

**THE CHINA COUNCIL
FOR INTERNATIONAL COOPERATION
ON ENVIRONMENT AND DEVELOPMENT**

THE THIRD MEETING OF THE FIFTH PHASE

Diaoyutai State Guesthouse, Beijing

December 1 – 3 2014

Summary Record

February 2015

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ABBREVIATIONS

AGM	Annual general meeting
APEC	Asia-Pacific Economic Cooperation forum
ASEAN	Association of Southeast Asian Nations
CCICED	China Council for International Cooperation on Environment and Development
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CO ₂	Carbon dioxide
EPRL	Ecological protection red line
EU	European Union
FYP	Five-Year Plan
GDP	Gross domestic product
GHG	Greenhouse gas
HFC	Hydrofluorocarbons
MEP	Ministry of Environmental Protection
NDRC	National Development and Reform Commission
NGO	Non-governmental organization
NO _x	Nitrogen oxide
NPC	National People's Congress
OECD	Organisation for Economic Co-operation and Development
PM	Particulate matter
PV	Photovoltaics
RMB	Renminbi
SE4All	United Nations Sustainable Energy for All initiative
SERI	CCICED Secretariat
SISO	CCICED Secretariat International Support Office
SO ₂	Sulfur dioxide
TCE	Tonne coal equivalent
UNEP	United Nations Environment Programme
WHO	World Health Organization

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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 Chinese government 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 23 annual meetings organized in five-year 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. Zhang Gaoli, 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 third meeting of Phase V.

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, 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 and located at Simon Fraser University in Burnaby, Canada. Until April 2013 SISO was funded by the Canadian International Development Agency, afterwards by Canada's Department of the Environment (Environment Canada).

This Summary Record of the CCICED's third meeting of Phase V 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. Annual General Meeting

Item 1. Opening of the Meeting

China's Minister of Environmental Protection and CCICED Executive Vice Chairperson **Zhou Shengxian** called to order the third meeting of Phase V, focusing on the theme of management and institutional innovation in green development. He introduced the following dignitaries:

- Vice Premier of China's State Council and CCICED Chairperson **Zhang Gaoli**;
- Canadian Member of Parliament, former Minister of the Environment for Canada, and CCICED International Executive Vice Chairperson **Peter Kent**;
- Vice Chairman of China's National Development and Reform Commission (NDRC), and CCICED Vice Chairperson **Xie Zhenhua**;
- Executive Director of the United Nations Environment Programme (UNEP) and CCICED Vice Chairperson **Achim Steiner**;
- Deputy Secretary General of China's State Council **Ding Xiangyang**;
- China's Vice Minister of Environmental Protection and CCICED Secretary General **Li Ganjie**.

He welcomed guests, Council members, and observers to the 2014 AGM, and declared the meeting open.

Item 2. Secretary General's Progress Report and Work Plan

Secretary General **Li Ganjie** presented to Council his report on the progress of work during 2014 and CCICED's work plan for 2015. Here are the highlights of his presentation:

Our progress has been reflected in the following:

First, we have conducted two task forces and four special studies, as planned. On the basis of the findings we have drafted recommendations to China's State Council.

Second, to expand the impact of CCICED we have been sharing our experiences and research findings. For example:

- Back-to-back with the Asia-Pacific Economic Cooperation (APEC) high-level roundtable we held the CCICED roundtable on the theme of green transformation and institutional innovation for investment, trade, and consumption. We shared our findings and policy recommendations with local governments and representatives from Asia-Pacific countries.
- During the 11th China-ASEAN (Association of Southeast Asian Nations) Expo in Nanning, 17 September 2014, we held a side event on the topic of ecological civilization and institutional innovation for green transformation. We also held a workshop on China-African partnership on sustainable development. Thus we have promoted exchange with developing countries and enhanced the role of CCICED as a platform for two-way communication.
- In the green supply chain demonstration projects in Tianjin and Shanghai, CCICED developed the operational policies, systems, standards, and measures for green production, green supply, green procurement, and green consumption chain. At the same time the demonstration project on media and public participation accelerated the formation of regulations on public participation in environmental protection in Hebei province. In addition, the Council has also initiated a demonstration project on sustainable consumption.

Third, in 2014 great progress has been made in China. Many of our policy recommendations have been highlighted and adopted. For example, in 2013 CCICED suggested putting in place an

incentive/punishment evaluation mechanism incorporating energy consumption, environmental damage, and other factors into the national economic evaluation system. We also suggested that ecological civilization should be incorporated in the indicator system for performance review of local officials. As a result, in August 2014 the NDRC issued a document on evaluation related to per capita gross domestic product (GDP) carbon dioxide (CO₂) emissions reduction. In addition, CCICED suggested the revision of environmental protection law and the formulation of implementation procedures. In July 2014 the Standing Committee of the National People's Congress (NPC) adopted the revised law which will accelerate the revision of air and water pollution control law. What is worth special mention is that our initiative proposal to establish an APEC Cooperation Network on Green Supply Chain, which was put forward on the basis of CCICED demonstration projects on green supply chain, was endorsed by the 22nd APEC Economic Leaders' Declaration.

The year 2014 is critical to the 13th Five-Year Plan (FYP) with its strategic window of opportunities for modernization. Our mandate is to accelerate the modernization of the governance process for green development.

In the coming year, with the approval of the Bureau, we will work on the following:

- Focus our efforts on policy research on governance for green transition as a foundation for making policy recommendations.
- Disseminate and share our findings in order to expand their impact.
- Start preparatory work for CCICED phase VI. The 2015 AGM will be held 9 to 11 November in Beijing.

Item 3. Introduction of Draft Policy Recommendations

CCICED International Executive Vice Chairperson **Peter Kent** offered welcoming remarks and highlighted some of the key points in the draft policy recommendations being prepared for submission to the Chinese government:

What a remarkable and historic year it has been for China's government as the deepening of reform has unfolded. We applaud the efforts to link the economic system and ecological civilization via the Deepening Leadership Small Group. Also very significant is the NPC approval of the revised national Environmental Protection Law. The declaration of the "war on pollution" is also unprecedented in its scale.

Indeed the list of reforms started this year is much longer than I have time to mention.

In the APEC Leader's Declaration, I certainly was pleased to see important statements about many items of great interest to CCICED Members, including a prominent commitment to the green economy.

We are particularly happy to see the APEC leaders endorse Tianjin as the location of the first pilot centre of the new APEC Cooperation Network on Green Market Supply Chain. This initiative will have value not only for China but also for many other countries. It had its start based on CCICED work over the past few years with the Tianjin city administration.

Important to all of us is China's recent statement on setting a time frame of 2030 for a peak in its greenhouse gas (GHG) emissions. I believe President Xi has stated that achieving this goal will require an energy revolution.

Use of phrases such as this term, and others like ecological civilization and war on pollution suggest that there is an historically important window of opportunity for building a new green development approach, domestically and in China's international relationships. In fact many of the building blocks are already in place through initiatives in the 12th FYP. However, the challenges remain great, as we know from air and soil pollution and many other environmental protection issues.

I believe this AGM will be one of the most significant in CCICED's 23-year history. We hope our recommendations can provide valuable input to the planning of the 13th FYP. Premier Li Keqiang has

indicated that this plan is the final dash to meet the goals of a comprehensively well-off society by 2020. But, for the building of ecological civilization and China's green development, the new FYP will also signal the start of a marathon run that will take at least 15 years of environment and development transformative change.

Over this longer period – say from 2015 to 2030 – there is a need for a unified strategy that takes full advantage of the deepening of reform, and strengthening the rule of law, plus many other opportunities, including those arising from China's remarkable efforts on green science and technology.

We will focus our dialogue during this AGM on management and institutional innovation for green development. Our two task forces and four special policy studies were instructed to address important topics with immediate policy implications, but also to identify a number of priorities that extend into the medium term to 2030 or longer.

This year, CCICED examined the feasibility and content of a green transition strategy for 2015 to 2030. This work by our economics-oriented task force indicates that a number of the critical energy and environmental peaks can be accelerated through linking economic reforms more strongly with environmental reform.

Another task force, on institutional innovation for environment protection and management, proposed modernization to include better use of market-based reforms, unified management mechanisms, and strengthening of social governance arrangements.

Putting it bluntly, the existing ecological and environmental protection efforts suffer from having to work in a reactive way, almost always trailing behind economic decisions strongly influenced by sectoral and other interests. Clearly, very significant priority should be given to policy integration.

There are also important capacity limitations. Reform will be costly, but the consequences of not proceeding with institutional innovation will be even more expensive. Currently China's somewhat fragmented environmental protection system is not up to meeting the needs of an ecological civilization.

Drawing upon both Chinese and international experience, one of our special policy studies this year has provided fruitful research results on environmental performance audits of officials. This information has been used to formulate policy recommendations on how to proceed with development of a fair and effective system to evaluate officials at the time they depart from their posts.

CCICED has carried out several studies related to China's very difficult air pollution problems. In this year's regional air pollution special policy study, the suggestion has come forward that a much stronger regional approach is necessary. To gain the desired results of the current *Atmospheric Pollution Prevention Action Plan* will require an integrated approach involving the whole of eastern China, with appropriate sharing of information and of specific responsibilities.

Our other two special policy studies this year focus on important spatial planning needs.

The highly innovative decision in 2013 to introduce ecological red lines for protecting China's vast landscape and water environments is one of the most urgent matters to be addressed in green development. Redlining is one of the most difficult issues. International experience suggests that protecting conservation lands through spatial planning works best when stakeholders can see clear benefits. Our team has looked for an optimized approach that could be applied in a time limited way, but fairly.

This year CCICED also undertook to examine good city models for ecological civilization. The study team found that, while there are many successful models within China and globally, the most valuable information for making our policy recommendations was to examine successful processes aimed at improving urban environmental situations, especially regarding avoidance of sprawl and creation of people-friendly design.

In countries throughout the world there have been many instances where difficult-to-remedy environmental tipping points have occurred. Air pollution in China certainly is at such a point. The urgent need is to move from tipping points to turning points where people can see definite, positive progress—even if decades are needed for some problems to be fully resolved. Prominent examples are restoring the health of lakes affected by acid rain, and restoring the ozone layer in the upper atmosphere. As a Canadian, these are two turning points that I hold particularly close to my heart.

Hopefully, CCICED's message this year is that, while all of us in our respective countries, regions, and globally must heed the warning signals provided by tipping points, we should not be deterred from seeking the turning points that will put us on the path to a better place such as the ambition for a beautiful China and, for all of us, working towards a global ecological civilization.

We must ask ourselves the question: how can CCICED's recommendations be most useful? Should we be more specific in our response to challenges? Can we support government through advice on policy implementation? Can we provide further insights on China's global environmental relationships? Certainly we must ensure our advice is relevant and our advice is timely. Certainly the 13th FYP needs to be an important part of our efforts.

