounts, which must be accountable to the public and other related stakeholders, not just to the host government.

A number of successful examples may be useful models, such as the Norwegian Investment Fund for Developing Countries (Norfund) or the Alaska Permanent Fund Corporation (APFC). In most cases, these funds help improve the image of the investor as they are managed in full transparency and are subject to the interests of the community. Generally, revenues and dividends should be used to: diversify the economy of communities exposed to resource depletion; finance poverty reduction; and provide housing and education, improved medical services, promote environmental protection and green transformation, and other aspects of human and social development.

3. **Address the negative perceptions sometimes associated with China’s ODI and trading activities abroad.**
There are many possible reasons for such perceptions abroad, including some rooted in substance and others in a variety of motivations. While some of this negative image and perception can be countered by better information and communication campaigns, true success will require carefully integrated strategies on the part of government working with Chinese enterprises. It will be necessary to involve also governmental agencies as well as China’s embassies, educational institutions, business associations, and non-governmental organizations. China can learn from precedents set by other countries that faced negative image problems and prejudices with concerted and long term, well planned, well funded proactive initiatives that addressed the perception issues and corrected the image problems. The good news of China's green transformation needs to be transmitted and disseminated in a global information effort, preferably managed and carried out by an independent, "honest broker" type of institution with high and impeccable credibility.

4. Promote sustainable development of green trade and investment through greater participation in international rules setting.

China should expand import of sustainably produced products, cut tariffs to encourage import of energy intensive products while reducing domestic production of such products so as to support industrial upgrading. The government should provide guidance and incentives to stimulate export of products with low energy consumption and environmental damage so that the country’s export mix can be greener. Export tax rebate on dirty products (energy intensive, heavily polluting and resource guzzling) should be abolished, and an additional export tax should be imposed on such products. These policies should be consistent and not affected by economic and trade fluctuations to ensure effective implementation.

China should play a more active role in the setting of green rules for international, regional and bilateral trade and investment and in this way to help realize green transformation of itself and the world at large. China should promote the implementation at home and abroad of international environmental agreements that China has signed, and work to include environmental and social clauses in bilateral and regional investment and trade agreements currently under negotiation. China should also encourage enterprises and research institutes to carry out studies on international best practices and their dissemination, and promote “south-south-north” cooperation under current international frameworks.

5. Set up and improve green supply chains in China and support green transformation of the whole production system by promoting green consumption and fostering green market.

The government can play an enabling role in the development and management of green supply chains. Green government procurement action should be strengthened and made more prominent especially at local levels via the Government Procurement Law. A government procurement platform should be created, quotas for green procurement should be introduced and general guidelines on green government procurement should be developed based on proper green certification of products. An environmental information network of the products procured by the government should be developed and publicized. Green procurement should take place at all levels of government and in public institutions such as universities and hospitals.
China should develop a Regulation on Green Supply Chain Management and Sector Evaluation Standards of Green Supply Chain, and develop an accreditation system for green supply chains based in part on existing environmental accreditation processes. Meanwhile, “promotion centers” of green supply chain should be established to strengthen collaboration among industries, the government, NGOs and other external groups. These promotion centers could be first created in areas with, a good economic basis such as Tianjin Binhai New Area, Yangtze River Delta Region and Pearl River Delta Region, and then expanded into other areas.

The above measures will help establish a green supply chain management system led by the government, implemented by enterprises, evaluated by the market and judged by the public. This system can further support the development of sustainable production and consumption.

RECOMMENDATION 5. Develop a strategy and national action plan for managing mercury use in China in order to reduce impacts on public health and on the environment.

As industrialization accelerates in China, pollution from mercury and other heavy metals has caused serious social, environmental and public health problems. The Chinese government is placing great importance on this issue and promulgated the 12th Five-Year Plan on Comprehensive Prevention and Treatment of Heavy Metals Pollution. China should take prompt action, remove obstacles and ensure implementation of the plan to achieve its goals and greatly reduce risks to human health. In particular, it is necessary to pay high attention to mercury pollution.

Mercury is not only an issue of on-going concern to the international community, but is also one of importance to China. It is released into the atmosphere during coal burning, non-ferrous metal smelting and cement. It is used in large quantities as a catalyst in the production of polyvinyl chloride (PVC), creating demands for the mining of mercury and risks of environmental releases. It is a component in compact and regular fluorescent light bulbs and in some types of batteries. It is still widely used in dentistry and medical instruments such as thermometers. China remains the world’s largest mercury producer, consumer, and emitter, and the country’s total mercury use is more than 50% of global demand. China is one of only two nations still mining mercury.

The Government of China should develop a strategy and national action plan for mercury management in China, and make this plan compatible with the national plan on heavy metal pollution. The strategy and action plan is important to strengthen technical guidance, risk control, environmental supervision and reductions of pollution by mercury related industries. It is estimated that stringent but feasible emission targets could result in very significant reductions of emissions from coal burning industrial boilers and power plants, non-ferrous metal smelting and cement production. Priority should be assigned to achieving mercury-free PVC production processes. Recycling of mercury from industrial sources and mercury-added products should be strengthened to create a closed-loop system that would eliminate the need for the mining of mercury.

1. Develop a national strategy and action plan on mercury management.

The national strategy and action plan on mercury management should aim to reduce health and environmental damage by mercury and cut China’s contribution to global mercury emissions.
The strategy and action plan should be in line with the 12th Five-Year Plan on Comprehensive Prevention and Treatment of Heavy Metals Pollution (2011-2015), and identify short and long term mercury reduction targets for the period of 2011-2015 and beyond. Effective measures should be taken to reduce and prevent negative impacts of mercury on human health and the environment. A mandatory, facility-based and publicly accessible inventory of mercury releases and transfers should be developed to support decision making by the government, the relevant industries and communities. The strategy and action plan should be integrated into the strategies of other sectors, help improve environmental performance of mercury related industries and communities, promote clean production and realize green transformation.

2. Strengthen technical support, risk control, environmental supervision and pollution reduction of mercury related industries.

China should strengthen its legal and regulatory system for mercury management, strengthen its capacity for the enforcement of relevant laws, and carry out priority-based management of mercury with effective implementation across the country. Market-based instruments should be used as important supplements to mandatory measures and targets to reduce releases and uses of mercury and to improve the management of mercury-containing waste. Scientific and technological needs should be identified to help the government make informed decisions on mercury risk control. China should promote structural adjustment of mercury related industries and communities by developing strategies with the relevant sectors to ensure that the restructuring harmonizes with market demand, urban and rural layout, regional characteristics and other essential factors. More weight should be given to a structural approach to reducing pollution (i.e., through industrial restructuring) while continuing projects to reduce and manage pollution (i.e., reducing pollution through specific treatment projects and improved management).

In order to reduce mercury emissions, mercury use should be forbidden or severely restricted in the relevant industries such as chemicals (including the production of PVC plastic), lighting, battery, medical care and pharmaceuticals. Clean production techniques and technology should be promoted and pilot programs launched to explore the best feasible technologies and environmental management practices. Where appropriate, mercury pollution prevention and treatment technologies from abroad should be introduced and commercialized within China. There is a need to support research and development of low-mercury and mercury-free alternative products and processes, gradually reaching the goal of low-mercury and mercury-free industries and realize mercury control at the source.

Measures that should be taken to protect Chinese citizens from possible exposure to mercury include: strengthening of occupational health and safety procedures for workers; rigorous management of contaminated sites, hazardous wastes and mine tailings; enhanced monitoring for mercury in selected foods; and the provision of appropriate information to the general public and to populations that may be at risk.