Item 4. Keynote Speech

Executive Vice Chairperson Zhou Shengxian next introduced Chairperson **Zhang Gaoli**, who delivered the meeting's keynote address. Here are the main points that he made:

China has always paid great attention to the protection of the eco-environment. Conserving resources and protecting the environment have always been our basic policies. Sustainability strategy has been implemented. The development of ecological civilization has been incorporated into the development plan of China. We have the five-in-one approach: ecological civilization is one of the five.

I believe that if we can do well with ecological civilization, then that is where the real value is. President Xi emphasizes that a good eco-environment is the most equitable and inclusive public good. Protecting the eco-environment develops productivity. We want to usher in a new era of ecological civilization, and build a beautiful China. It is part of the great Chinese Dream.

As pointed out by Premier Li, the development of ecological civilization is about people's lives. It is about the future of this very nation. So we must enhance eco-environmental protection. We must be resolved to accomplish this hard task with hard measures.

At the 4th plenum of the 18th Central Committee, a major decision was made regarding rule of law. It was laid out that China should protect its eco-environment with a strict legal system. We should enhance our efforts in dealing with ecological problems. We must have ambition and resolve, and take effective measures to deal with problems, including air, water, and soil pollution. Importantly, we need to rely on institutions and mechanisms in building ecological civilization. That is the way for us to have long-term success.

China is now taking one step after another on the path of eco-environmental protection. We know that China is a big consumer of energy and a big emitter of pollution. We admit all this. So we should press ahead with energy conservation and efforts to prevent pollution. I can tell you that we are doing more and better every year. And we are seeing more and more results, year by year. In the first three-quarters of this year, the energy intensity per unit of GDP went down by 4.6 %, and emissions of various pollutants also went down.

China also launched its *Atmospheric Pollution Prevention Action Plan*, taking the lead among developing countries in monitoring and controlling PM_{2.5} pollution. This information is made available to the public. Most developing countries are only monitoring PM₁₀. We are monitoring that, of course, but also PM_{2.5}.

On a cumulative basis about 29.8 million hectares of farmland have been returning to forest. We have about 69.33 million hectares of forested woodland, ranking #1 in the world. Recently I went to Fujian and Guanxi where protecting and conserving forests are important metrics. They want to increase the cover of forest. There can only be more, not less. Pasture quality is improving, and we are having less desertification.

According to the World Bank, from 1991 to 2010 China's cumulative energy conservation accounted for 58% of the world total. Our target was that, by 2020, the intensity of CO₂ per unit of GDP should be cut by 40 to 45%. By the end of last year we already cut it by 23.8%. That is a reduction of some 2.5 billion tons of CO₂.

I know you care a lot about the smog that Beijing and surrounding areas are experiencing. For the *Atmospheric Pollution Prevention Action Plan*, Beijing and surrounding areas, the Pearl River delta, and the Yangtze River delta are the focus areas. Actions really matter. In the first three quarters we looked at the situations of 74 cities. PM_{2.5} reading went down by 6.5% on an average basis. In Beijing and surrounding areas, it went down by 13.5%. During the APEC meeting period, people were very concerned about the air. Fall is giving way to winter, and it was time that home heating was started, and there was no wind. So the forecast was medium or heavy smog. We took some measures, including closing some energy intensive and pollution emitting plants. We also took action against the use of cars, and some construction sites. So, during the APEC meeting week the air was good.

We know that controlling air pollution is a long-term and arduous task. If we take measures, things could improve a little, but we cannot be complacent. Rather we should be sober. We must make more efforts to prevent and control air pollution. We should also treat soil and water pollution, because practice has taught us that if we really make efforts — and with some blessing from God — things will turn around. It might take us decades. In the case of London and Los Angeles, for instance, it took decades to treat the air and to restore blue sky.

So we should always be sober minded. We know it's challenging, but we must have perseverance. I am convinced that we will make things better.

Climate change actions are an important part of China's efforts. Dealing with the challenge of climate change is required by China's sustainable development. These actions also highlight China's international cooperation, as pointed out by President Xi. This is China's international obligation. It is not imposed by others; rather, we want to do this ourselves. If we don't take any action, can we have sustained growth? Can we answer to the people? Are we a responsible nation? All these are important questions.

In September, at the United Nations climate summit, I felt strongly that countries are committed to climate change actions, and at the same time they have hopes and expectations for China. During the APEC meeting week, Presidents Xi and Obama met for discussions, and an important outcome is the joint declaration on climate change. China plans to peak its CO₂ emissions by 2030 (in fact, we hope to peak earlier). We plan that by 2030 non-fossil energy will count for about 20% of primary energy consumption. [US Secretary of State] Kerry asked me to offer more, but we know that China's energy mix is coal dominated. 67% of our energy consumption is coal, and coal is a big part of our resource. Given our resource endowment and energy mix, we can only make a commitment that we believe we can deliver.

We are developing hydro, wind, solar, and nuclear power. Nuclear is a small part of our installed capacity. For those projects under construction, they account for half the nuclear stations being built in the world.

The joint declaration adhered to the principle of common but differentiated responsibilities. This principle is embodied in the UN Framework Convention on Climate Change. I said to [French] President Hollande that we must adhere to this principle. That's the way to reach agreement for next year's Paris conference. We know that different countries are at different stages of development, and their situations are different from one another.

International society has well recognized this joint declaration. The Chinese government is resolved to honour our commitments. In fact, we try to do better than our commitments.

China is now exploring a new pathway for eco-environmental protection. We will innovate with the management system of green development. We will promote green development for building a beautiful China. We have a saying in China: green mountains and blue sky are better than golden mountains. Our GDP size is #2 in the world, thanks to fast development, but this is not sustainable if it damages the environment. By doing that we are not being responsible to future generations. That's why the transformation to a sustainable, low-carbon, circular development is our key strategy.

We need to focus particularly on the following areas:

First, we should examine both the plus and the minus factors, so as to address the fundamental causes of pollution. Minus means facing up China's obsolete capacities and strictly controlling the energy intensive, high-emission sectors such as the steel, cement, and aluminum industries. We have been cutting down the size of these sectors with specific targets to be achieved each year. At the same time we encourage the development of low-carbon, strategically important industries, for example, high-tech. Only by doing this can we bring about a benign circle of development. Otherwise GDP goes up at the expense of the environment. It's not what we want in terms of development. We are in the 21st century, yet still we stick to the old path of "development first, treatment second." When I was in London I saw how much money they have spent to treat pollution. The same will happen in China. So we need to vigorously develop these environmentally friendly, strategically important, emerging industries, and to optimize our economic structure by boosting the proportion of high-tech and service industries. We should eliminate fundamental costs for excessive energy consumption and emissions. We should do a good job of environmental planning and policy assessments, focus on environmental access and on the standards for environmentally friendly sectors, and increase the eco-dimension for agricultural service industries. In the next FYP we have to draw a red line. We have to put in place environmental access and impact practices, and assessment practices. Otherwise, all the high polluting, excess capacity, redundant industries and sectors will be still there.

Second, we should deepen reform and innovation in the eco-environmental protection area and bring to full play the role of the market. We should actively promote the environmental market and the development of different trading systems for energy consumption, emission rights, and water rights transactions systems, and speed up price reform for natural resources. We are imposing taxes on many of these energy areas and we should clean out corrupt practices in the resource tax area. Also we should

improve the eco-compensation system for this key area, and put in place a market mechanism to involve private sectors and capitals. We should promote the system of treating pollution by third parties. To improve our eco-environmental protection management system, to maintain the systematic, diversified, and sustainable nature of our eco-environment, and to manage and monitor our environment in a unified, effective, and authoritative manner, we must put in place this strict environmental management protection system in which all these pollutants are being monitored (the authority of MEP must be high).

Third, we should speed up the construction of the legal system for ecological civilization so that this law provides a fundamental guarantee. We should pass new laws, revise or abolish existing laws, and put in place a sound legal system regarding the eco-environment, land, forestry, and pastures. For instance, the Qinghai-Tibet plateau (which is a kind of ecological guarantee for us) has to fall within this redlining. There are many such areas in China's provinces. We have to achieve that by legislation. The newly revised Environmental Protection Law has achieved many breakthroughs in improving the supervisory system, implementing governmental responsibilities, and raising the violation cost of enterprises. This provides a solid legal basis for China's environmental protection. It speeds up the revision of measures regarding air and soil pollution, and nuclear safety.

The repercussions of nuclear disasters, such as Chernobyl and Fukushima, are terrible. That's why these systems have to be of the highest standards. Every ministry must be committed to nuclear safety all the way, from the initiation of the project, to construction, completion, and operation, including the emergency plan.

We should pay close attention to all such links so that we deal with pollution in a strict way and conduct environmental monitoring and administrative enforcement in an independent manner, and have zero tolerance for violations. Everyone should be equal before the law. There are no exceptions in this regard.

Fourth, government should play a leading role in eco-environmental protection. Government has to be forceful and effective. We should put in place the objective goals and performance assessment methodologies for ecological civilization. We must optimize the national territorial spatial development pattern in accordance with the functional areas and speed up the eco redlining work. We should focus on energy conservation and on reducing emissions in key industries and projects, especially in terms of standards. We must establish an energy efficiency champion system.

All these big issues affect our livelihood. We have to assure that we can drink clean water, and breathe clean air, and eat safe food. That is the big livelihood project for us.

Also, we should push forward for wider public participation so that the general public plays a monitoring role. With living standards going up, the public are increasingly demanding a good eco-environment. We should disclose this ecological information in a timely manner, and we should respect and protect the public's rights to know, to participate, and to supervise. We must create a good ecosystem in which everybody is involved and everybody shares responsibility. Also we should put in place a kind of public-to-enterprises-and-government dialogue mechanism to play the full role of the media and civil society to create an all-round ecological civilization — a civilized, energy-saving, green, and low-carbon consumption lifestyle.

Everything has to be transparent. Transparency, public participation, and supervision are important. Of course everyone should understand we are still a developing country of 1.3 billion people. Without development we cannot create jobs for everybody. That is what we mean by common but differentiated responsibility. We have to develop but we also have to protect our environment.

CCICED has been established more than 20 years. It is an important platform for dialogue between China and the world. It is a window to open China up for international dialogue. And it is an important bridge for China to exchange with the international community in the area of environment and development. It has played an important role in advancing the green agenda in China. I am particularly thankful to all the experts, domestically and internationally. You are famous people in your own areas, with strong academic backgrounds and rich experiences. You have contributed a lot to China's environmental development. Many members and experts have been long involved in the work of CCICED. For example, Mr. Hanson from Canada has been a member of CCICED for more than 20 years. He has worked very hard and with distinction. We bear all this in mind.

For China to develop well, we have to draw modestly on all the best practices around the world, and to learn from all the civilizations around the world. Only by doing that can we develop well. So, members and experts, you contribute your wisdom, your insights, and your good ideas. We will hear many in the

coming days. And we should absorb these good ideas. We show our admiration and appreciation for your devotion and wisdom.

China's green development outlook is bright, with huge potential. I hope that all of you will express your insights and opinions on ecological protection, pollution treatment, and climate change, and come out with constructive ideas. China will always be supportive of the long-term development of CCICED. I hope that you will continue to serve as a platform for intelligence and bilateral exchanges, so as to make great new contributions to the green development of China and the world.

Item 5. Addresses, Special Remarks, Issues Paper

Statements by the Vice Chairpersons

With International Executive Vice Chairperson **Peter Kent** presiding, CCICED members heard statements from the Council's Vice Chairpersons. First, here are highlights from the remarks delivered by Vice Chairperson **Xie Zhenhua**:

China is a big developing country. In the last 30 years of reform and opening, we have made great economic and social progress. However because of China's limited natural endowment, the vulnerable ecological environment, the extensive development mode, and the imbalanced industrial structure, we have paid a high environmental price. The emissions of pollutants are very serious. In recent years some cities are afflicted with heavy smog and lots of environmental accidents

Like all other countries, China faces the challenge of climate change. In the last 100 years the average temperature in China rose by .9 degrees Celsius — higher than the global average. Emissions of GHG and CO₂ have been growing rapidly. These resource and environmental issues are bottlenecks impeding our sustainable and healthy development. To achieve the goal of a comprehensively well-off society by 2020 we must accelerate the transformation of our economic mode and develop a green, low-carbon, and circular economy. This is the basic need to achieve our sustainable development. It is in line with international trends, and it is a must for the improvement of our competitiveness.

To ease these environmental constraints, the 18th Party Congress set the goal of integrating ecological civilization alongside China's economic, political, cultural, and social development. The Congress also pointed out that it is important for us to conserve energy, to protect the environment, and to restore the ecological environment in a natural way. This means that in the development and conservation of energy, energy comes first. In the protection and development of the environment, protection comes first. In the restoration and development of the ecological system, natural restoration comes first.

The 18th Party Congress also set the goal of green, circular, and low-carbon development. This means that we must have a new special arrangement: a new industrial structure, production mode, and lifestyle in

order to improve the quality of life. The Congress also set the goal to put in place systems with strict control at the source, strict regulation in the process, and severe punishment for the consequences.

The 4th plenary of the Congress set the goal to establish a legal system to promote the development of ecological civilization. The building of ecological civilization is supported among the party and the Chinese people. As President Xi has pointed out, we are not *made* to do this; we are *willing* to do this. And as pointed out by Premier Li, we must reduce some capacities and add other capacities in order to limit energy consumption and GHG emissions. In this way we show responsibility for the general public and for coming generations. This is our historic responsibility. We have already made some progress in these areas.

And now I will share with you what we have done, what we are doing, and what we will do in the future.

First, we will improve the top level in order to build toward achieving a comprehensively well off society by 2020. We will design a plan that sets binding targets to reduce the consumption of energy and CO₂ emissions. These binding indicators or goals will be broken down so that different local governments and enterprises can observe the limits. In this way we will set the cap for the total emission of pollutants.

Second, we will further adjust our industrial structure to develop our service industry and the strategically important emerging industries. In 2013, the service industry took up about 46.1% of the GDP — 5.8% higher than in 2005. For the first time the contribution of service to GDP surpassed the contribution of secondary industry. According to the estimates, the environmental industry will increase at the rate of 17% by the end of 2014 and will amount to 3.7 trillion renminbi (RMB). To achieve our goal we will phase out lagging capacities. Between 2006 and 2013 we closed down small power generation units by 94.8 megawatts, and phase out production capacity in the steel, cement, and aluminium industries.

Third, we will speed up low-carbon development. Between 1991 and 2013, the Chinese economy grew at the rate of 10.2%. This growth was supported by increased energy consumption at the rate of 6%. According to the World Bank, meanwhile, the energy intensity per unit of GDP decreased by about 59% between 1991 and 2010. The optimized energy mix has further accelerated the development of clean

energy. In 2013 the consumption of coal took up about 65.9% of the consumption of primary industry, 5% lower than the year 2005. The consumption of natural gas has increased about 3.5 times since the year 2005, and the installed capacity of hydro, wind power, and photovoltaic (PV) power have increased two-fold, 60-fold, and 280-fold respectively. In 2013 the installed capacity of renewable energy took up about 24% of the world's total and the non-fossil fuels consumption decreased about 9.8%.

Fourth, the development of a circular economy will change the traditional model of resource use from cradle to tomb. Rather, we want to build a new resource utilization model from cradle to cradle. China enacted and implemented the circular economy promotion. We also launched the strategic action plan up to the year 2020. We have issued hundreds of standards for the circular economy. At different levels, including provinces, municipalities, industrial parks, and enterprises, we have promoted the development of the circular economy. In businesses we have promoted clean production. We have developed the agricultural circular economy. In 75 industrial parks we have conducted retrofitting oriented to the circular economy. In 45 cities we established demonstration bases for city mineral resources. In 83 cities we have run projects that turn kitchen waste into resources. We should all reduce resource waste and increase the utilization rate of resources. This will achieve a synergy between economic, environmental, and social benefits.

Fifth, we have enhanced eco-environmental protection. We have strengthened our efforts in treating pollution. A lot has been achieved in this respect. The goals we set for the 12th FYP in terms of the treatment of urban wastewater and municipal waste have already been met, in fact at the end of last year. This year we will further step up the efforts. The water quality of the key river basin areas has been improved. We have also done a lot of work on the desulfurization facilities installed in the coal-fired plants. Now, the operational rate for desulfurized units is about 90%. For denitrified units the operational rate is up to 68%. China has also implemented many eco-projects. The forest cover now stands at 21.63% and forest stock is about 50.1 billion cubic metres, so we have already met our climate change goal in terms of these metrics.

Six, in the past few years we have conducted many pilot and demonstration projects for green, low-carbon, and circular economies. This has been an important success factor for China's reform and opening up. In 57 areas we have conducted demonstration projects for eco-civilization. We try to select places at different stages of development, with different resource endowments and different eco-

functional definitions. In 36 cities in six provinces we have carried out pilots for low carbon provinces and cities. We have explored effective pathways to peak CO₂ emissions in regions with differing conditions. In provinces, municipalities, industrial parks, and enterprises we have done circular economy demonstration pilots. We have already collected some 60 typical circular economy models and successful examples. We have also selected 55 industrial and development parks to be the pilots for low-carbon industrial parks. We have also carried out low-carbon community pilots in municipalities. We have accumulated a lot of experience in developing this new model of industrialization and urbanization. In Beijing, Shanghai, and some other cities we have conducted a pilot for carbon emission trading. Now, online trading has been launched in all these places. The progress has been smooth. We are exploring the market mechanism to reduce energy consumption and carbon emissions. On this basis we expect to build a nationwide carbon trading market.

China is now at a stage of rapid urbanization and industrialization. We are under a lot of pressure in terms of the economy, improving people's well-being, protecting the environment, and dealing with climate change. As a responsible government, the Chinese government has explored its own pathway to address these challenges. It is a multi-win pathway of sustainable development. On 12 November, President Obama and President Xi issued a joint declaration on climate change and announced the post-2020 action goals. China sets out to peak its CO₂ emissions by 2030. In fact, China aims to do that even earlier. By then, non-fossil fuel will account for about 20% of primary energy consumption. This fully demonstrates China's determination and ambition to deal with the challenge of climate change. We believe that the timing of this declaration is good, because it will inject new vitality into the negotiations for the post-2015 agreement. With that we show that we respect common but differentiated responsibility. Countries should make their contributions to climate change responses according to their capacity and means. This shows the difference between developed and developing countries. In the case of the USA, it is an absolute reduction. So by 2025 they are going to reduce emissions by 26% to 28% on the basis of 2005. But for China it is a relative reduction. We plan to peak around 2030.

As for clean energy and renewable energy development, we have also sent clear signals. It's going to be a big market. We believe that all countries should work harder to develop new energy and renewable energy.

The two leaders also commit to reducing the production and domestic use of hydrofluorocarbons (HFCs). As for the multilateral arrangements, we respect multilateral rules, and we should respect these rules to control HFCs. Both countries have also made clear their attitudes toward HFC control. Through this declaration we also show we should find a win-win path for development and environmental protection. It is what we call a low-carbon pathway. This year China will spend RMB 750 million to address the problem of HFCs. In the next two years China will spend about RMB 3 billion.

Also as part of this declaration the two countries addressed other priority areas: low-carbon and environmental technologies; the development of new energy; smart grid; low-carbon and smart cities; carbon capture, use, and storage; and shale gas development. In all these areas the two countries plan to expand cooperation. The countries are both big emitters and are at different stages of development, and therefore should have practical actions of collaboration. So we should talk less and do more.

This declaration shows China's attitude toward climate change. It demonstrates China's determination and ambition. The declaration will also have a positive impact on the negotiation of the climate agreement. We are also going to assert long-term goals for energy conservation and energy reduction. In future we will promote green, low-carbon, and circular economies in the following four aspects:

First, we should enhance accountability for the goals. For those well-established goals we should enhance inspections to ensure the goals are met on time. As for the new goals, we should develop roadmaps and implementation metrics in relation to resource consumption, environmental damage, and carbon emissions. Ecological benefits should be incorporated into all evaluation systems for economic and social development performance, and these metrics should be given more weight. We should develop a responsibility system, an accountability system, or even a lifetime accountability system for government leaders.

Second, we will enhance institutional arrangements. We should: improve the regulatory system for natural resource assets property rights and use; develop a redlining regulatory regime; set caps for the consumption of resources; draw up ecological red lines; implement the ecological functional zone strategy and improve the eco-compensation system; increase our eco-compensation to the national key ecological functional zones, the main agricultural areas, as well as cross-regional river basins; improve the

eco-environmental monitoring and supervision system; and accelerate the development of the legal system and standards for ecological civilization.

Third, we are improving the policy system. We should allow the market to play a decisive role in resource allocation. We should improve and implement a number of tariff policies, including differentiated tariffs, punitive tariffs, as well as tariffs for desulfurized, denitrified, and dedusted power. We should also further implement the policy allowing renewable energy sources to access the power grid. We should step up reform of resource and environmental taxes and fees. Resource taxes should be converted to an *ad valorem* basis. High energy, energy intensive, and pollution intensive products should be incorporated in consumption tax collection. We should press ahead with a value-added tax. We should provide preferential policies for new energy and eco-projects. We are also developing green credit. We encourage more private capital to be involved in energy conservation and emission reduction areas. We will also promote private investment in the related energy sector. We will try to establish a national emissions trading market, and to promote development of water rights and other pollution emissions rights markets.

Fourth, we advocate green consumption. Across China we have already carried out a campaign to encourage people to save resources and live a frugal and moderate life. We advocate green, low-carbon, and healthy lifestyle and consumption behaviours. We will use pricing, taxation, and standardization as the means to guide people to buy and use green buildings and new energy vehicles. We encourage people to reduce the use of disposable products. We should reduce over-packaging and be strongly opposed to all types of wasteful behaviour. All in all, we should develop a cultural norm that values energy conservation and environmental protection.

Here are the main points of the presentation by Vice Chairperson **Achim Steiner**:

Whenever I follow one of our Chinese colleagues, I wonder how to bring these two universes together. On the one hand, we have a perception of a nation, China, that is in the midst of challenging pollution and resource degradation, but alongside that — the vision we just heard from the Vice Chairperson — an agenda that is in many respects more systematic, realistic, and pragmatic than things we hear in most countries when we discuss such transitions in such forums.

These are momentous times, for China and the globe, whether in respect of the post-2015 development agenda, or the post-Rio efforts to arrive at new sustainable development goals that are universal and integrated; whether in terms of the journey to Lima and then to Paris in which a new climate agreement will emerge; or in terms of the [United Nations] Secretary-General's efforts to mobilize leadership across the world on climate change, including by linking energy access, efficiency, and renewable energy. These are all elements of an international agenda — and of an agenda in China — that point to a moment of transition and transformation. And we should use both these terms.

We can use the term transition because we are, both in the global context but also in China, clearly at a point where major transitions are in process. But will they be transformative? This is slightly different. You can move from A to B, but the question is whether you arrive at the destination you want — or at one you did not anticipate.

Certainly, the declaration by President Xi and President Obama alongside the announcement of the European Union (EU) about the financing of the green climate fund, plus the reports from many countries about actually implementing climate change actions, all point to a moment where transformation is now a word we can use. Those who argued there will not be much progress in climate action until the two largest economies can agree on a formula for how to go forward will now have to take a second look. Those who said the idea we may face a time this century where fossil fuel resources available to us will no longer actually be extracted and used — who thought this a naïve and imaginary scenario — will need to revisit their assumptions.

We are entering the age of peak fossil fuel use. We are also entering an age where financial and capital markets will begin to factor this into their view of the future of extractive industries in the fossil fuel sector. Some of the most prominent oil and gas companies are already working on the basis of a carbon price per ton, anywhere between \$40 and \$80 a ton. In other words, a carbon price may become an economic reality, a part of the fabric of how our global economy will function. Even those who used to argue that renewable energy will remain a marginal component of energy infrastructure now know that 50% of the new electricity generating infrastructure in 2013 worldwide was renewable. So anyone who doubts that these are momentous times perhaps needs to revisit some of the long held assumptions.

As I said at the opening, sometimes the contrast between discourse and perceived reality *vis a vis* China may be quite large. We are living in the midst of a nation redefining its development path, its technology base, the governance systems that it deploys, and the policy paradigms under which local governments, the private sector, and citizens are being guided. In the governance domain, the notion of the rule of law has entered onto the centre stage of a discourse about development and environment. These are not just policies adopted in theory. MEP and other Chinese agencies are implementing them.

The problems remain enormous, but the transformation that has been set in motion is equally promising in terms of its scale and reach. For us as a Council we should note that in trying to appreciate and understand where the big decision-making pathways will lead China in coming years, we should recognize that the next FYP is exactly such an opportunity. In the context of the 13th FYP China is certainly going to evolve its agenda of implementing its priorities, including that of a transition toward green development and an ecological civilization, by trying to answer a number of key questions. I think CCICED is well advised to try and appreciate and solicit these questions.

These transitions will not happen without tensions. Indeed the tensions among the economy, environment, and the social dimensions of sustainable development are neither unique nor unusual in terms of China, but they are defining in terms of the political discussions that will guide the articulation of the targets and pathways for the 13th FYP. Are we as a Council focused enough on trying to appreciate where some of these tensions — natural tensions, good tensions, legitimate tensions — are occurring? And are we addressing ourselves in an explicit and deliberate manner in order to assist China's leadership in best addressing these tensions?

A notion that is often referred to in the context of climate and other negotiations following the Rio 92 summit is that of "common but differentiated responsibility." This formula remains a defining framework of the responsibilities — and also the abilities — of countries to act. But what I think is of equal importance is how China looks at its own domestic interests and imperatives to act, and their relevance beyond its boundaries. Domestic imperative and global relevance may be another way we can frame some of the policy choices that are essentially defined by China's own priorities: imperatives to act and opportunities to act, but that need to be appreciated, interpreted, and understood also in terms of their global relevance.

China's energy security — its ability to peak in terms of carbon emissions — in significant part depends on the domestic deployment of renewable energy technology. But the impact of that deployment on the global renewable energy technology markets cannot be overstated. Indeed, South Africa's ability to conduct three auctions over 2½ years in inviting bids for the deployment and installation of renewable energy infrastructure would never have occurred to the tune of US\$ 14 billion if it had not been for the impact of China and its energy technology sector significantly bringing down the cost of such technology and making it accessible — not only to developing countries, but also to developed economies. What is more striking is that it is not just a matter of the cost of technology but also the experience and the deployment. South Africa, between these three auctions, has reduced significantly the cost of what it needs to pay for investors to install this infrastructure. And most remarkably, three-quarters of this financing was raised domestically in the capital and financial markets of South Africa.

These are transitions that speak as much to China's own imperatives to act as to the global relevance of those actions well beyond its borders. This is true not only in terms of energy security but also in terms of pollution. Its relevance in terms of its impact on air quality beyond China's boundaries, emissions of black carbon, and short lived climate pollutants, are just a couple of examples of how the narrative extends. A similar logic holds with HFCs and with the transitions that we have to put in place in a short period of time and that require investment. Again, China is leading in its domestic efforts even in the absence of a global agreement, but yet it is through a global agreement only that we can assure that HFCs don't become a major liability for the climate and the economies of many countries.

Trying to understand how the Council can address these opportunities in a more focused manner to provide advice that is relevant and also useful in addressing these choices is something we may want to focus on as we listen to the reports of this year's task forces. But also in terms of the work now before us on governance, on the rule of law, and finance, clearly all of them speak to key elements of this green development pathway, of the transition toward ecological civilization.

I appreciate the Chairperson's wording: we know it, we admit it, let us move on to actually doing something about it. This also speaks to an evolved role for this Council. CCICED does not need to engage in basic work on environmental impacts or environmental protection. Its greatest opportunity lies in reframing the environmental agenda, not just in terms of stopping or preventing, but in enabling and facilitating those transitions toward an ecological civilization that are perhaps better framed in terms of

risk and opportunity, rather than simply “prevent, prohibit, tax” or some other regulatory approach. It also speaks to a core tension that is not unique to China, but replicates itself in every country: the question between governance by the state, versus how markets function and are best regulated and are most efficiently directed in terms of a full cost-and-benefit analysis of options.

In our work as a Council we have a unique opportunity also to bring our diversity of experience to the attention not only of China’s leadership but indeed collectively also in the further evolution of the global agenda on development, sustainable development, on sustainable development goals, and indeed on the global response on climate change.

I feel privileged to have been part of this Council for a number of years. I believe its value time and again has been proved to be quite remarkable and unique, but always and especially because of the people, the focus, and the relevance of what we do in terms of the particular moment in time here in China, and increasingly in recent years, because of the particular moment in time globally. This Council is as much an asset to China as it is to the nations of the world.

Special Speech by the Minister of Environmental Protection

International Executive Vice Chairperson Peter Kent invited China’s Minister of Environmental Protection and CCICED Executive Vice Chairperson **Zhou Shengxian** to brief the Council in a special speech. Minister Zhou made these key points:

Currently, economic and social development in China has entered a “new normal” situation, with a complex overlap of adjustment of economic development speed, challenge of economic restructuring, and absorption of the effects of previous stimulus. In other words, three periods come together and interact.

During the recent APEC meeting, President Xi elaborated on the “new normal” situation of economic development in China, which features a transition from high-speed growth to moderately high-speed growth, optimization and upgrade of the economic structure, and change from investment-driven to innovation-driven development.

The “new normal” economic situation calls for a “new normal” for the construction of ecological civilization and for environmental protection.

First, the leadership of the Communist Party Central Committee and the State Council has put forward a series of new ideas, conclusions, and requirements for ecological civilization and environmental protection. Using the concept of ecological civilization to address environment and development and to promote a new pattern of modernization with harmony between nature and humanity is becoming the “new normal.”

Second, the traditional way of “pollution first, treatment later” leads nowhere and will be prohibitively expensive for China. Exploring a new pathway of environmental protection by developing and improving environmental economic policies to create a long-term mechanism of incentives and regulation is becoming the “new normal.”

Third, to protect and improve the eco-environment is to protect and improve productivity. Properly addressing the relationship between economic development and environmental protection, integrating economic restructuring and innovation with environmental protection, and promoting green, circular, and low-carbon development are becoming the “new normal.”

Fourth, the concept of ecological redlining must be firmly established. Using institutions to allow gradual restoration of over-used resources and environment, expand green spaces such as forests, lakes and wetlands, and enhance water conservation and environmental capacity are becoming the “new normal.”

Fifth, a sound eco-environment is expected by the general public. Enhancing efforts, investment, and policies on environmental governance and ecological protection with a focus on prominent environmental issues that affect public health, advancing the battle against air, water and soil pollution, and gradually improving environmental quality are all becoming the “new normal.”

Sixth, eco-environmental protection must be rooted on institutions and the rule of law. Deepening institutional reform; accelerating the establishment of an institutional system for ecological civilization; improving the systems for the spatial development of national land, the conservation and utilization of

resources, and environmental protection; and using institutions to protect the environment are becoming the “new normal.”

We need to observe and analyze the new situation and the tasks of environmental protection in China from the “new normal” perspective, propose new ideas and approaches, build and implement a framework for ecological civilization and environmental protection, promote the modernization of the eco-environmental governance system and capacity, and advance the progress of environment and development to the next new level.

Building a macro-level and systematic framework for ecological civilization is the concrete implementation of the ideas expressed by President Xi. We now have a better understanding of environmental protection after a long journey of exploration. This innovative approach to promote overall progress focuses on these key priorities:

First, explore new pathways toward environmental protection and further enrich the environmental protection theory system. This is an effective way to advance the construction of ecological civilization. We need to draw on pollution control experiences from developed countries. Meanwhile, we must consider our domestic situation and current development stage in order to promote reform and innovation. We shall use a new mindset and new approaches in governance, and make full use of organizational and institutional advantages to shorten the period of pollution control and achieve the objectives of “blue sky, green mountain, and clear water.” The core of exploring a new pathway for environmental protection is to properly address the relationship between economic development and environmental protection, use environmental protection as a driving force for the transformation and restructuring of the development mode, combine restructuring and innovation with eco-environmental protection, and promote the coordination and integration of economic development and environmental protection.

Second, develop a powerful environmental protection legal system with the implementation of the newly revised Environmental Protection Law. This is another powerful tool to promote the construction of ecological civilization. On 24 April 2014, the NPC approved the newly revised Environmental Protection Law which takes effect 1 January 2015. This basic law defines the principles and institutions of eco-environment protection. It has achieved several breakthroughs in areas such as improving the

regulation system and government accountability, raising the cost of violations, and promoting public participation. We will accelerate the development of relevant supporting regulations for the limitation of emissions, closing down facilities, detention, per diem penalties, referrals to police and information disclosure. We will also focus on the coordination and communication of public interest litigation, administrative accountability, administrative detention, and the handling of environmental criminal cases. Meanwhile, we will speed up the development and revision of special laws and regulations on air pollution control, soil protection, and nuclear safety, and promote the overall progress of environmental protection laws, regulations, and standards.

Third, taking the opportunity of environmental institutional reform, establish an environmental protection organizational system that regulates all types of pollutants. This is the institutional framework that safeguards the construction of ecological civilization. The core of eco-environmental protection is to establish and improve the regulation systems for pollution control, ecological protection, nuclear and radiation safety, environmental impact assessment, enforcement, and environmental monitoring and warning. Through institutional innovation we will establish an environmental management system that conducts unified regulation on all types of pollutants and pollution sources including point and non-point sources, stationary and mobile sources, and all types of media including air, soil, surface water, groundwater, and ocean. We will implement independent supervision and enforcement, and strengthen supervision over relevant departments and local governments in terms of their implementation of environmental protection laws and regulations.

Fourth, build a working system aimed at improving environmental quality through campaigns of air, water, and soil pollution control. This is the main battlefield for the construction of ecological civilization. We will stick to the principle of source prevention, process control, and punishment for consequences, use strict rules to strengthen air, water, and soil pollution control, address prominent environmental pollution issues that damage public health, and achieve gradual environmental quality improvement through practical actions. We will deeply implement the Atmospheric Pollution Prevention Action Plan, focus on key aspects of industrial restructuring, energy efficiency, vehicle exhaust emissions, and dust control, improve the mechanisms for participation of government, enterprise, and public, and implement regional joint prevention and control. We will strengthen water pollution control. We will focus our efforts on the improvement of polluted water bodies, especially those urban waters that affect large populations and attract public concerns. We will also implement soil pollution control, promote and

implement soil contamination remediation projects, and strengthen supervision over the development of contaminated land to ensure the environmental health of human habitat.

Promoting the modernization of the eco-environment governance system is an important pillar for the framework of ecological civilization and environmental protection. We must adapt to the demands of ecological civilization and to economic and social development, reform those institutions and mechanisms that are no longer compatible with practical development needs. We should develop new mechanisms, organizational systems, laws, and regulations to improve the scientific credibility of eco-environment protection systems and to achieve institutionalized and standardized environmental governance. We must pay more attention to environmental governance capacity building and to an enhanced awareness of the rule of law. We should use environmental laws and regulations, policies, and market approaches to manage the ecological environment. We must turn the advantages of the institutional system into real effects of eco-environment protection and improvement of environmental quality. Finally, we must keep improving the qualifications and capacity of environmental protection staff.

Currently, we will focus on the following key issues while promoting the modernization of the eco-environmental governance system and capacity:

First, we will promote the strategic transformation of environmental management. We want to transform from simple prevention of primary pollutants towards prevention of both primary and secondary pollutants, and transform from the control of single pollutants towards joint control of multi-pollutants, with eco-environmental quality improvement as objectives. We will establish a mechanism that uses environmental quality improvement as an objective to force emissions reduction and pollution control, which further drives a transition in the development mode and economic restructuring.

Second, we will deepen reform to facilitate functional change. We want to reform the environmental approval system, optimize approval processes, and simplify procedures to improve efficiency. We will also broaden the scope of suppliers of environmental public services and encourage procurement of services from social organizations.

Third, we aim to improve environmental management institutional systems and mechanisms. We wish to reform eco-environment management institutions, develop and improve environmental economic policies, reform pricing for resource products, promote environmental tax reform, speed up the improvement of eco-compensation mechanisms, promote environmental pollution liability insurance, and improve green credit policies.

Fourth, we intend to strengthen capacity building for eco-environmental protection. We will establish an advanced environmental monitoring and warning system, complete the enforcement and supervision system, and make more effective the environmental information support system in order to improve the implementation capacity of environmental departments.

Fifth, we will strengthen human resources capacity by improving the ideological, political, and scientific knowledge and working skills among environmental staff so as to increase the quality of scientific, democratic, and rule-of-law-based decisions.

In recent years China has been putting environmental protection in an important strategic position, promoting the construction of ecological civilization, and exploring new pathways for environmental protection. We have made progress in these areas:

First, efforts on pollution control have been strengthened. The “war on pollution” is showing gradual progress in the main battlefields of air, water, and soil. During the first three-quarters of this year, the average PM_{2.5} concentration is 61 micrograms per cubic meter for the first batch of 74 cities where new air quality standards have been applied. This is a reduction of 6.2% compared with the same period the last year. The average PM_{2.5} for Beijing, Tianjin, and cities in Hebei and surrounding provinces is 76 micrograms per cubic meter, a decrease of 14.6% compared with the same period the last year. The percentage of water quality monitoring points with worse than Class V among the national level monitoring cross-sections is 9.6%, a decrease of 1.1% from last year.

During the APEC meeting in November 2014, with joint efforts by various departments and local governments, the air quality in Beijing was kept generally good, with the average concentrations of all pollutants among the lowest levels for the recent five years. President Xi acknowledged this achievement, and hoped and believed that so-called “APEC blue” can be sustained through efforts. He hoped that

efforts be made to achieve, not only in Beijing but also all over the country, “blue sky, green mountain, and clear water” for future generations. This is also an important part of the Chinese Dream. The success of air quality control measures during APEC indicates that the smog problem can be solved with solid determination. We will draw on the experiences from the APEC meeting to improve the air pollution control campaign and implement measures stipulated in the Atmospheric Pollution Prevention Action Plan. We will keep up persistent efforts to turn “APEC blue” into a sustainable “China blue,” regardless of weather conditions.

We will accelerate the preparation of the Water Pollution Control Action Plan and the Soil Pollution Control Action Plan with clear responsibilities, detailed supporting measures, key priorities, and strict accountability requirements, and implement these plans as strictly as we did the Atmospheric Pollution Prevention Action Plan. Preparatory study of the 13th Five-Year Environmental Plan will be initiated to deeply analyze the key issues for the 13th FYP, propose basic ideas for plan development, and plan the key programs, projects, and policies.

Second, emission reduction of key pollutants is progressing smoothly. Total emission reduction of key pollutants is an accurate measure of environmental protection. Since the beginning of the 12th FYP, the total emissions of a number of pollutants, particularly nitrogen oxide (NO_x), has decreased significantly. We will keep pushing the emission reduction of key pollutants with a focus on the “six plants and one vehicle” (wastewater treatment plants, paper mills, livestock and poultry farms, thermal power plants, iron and steel plants, cement plants, and automobiles). We will also focus on supervising and pushing those areas and projects where progress lags behind schedule, improving policy measures for coal reduction or substitution and total emission quota management for construction projects, enforcing emission standards for key sectors, and adopting environmental protection electricity tariffs.

Third, using environmental protection to optimize economic development has shown promising effects. For the past three years, MEP has rejected, vetoed, or suspended the environmental impact assessment for 103 projects with total investment of RMB 532 billion. 289 national environmental standards have been issued. Great efforts have been made to promote the development of environmental industries. More strict air emission standards have been applied for sectors such as thermal power, iron and steel, petro-chemicals, cement, and non-ferrous industries in the key regions. We will adopt comprehensive measures to promote economic transition and upgrading. We will strictly control the

construction of “high pollution, high energy consumption, and resource-intensive” projects, as well as low-level repetition and overcapacity projects, and speed up the phasing-out of obsolete production capacity. We will also improve the environmental standards system, guide the application of environmental technologies, promote mandatory cleaner production audit, and facilitate the development of an environmental protection market.

Fourth, improvement of public well-being is progressing steadily. During 2010-2013, the central government allocated a special fund of RMB 11.6 billion to support heavy metal pollution control. The legacy issue of over 6.7 million tons of chromium slag that piled up for over half a century in 15 provinces has all been cleaned up. We have communicated with those municipal governments where there are prominent problems of drinking water sources protection and solved a number of legacy issues. We have strengthened law enforcement, mobilized enforcement teams, supervised enterprises, and investigated and penalized over 25,600 violations. We will further enhance our enforcement and supervision work and maintain the threat of punishment with hard measures and a “zero-tolerance” attitude toward environmental violations. We will conduct national environmental protection inspections to screen the environmental risks in various industrial parks and key polluting enterprises, penalize and/or remedy the problems identified, and ensure complete coverage of supervision and enforcement. We will strictly control the environmental risks related to heavy metal, hazardous waste, and chemicals, and properly handle environmental accidents.

Fifth, ecological and rural environmental protection has been strengthened. We have been implementing the China Biodiversity Conservation Strategy and Action Plan, and now the total number of nature reserves in China is 2,697. We have also implemented the “Pilot of Ecological Civilization Construction” where activities have been advocated in 16 pilot provinces and over 1,000 pilot cities and counties. Since 2008 the central government has allocated a special fund of RMB 25 billion to support environmental treatment in 59,000 villages which benefit over 110 million people. We will continue to strengthen ecological and rural environmental protection, deepen the construction and management of ecological civilization pilot regions, enhance the protection of key national ecological functional zones, and strengthen the integrated management of nature reserves. We will promote rural environmental improvement and non-point source rural pollution control, focusing on areas involved in national water transfer schemes and villages around the key drinking water sources.

Sixth, we have reformed the eco-environment protection system. We have issued technical guidelines for ecological functional redlining, and developed functional zoning proposals for four demonstration provinces including Inner Mongolia. We have developed the *Recommended Method for Environmental Damage Evaluation (2nd Edition)* with five technical guidelines. We have issued guidance for further promoting pilot demonstrations of emission rights use and trade system, and developed management regulations for pollution emission permits. We will adjust pollution fee standards, requiring the completion of adjustments before June 2015. We have proposed a basic framework for an environmental fund, and conducted a pilot of third-party treatment in Guangdong. We will further deepen reform in the eco-environment field following the predetermined timeline and roadmap, fully implement the ten priority reform tasks identified early in 2014, accelerate the development of general thoughts for ecological civilization institutional reform and the top-level design for eco-environment protection system reform, speed up the development of an indicator system for ecological civilization and ecological protection red-lining, and achieve material progress towards ecological civilization.

The CCICED Issues Paper

International Executive Vice Chairperson **Peter Kent** introduced CCICED Chief Advisors **Shen Guofang** and **Arthur Hanson**. Arthur Hanson outlined the 2014 Issues Paper and made these points:

I would like to bring together some of the points we have already heard, and draw attention to some of the cases that we actually see in China. I often have the pleasure of travelling around the country, so I want to try and put flesh on the bones of some of these discussions with some actual case studies.

We have had a blur of ideas that I think represent what I call a “turning point.” Tipping point to turning point. Clearly one thing that has happened in China is that the air pollution problem has seen a huge tipping point. Now, people realize that China wants a new direction in its relationship between environment and development. That is terrifically important.

What makes it difficult is that this is not just an environmental problem but also a social, economic, and political problem. This brings in the whole concept of ecological civilization and the interacting policy dialogues that have to take place. The people of China are distressed — a kind word — about the problem

of air pollution. This has become the tipping point. Now we know that this is a very long-term problem. It will not be solved by 2017 or even by 2025. China will have to live with air pollution for a long time and do its best, just as Los Angeles did.

So, we must think about “turning points.” These are when you regain confidence that you are on the way to a solution. You may not have the solution yet, but you have made visible progress. This is why, over the past few years we have talked about meeting technical numbers — gains that are important — but also about achieving a perceived improvement in environmental quality. That will be my starting point here: what do those tipping points look like? And, secondly and importantly, unfortunately there will be more tipping points. For example, we haven’t yet seen the full extent of soil pollution and how bad it is. There can be other things that relate to climate change that will almost certainly appear based on trends that are already underway, and these trends may produce other types of tipping points. So this is not a calamity, but we have to plan for dealing with environmental risks in the future that we don’t yet know much about and that will bring forth more surprises.

So, tipping point to turning point. Then there is another t-word as well, which is “transition.” How prepared is China for the great transition that is coming? We have heard of many significant initiatives, but how do they all hang together? Where are the points of stress? One important suggestion is that just as banks and financial institutions have to undergo “stress tests” to see how well they would do if there should be difficult circumstances, similarly China’s institutional framework to address environmental problems, in industrial sectors and in organizations like MEP, probably also needs its own kind of stress test. These institutions are not performing now: we all agree on this. The institutional framework is not up to the challenge of ecological civilization at this point. That’s a terrifically important finding.

So how do we move in this transition period? This period — because of the new approach to climate change, because of other plans like the biodiversity action plan — we now consider in terms of the coming 15 years. This is a window of opportunity that has been created by China and by its actions in recent years and that opens the possibility of addressing challenges in a new and different way. But what do these things look like on the ground when you start actually trying to do them?

First, here are some explanations. This language of “tipping points” can be described in different ways. I think of it simply as a ball that has been rolling along slowly, and suddenly — whammo! — it goes

somewhere you do not want it to go: into a deep hole, or maybe up a cliff. When that tipping point is reached, conditions change rapidly. It's a nonlinear system. Once you are in that hole — for example, smog — it's hard to get out of it. That's what we have difficulty coming to terms with. It's not simply that we will spend more money and the problem will go away. It's much more difficult than that. And that's why we have to understand how we can find a way toward a turning point.

I would say that the effort being put forward now in the war on pollution isn't going to reach the turning point. I don't think that by 2017 there will be a sufficient capacity yet on the air pollution problem, and certainly not on water and soil, to be convinced that the turning point has been reached. Maybe by 2020, the target date for achieving the *xiaokang* society, we will have that turning point. Let us hope for that.

Here are some of the case studies I mentioned.

I happened to be in Beijing during the marathon. About an hour before the race was due to start, air pollution was pretty grim. The situation brought to mind the term "mind the gap" because there is an aspiration and then there is reality. On the morning of the race, the organizers sent out a phone message to 30,000 potential runners, people from all over the world, to inform them that they may experience some "low to moderate haze." To my mind, that verges on the criminal. Many people did run that day. These are people risking their lungs. The Air Quality Index was 426, or hazardous — so bad that I chose not to put my nose outside the hotel that day. This is the problem: there is a credibility gap.

Here's another example of minding the gap. What did it take China to achieve so-called "APEC blue"? It took shutting down half the industry in the surrounding province and banning half the cars from the road. By good fortune, the weather cooperated. Mother Nature blew all this stuff away. But look at that gap, between where China is and where it wants to be. Think of it in economic terms: what did it cost to make that quick response? Here again is the gap between aspiration — what might be done — and how can you get to this turning point, because clearly we are not at a turning point yet.

The war on pollution is a tremendous effort — and I think this is the right terminology. This is one of the interesting things we have seen recently, this evocative language. A war on pollution: never before have we heard that kind of terminology in China. Xi Jinping has used another evocative term when he talks

about an energy revolution in China. So this is fundamentally different language and a fundamentally different approach.

Let's continue to "mind the gap" and go back and look at realities. During a recent trip through the Three Gorges I saw an example of the sorts of things China must forego if it is to take those measures that are good for China and good for the world too. I saw a whole mountain that comprises just coal. It's just sitting there, open, and is mined simply by blasting. The coal tumbles down the slope and an excavator sends it down a chute to a waiting boat. It's so simple. When you see how easy this is, you can understand why China has dragged its heels in coming to grips with this problem, and why it now faces a huge challenge with it.

In Hainan province, I saw a long sandy beach lined with windmills. The sight reminded me that China's grid system is not yet efficient enough to accept all this "extra" energy. One role of CCICED is to ask: how can we see this whole thing accelerated? China takes a conservative and responsible approach in setting targets, and insists that "when we make commitments, we want to meet them." But still, how can we accelerate the process? How can the mess be cleaned up surrounding the relationship between the state grid system and the coal industry, for example? These are things we need to explore.

One of our key issues is this whole new governance system. We specifically chose to use the term "governance" because we are talking not just about government, but also about enterprises, civil institutions, that whole network of things that go into governance. Right now it's clear that China's is a fragmented system that is not operating in any sense optimally, although China is making some real innovations.

For the first time in this forum, we need to talk about the impact of corruption on the environment. We know these impacts exist and we know they are important, not only in China but in many countries. We've tried to look at this issue in some depth. It's hard to find hard facts of course. I don't know whether CCICED should be playing a role in this, but we have to understand that many things get subverted, and many issues, whether in the past or the future, have to be addressed.

What is valuable for China's efforts is the amount of attention it is putting into ecological services, and stepping back further, into the value system that goes with the ecological civilization that has to become

part of China's culture and public behaviour. We have used this term "ecological services" a lot this year, in terms of the fundamental basis of ecosystems which have to be better valued, and which have to be in many cases restored.

Another term I like to use is "higher, faster returns." China has invested greatly in its science and technology efforts. Industrial research and development is making leaps and bounds. So, five or ten years from now, we will have more green transformative options. But how will these make it into operation quickly? What are the means for getting good ideas forward out of research institutions, out of start-up industries into the full commercialization that they deserve? CCICED must look much harder at this, because this is the new growth, the new economy that Minister Zhou is talking about.

What is the legal basis for ecological civilization? Minister Zhou notes the importance of the newly revised Environmental Protection Law. That is important. But how much more is needed to establish a legal system based on concepts of ecological civilization? I would argue that it has to involve a great deal of effort on the part of specific sectors. It has to involve itself on the basis of laws that govern many of the issues that relate to urbanization, for example. This is little understood at this point: how to proceed in a system where rule of law is still not fully developed? The important point is that we have the test case in front of us. As of 1 January 2015 we have a legal basis for thinking about ecological civilization.

How can this green transition idea be accelerated? We need to take a hard look at the period from the 13th to the 15th FYP. This may be the most important window of opportunity for China and for the world. Many things have to be done by 2030 if, for example, we are to survive the ravages of climate change. The problem is that this whole set of great announcements out of the Chinese government is still lacking in coherence. I do not see a grand transition strategy for China. I do not see a strategy that would get us from where we are to where green development is a standard. Surely this is something that China could use right now, as it starts setting in place the fundamentals of it during the 13th FYP and then after 2020 when the *xiaokang* society should be in existence.

It has been a major achievement for CCICED to look at how we can insert ideas about green supply chain into practical settings in cities like Tianjin and Shanghai. Tianjin has picked this up and run with it wonderfully. We have received well-deserved credit. We can take some of the ideas that have been

developed in this Council and now apply them not only in major cities in China, but also in other parts of the APEC region.

I am troubled by the pace of reform. Everyone agrees: you can't pollute first and clean up later. But the environment has been chasing the economy. This has been clear for more than two decades now, not only in China but in the rest of the world. In many areas of China, for example, the pace of reform in urbanization is slow. There is no urban planning by any standard. The economy continues to trump the environment. That reality will change. But how do you make it change? How, for example, do you create the green taxation system that we've been calling for, but that has been very slow in coming? The warning signal is that if the environment continues to lag, there will be a terrible price to pay in terms of new tipping points — and those will make the turning points disappear into the future.

In the area of financing, some interesting options are suddenly on the table. The BRICs Development Bank [now the New Development Bank] will have a strong connection with Shanghai, but where is the environmental component? How strongly will that be put in place? Questions like this need to be asked. Many things need to be addressed in the relationship among environment, development, and financing.

Another matter touches on the issue of corruption and also the confusion of weak laws. Almost all of China's hundreds of golf courses have a dubious legal status. Many people would say they are illegal. The reality is that the law is confused. You can draw on one set of laws that say the golf courses are legal; another set will say they are illegal. Many of these golf courses are actually developed on the basis of ecological civilization — almost on a redlining basis — and essentially under false pretenses. Sometimes they get away with it, but sometimes the bulldozer comes in and takes out all those greens and turns them into something else. The point is that this is an inefficient way to go. Modern law that follows principles is badly needed in many of the land use areas.

Ecological redlining is one of the most interesting, complex, and important topics we have addressed this year. It is a huge topic for China. Suddenly China will have ecological redlining throughout the country, including for example in the Qinghai plateau and the Tibet plateau. This might involve as much as 35% of China. This is a huge challenge and there will be lots of local problems with it. For example, some of the scenic areas around the Three Gorges might be classified as wasteland. Now if something is classified as

wasteland, it suggests it has no value and anything you do with it would be better. But we know that many of these lands are extremely important in terms of their ecological services value. So CCICED is suggesting that the major category of land use called “wasteland” should be abolished in China. Instead it should be called “ecological land.” And many of these lands would find their way into becoming redlined areas for their ecological services or other ecological values.

Here’s another example of how complex it will be to make some of these transitions. Xishuangbanna, Yunnan, is one of the great biodiversity rich areas of China. You can see the wild bananas in the rainforests there, a huge genetic stock of wild bananas. This is in a reserve area. But also in this reserve area live 6000 people, Dai and other minorities. They are doing well because of the high demand for rubber in China. Some of this reserve and many of the areas outside the reserve have been converted into producing rubber. What is the right balance? This is a district that would fit neatly into an ecological redlined area, but what do you do with this, given all the rubber that is grown there?

In this area we saw a device for recording the respiration of the soil. This measure tells a lot about the soil’s capacity for carbon storage. All this fits into a global carbon picture. This data that is being gathered is posted by electronic means and distributed around the world to whoever wants to use that information. This is the cutting edge of science as it relates to potential public policy on ecological redlining.

Changbaishan volcano, on the Jilin border with North Korea, is a water source that forms three rivers emptying out of the lake that is in the caldera. The rivers go into Russia, China, and North Korea. The key point is this: whatever happens for protection of this area (which is already protected as a “man and biosphere reserve”) is going to affect multiple national partners. As well, this area has been home to Siberian tigers, red deer and so forth. But the area is being chopped up, by roads and ski resorts. And the mountain is visited by many people, sometimes 40,000 a day. How do you start redlining? How much protection do you provide? How much can you really stop development? These are the kinds of questions and challenges that we face in the whole area of equal protection.

Another important point about redlining: consider how you bring red lines into the cities. In the case of Shenzhen, the mangrove red line that they have on their shoreline facing Hong Kong is fantastic. There

are walkways for the people to stroll and the area is filled with birds. It's wonderful. So urban redlining is a feasible thing to be doing in China.

We keep hearing the terms “unified and integrated management and innovation” — and this in the highly fragmented system of governance in China on environmental matters! Water is life in China, and water is one of the most difficult things to manage, either for quantity or quality, so we have to make some new starting points in terms of how we approach these problems. I applaud the efforts that MEP and the other ministries are doing, but on the institutional side it's not enough yet to guarantee an ecological civilization in China.

Item 6. Task Force and Policy Research Reports

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

Task Force on Evaluation and Prospects for a Green Transition Process in China

Li Ganjie introduced the task force co-chairpersons. **Fan Gang** is Director of China's National Economic Research Institute and Professor at Peking University HSBC Business School. **Lars-Erik Liljelund** is a member of CCICED and former Director-General of the Swedish Environmental Protection Agency. First, **Fan Gang** shared some of the task force's findings:

During the past ten years we have achieved a lot in terms of transformation and transition. The Chinese government has taken many measures to address pollution and emissions, with remarkable results. Great efforts have been made in the reduction of emissions intensity. And we have also improved the indicators for other pollutants. In spite of all that, we still face challenges, especially with air pollution.

Regional air pollution is getting more serious. This has caused great anxiety and worry among the general public. Our task is to do research on the causes of the worsening pollution. We have already solved some problems, but other problems remain. Our job is to identify these problems and make recommendations. We carry out the research in our task force from an economic perspective. We want to find out what factors are contributing to the worsening of the air pollution, or of pollution in general.

The first cause is the imbalance in the economic structure. During the past ten years, the imbalance in the investment and consumption structure had led to the worsening of pollution. Overinvestment, especially in certain sectors, has led not only to overcapacity but also to the over-consumption of energy. If we don't have this overcapacity, we may not have such serious pollution in China. Therefore it is important for us to change the economic development mode. It doesn't mean that we should slow development growth. It means that we should reduce the overcapacity and the over-consumption of energy.

Second, in the past we did not use the market-oriented or market-based approach. Rather we depended a lot on the administrative approach — and administrative controls in China are expensive. In addition, the pricing mechanism is distorted and so it cannot incentivize institutions and individuals to protect the environment. If we take a market-based mechanism, we should depend on price and tax leverages to incentivize people to protect the environment.

Third, we do have some incentive measures, for example, incentives to promote the development of renewables. However it seems our focus is too much on the supply side rather than the demand side. We have produced a lot of renewable equipment with great renewable capacity, but we are not making the best use of them. At present the percentage of renewables in use is still at the low end in China, even though we produce a lot. This has raised the consumption of energy which has led to even more serious pollution. So, our policies have been focusing on the supply side rather than the demand side, therefore China's consumers are not highly incentivized to use renewables.

Fourth, energy efficiency has been low for many years. State-owned enterprises and local governments are not sensitive to this and we do not have effective trading mechanisms to encourage enterprises to protect the environment. In addition, many environment departments and agencies are indifferent to the goals set for the protection of the environment, and it often happens that different government agencies are not effectively coordinated with one other. Usually only the department directly involved in the protection of the environment is interested in this goal, while for other departments this goal has not been integrated in their everyday work. On top of that, green financing has not been playing an important role. We do not yet have a mechanism to encourage green financing and green credit. There is also a lack of public awareness and participation. Only when all stakeholders are involved can we protect the environment in an efficient way.

In spite of these problems, we note in our research that we are given historic opportunities. The deterioration of the climate has greatly improved the public awareness of the importance of protecting the environment. The growing middle class is becoming more demanding about the quality of the environment. Altogether these have created good opportunities for us. At the same time the international community is making great efforts which can be a good reference for China. The Chinese government has been committed to institutional reform which definitely will have a positive impact on environmental governance institutions. According to our calculations, if the government could incorporate the right policies aimed at structural changes and green development, China could be able to continue its 7% growth rate for the coming years with significant improvement in environmental conditions. And a smaller share of investment in GDP may even produce stronger GDP growth if the remaining investment is directed to green technology and infrastructure and promotes green transition. So, we don't suggest slowing down the rate of economic development. We suggest that we should improve the policies and the institutions.

Now, **Lars-Erik Liljelund** outlined the main policy recommendations:

First, China should improve the economic structure with less and better targeted investment. It's important there be better balance between investments. China should avoid the tendency to overinvest, because that just produces higher emissions due to excessive energy consumption. Policy adjustments are also needed for structural rebalance, fiscal and financial reforms, improvement in income distribution and the social safety net. Furthermore, there is need for transformation in government functions and for increased social service and public security spending.

Second, China should promote a shift in resource use via green taxation and market-based instruments.

Third, China should stimulate the demand for clean technology via targeted policies. Here the government should maintain and reinforce demand-side policies to support renewable energy industries. Clearer demand-side policies should be applied more broadly to expand all green technology markets and help address overcapacity in green industries.

Fourth, China should pursue green urbanization policies. The cities, and the buildings in the cities, must be efficient enough to manage energy consumption and also reduce pollution. Scenarios by the task force suggest fully enforcing compulsory building standards for energy efficiency and expanding inter-city and urban rail transport, which could lower energy consumption by about 5% to 12% by around 2030.

Fifth, China needs financial sector reforms to catalyze a green transition. Financial institutions should incorporate environmental factors in profit calculations, and the allocation of financial resources should avoid polluting activities and should create opportunities for green growth.

Sixth, there must be stringent caps on fossil fuel consumption. In addition to intensity control, China needs to adopt national quantity target control on energy consumption, with quota allocation for regions and for main industries and companies.

If all these policies can be implemented, China may achieve significant progress in green transition by 2030. Combining all the policies we suggest above, it is possible to achieve the goals in the following three steps: first, renewable energy should grow faster than other energy sources by 2020; second, non-fossil energy could grow faster than fossil fuels by 2025; third (already announced by President Xi at the APEC meeting) fossil energy consumption could peak about 2030 or 2040, and then decline in absolute

terms. “Dirty” fossil energy consumption peaks around 2020, but after that natural gas continues to increase until 2040.

These different scenarios of course have a combined effect and these effects have been analyzed. We have calculated the output from these scenarios, in terms of the effect on fossil energy demand in energy standard coal equivalents. Besides the “business as usual” scenario, there are scenarios assuming investment consumption rebalance, industrial structure rebalance, resource tax and electricity price reform, improving energy structure, and transportation, promotion, and building energy saving.

Together, these give huge combined effects and for this reason we strongly recommend that the government prioritize institutional reforms and policy adjustments to rebalance the economic structure by 10% by 2020. We recommend a 10% increase in the consumption/GDP ratio, and a corresponding 10% decrease in the investment/GDP ratio. Beyond 2020 government should adjust economic and industrial structures further in a way that is appropriate to conditions at the time.

Task Force on Institutional Innovation for Environmental Protection in the Context of Ecological Civilization

The co-chairpersons of this task force are **Wang Yuqing**, President of the Chinese Society for Environmental Sciences, and **Robyn Kruk**, former Secretary of Australia’s Department of Sustainability, Environment, Water, Population and Communities. **Wang Yuqing** began by outlining the task force’s background, research process, and key findings:

This task force exists for three reasons. First, it is objective-oriented. The Party Congress and the Third Plenum set out to develop ecological civilization institutional systems so we can use institutions to protect the environment. And the eco-environmental protection management system needs to be reformed. So this is the objective set by the Party and by the government. Second, the task force is also problem- or issue-oriented. China now has a serious issue ecologically, and resources and energy are now big challenges for us. The flaws and problems and gaps in existing institutions and systems have been exposed. And third, people have a great desire to improve environmental quality.

In terms of how we have approached this research project, the overall objective of reform in China is the modernization of the governance system and capacity. So, in the case of environmental reform, we should also establish the objective to modernize environmental protection institutions and capacity. Here

we believe that institutional arrangements are the most important — even more important than funding and technology, more important than morality and discipline.

We believe that reform will stir a lot of interest. It will run into difficulties, but an institutional setup or system can be an effective tool to address these problems. We know that reform is an evolving process and we need a long-term approach. That's why we need a stable institutional framework.

We have looked at problematic areas which were not given enough attention in the past: social governance of the environment; the institutional reform of environmental protection; and the strategic transformation for environmental management. From this basis we have proposed the general idea for institutional innovation.

As you all know, the serious environmental problems in China have exposed gaps in the governance system. In our report we analyzed the root causes of these problems. First of all, China is a developing country. It is in the stage of economic development and also there is this stage of environmental management. Second, there is an institutional problem. Third, there is a mechanism problem. Forth, there is the problem with the guiding principles for development.

I would like to talk about the key findings.

About the reform of environmental protection institutions, we should define three relationships. First, if we can well define the relationship among government, market, and society, we can clarify the roles and responsibilities of the different parties. Second, for eco-protection we should define the relationship between unified management and specialized management. Third, we should clarify the relationship between central and local governments in terms of responsibility and authority for environmental management. Without proper arrangements, there is no institutional support.

The overall direction is to increase the authority and power of the environmental departments, and then other departments should be given clear environmental responsibilities. There should also be an accountability mechanism, a cross-regional coordination mechanism, and better supervision mechanisms over local governments.

We need strategic transformation for environmental management. We have been much focused on total emission controls for main pollutants, but in future we should be more focused on the overall improvement in environmental quality.

We should enhance social governance for environmental management. We know this is a weak link. We should establish a multi-stakeholder governance structure led by the government.

Regarding the general direction of environmental management institutional reform, we believe that the central and local governments must lead by example by complying with environmental laws and regulations. Concepts of ecological civilization should be incorporated into the whole decision-making process. Reform efforts should be focused on areas of greatest risk and of greatest public concern and potential gains. We believe that we should adhere to the rule of law, and we should encourage and mobilize all stakeholders to be engaged in environmental protection. We should form a multi-stakeholder system led by the government. Different stakeholders can support each another, but they can also act as a check-and-balance mechanism with one another. In China's context it is important that this be led by the government, but we should also enable market and the general public to play their roles.

Finally, we should use a new approach where the state government would provide macro guidance but local government should be given room for innovation. China is a vast country, and localities differ greatly in terms of their economic development and environmental situation. We should encourage local governments to devise tailor-made solutions for local environmental problems. The state should provide basic laws and regulations, as well as goals, objectives, and standards, and in the meantime should encourage local governments to be innovative and responsible. And then the central government should enhance its supervision over local governments. Information disclosure and transparency are also important.

Robyn Kruk concluded the presentation by highlighting the task force's recommendations:

Our task force spent a lot of time working out what institutional innovation is. We came to the agreement that it was, in effect: ensuring that institutions are in alignment with the ambitions of the government, that the delivery mechanism was sound enough to deliver on the promises and ambitions of the people and the government.

Our conclusion was that China still has to mind the gap. We were impressed with the work achieved in the past few years, but our message is that we need to fill the gap. Certainly the progress that has been made makes it a positive situation.

I want to reflect briefly on the international experiences. The reality is that the challenge is about implementation. We avoided putting forward new policies to CCICED, and we avoided recommending new structures unless it was especially necessary. Basically there are a number of lessons that jurisdictions have learned internationally, and everyone admitted quickly that no one had got implementation right. Most of us are in a transition process, trying to balance the high profile demands of growth, social development, economic development, and the desire to have a high quality environment.

A number of international experiences came through consistently.

First is the importance of an effective oversight mechanism. This is not just about the environmental agency. There is a need in all jurisdictions with an oversight mechanism to have an adjustment mechanism, a regular revision of policy, and the ability to adapt when crises occur. There has also been a trend to actually “hard wire,” that is, to give statutory force or an enduring capacity to institutional arrangements. Most of those are intended to ensure that the government is not blind to accurate data in making those rebalancing decisions. It also ensures that the difficult problems do not stay stuck within government; after all, it is expensive and time consuming to enforce environmental regulations.

Second, devolution has been picked up in China’s policy making, for example, in the desire for the national government to have the authority and ability to set macro policies and make laws, then devolve decision making to the lowest level possible — but also have the capacity to assess that when things go wrong it has the ability to take a national approach.

Third, distributed or social governance comes up in every jurisdiction as being part of the solution. It is important in building consensus, but also in acknowledging that it is the role not just of government to work toward that balance. This is something that the citizenry, the public, and enterprises have the desire and the ability and the need to become involved in.

Fourth, we saw various processes to maintain or regain public trust. Yesterday, speakers referred to the high degree of unhappiness in China about pollution levels. In most jurisdictions there have been similar pressure points — or tipping points. Various mechanisms have been put in place to either regain or maintain that public trust. It comes back to effective engagement.

Fifth, the integration of good science, data, and independent oversight sits at the heart of most of the mechanisms we have reviewed and some of the modernization principles that our task force was asked to address.

Six, capacity is arguably the most critical factor. It is not simply about money. It is about having a workforce that is educated, trained, adequately resourced, supported, and able, and backed by the government to undertake difficult tasks involving tensions.

As for our recommendations, I am sorry that we have focused only on a small part of this equation. We've touched on the areas of ecology and pollution, but we recognize there is much work to be done in areas such as soil, where the government has an ambitious agenda to achieve. Some of the principles we've espoused in our recommendations, however, provide a broad institutional basis and are generally applicable to those areas as well.

Recommendation 1: Mobilize governmental, social, and economic resources to build ecological civilization. Clearly define responsibilities, establish coordination mechanisms and policies, develop integrated goals, and form synergies.

One thing that impressed the task force members is that China has an agenda more systematic and sincere than that seen on other jurisdictions. The key to institutional innovation and successful implementation is leadership ability. The commitment of government is probably the most significant institutional innovation — and you can't build that into your bureaucracy. China has that, and China is well placed in that regard.

This recommendation touches on a group of issues. Some are clearly more important than others. The aim is to harmonize and mobilize a range of sources — parties, policies, plans, the machinery of government. The point is: there is no shortage of environmental or resource law in China. The challenge is not to have a tangle of law that makes it more complex or difficult to achieve effective outcomes. Instead we are talking about rebalancing. Our recommendations put forward some important suggestions about an overarching, top-level oversight mechanism with the authority to clarify roles, to bring forward some of the sticky difficult problems that often sit in the bureaucracy for years, and to look at whether progress is being made. This is not a job that can be given to the environment ministry or to any other agency. It is only the government as a whole and the leadership team that has the authority to make those decisions.

Tensions are inevitable. The issue of a “new normal” was also spelled out. Particularly because the ecological civilization agenda is such an ambitious one, the oversight mechanism is critical. The new state is a collaborative synergy.

Recommendation 2: Establish incentive mechanisms to promote environmental protection.

We have already heard about the importance of the rule of law, the ability to demonstrate leadership, the importance of a strong and effective regulatory system. But at the same time incentives have to progress at an equal pace. Over the last ten years there have been excellent policies that do just that: eco-compensation, pricing reforms, fiscal reforms. These have ensured that a plus-and-minus approach is followed simultaneously and the government doesn't rely totally on a command-and-control approach. Meanwhile, our colleagues in the previous task force presentation have talked about the need to actually establish market-based and credit mechanisms as well.

Recommendation 3: Strengthen social governance for environmental protection and develop a multi-stakeholder governance model.

This is a critical recommendation — and the one that is most “underdone.” It will not grow without the input of government. It is not just about community and citizens. It is also about providing a climate where enterprises become active partners in their desire to rebalance, adjust, and improve environmental quality, at the same time maintaining growth. In many instances we advocate there must be new policy to remove barriers. There must be protections given to individuals and they must have the right to access information.

Although a number of other detailed recommendations are spelled out in this area, there is a need for further prescription. All task force members, by the way, were impressed with the Aarhus convention, which was explained to us by European colleagues as one means to have a structured inclusion strategy.

Recommendation 4: Match environmental protection departments' authority, capacity, and resources to their supervision and management functions and tasks.

We are simply saying: match the resources to the task available. This is not about one agency. This is about looking at environmental entities across government. The task force feels strongly that current arrangements will not deliver on the government's expectations in relation to ecological civilization. We've touched on a number of areas where we say: match the task with the capacity. Some of this is financial; for example, it's worrying when financial investment in environmental areas is not keeping pace. In many instances this is about giving the environmental entities the authority, capacity, training, and the necessary tools to undertake the job.

I do want to acknowledge, having myself been an environmental regulator, this is a difficult job, and I want to acknowledge the work of MEP so far. It's often a lonely job, but one of the things that appeals to us about ecological civilization is that the transformative concept makes it a shared responsibility and not just one that is left to the environmental agencies.

Recommendation 5: Integrate environmental management institutions for efficiency and effectiveness.

In this area are a number of issues related to detailed changes we are recommending. We strongly ask for integration between the various instruments as well. To undertake effectively some of the ambitions of ecological civilization, we need to better align the processes involved in environmental impact assessment, land use decision making, and pollution permits. There was some definite strength in those areas, but the task force made a number of recommendations for strengthening that area, most significantly in relation to the emissions permit system. It was noted that the current system is expensive, therefore ineffective and inefficient. This is an area in need of great change, and one where considerable gains can be made.

We argue strongly for close cooperation with the critical work of the redlining task force. The government has made a strong commitment to look at the carrying capacity of natural resources and land, and tie decisions to that information base. There are a whole range of assumptions we have to make based around good science, good data, and the ability of people to make some difficult assessment decisions. We argue in the task force for a strong relationship between the environment and health. Health is a concern for all jurisdictions. It is data that are often readily accessible, and it is often the data most critical in terms of making decisions about risk.

Recommendation 6: Recommendations for further CCICED studies.

Finally — and this is an admission that the task given to us is huge — we encourage a far more detailed examination of a number of issues. This whole area is so important we have resisted the temptation to provide sexy new recommendations. Instead, we argue for a range of changes to the existing machinery of government, to ensure that the machinery can deliver on the government's ambitions.

Special Policy Study on Good City Models under the Concept of Ecological Civilization

This special policy group's work is presented by study group co-chairperson **Li Xiaojiang**, President of the China Academy of Urban Planning and Design, and by study group member **Gørild Heggelund**, Senior Research Fellow at Fridtjof Nansen Institute. **Li Xiaojiang** made the following points about the group's organizational challenges and the problems of urbanization in China:

If we have achieved some consensus and good research findings, then it is due to the diversified nature of the group and its activities. The case studies drew upon experiences in China, Germany, and the Netherlands. We had less than half a year, but our Chinese and foreign experts worked for more than 20 days nonstop.

According to our research, by 2030, when population reaches its peak level, the urbanization rate in China will be around 60%. By 2040 the rate will be 75%. That is a huge movement of people from rural areas to cities.

China is an agriculturally dominant society. During the past three decades, according to the World Bank, the urbanization process that took 100 to 150 years in western countries took less than 30 years in China. This is a huge miracle. But this urbanization in China is not complete. It's not simply moving a family from countryside to city. In fact it's a separation of the family in that process. Many peasants are kind of "half city dwellers." Also it's a very extensive model in which we use a lot of resources. It's high speed but it's not sustainable. And we have not achieved harmonized social development.

During the first decade, the first period of industrialization, western workers moved east. But now it's different. Now there is more movement within a given area. Furthermore, many people live in both urban and rural areas, that is, they work in both agriculture and industry. That is a new pattern.

Urbanization is not only an issue for China's coastal areas, but also for the development of the vast countryside. In China we have 260 million migrant workers, so organization is a complex problem. If we look deep into this population of migrant workers, among those who are working in the cities, 51% of them have not quit or left the residence where they were born. They are still staying in the county. So it's a kind of localized urbanization. What kind of impact does this model have on the consumption of resources?

In the past five years, big cities have been drawing a lot of population, but not in a stable way. However for small cities with less than 500,000 people, we see steady population growth. In fact, 54% of the

national population live in these small towns, that is, at county level or smaller. And the percentage is 70% and 60% in the western part of China.

So what kind of problems are we facing? We have three objectives: the permanent settling of 100 million migrant workers and their families in cities; improved housing for 100 million urban dwellers so that their living standards reach to the city dweller level; and new employment for 100 million people. With these objectives in mind, the central government is aware of the major characteristics of China's urbanization: the population keeps going to the cities; we have a larger middle class which consumes more resources; and the population is aging. So we know that we are going to consume more resources and that pollution will be more serious. Pollution will spread from eastern coastal areas to the western part of the country, and from big cities to small and medium sized cities. Also the fiscal pressure on the Chinese government will be greater.

Based on these challenges, we have identified nine key problems:

First, the lack of policy coherence. China probably is the country which has the largest degree of planning. But if you take a closer look, most of this planning is focused on resource development and economic development, but very little is focused on protection of resources or control of the environment.

Second, high-speed development plus spatial expansion equals excessive resource consumption. China's urbanization primarily depends on excessive resource consumption, because of the land-based fiscal revenue system in many cities. That's why expansion of the cities is so important.

Third, consumption and extreme incursion into natural areas cannot be sustained. In many instances, urban planning does not respect the natural landscape and cultural heritage.

Fourth, urban developments in China do not take precautions against climate change. We always think climate change is something distant, in the future, but actually we see in Chinese news reports now a lot of extreme weather and disasters.

Fifth, fast construction creates wasteful imbalances and lack of environmental services to inhabitants, causing livability problems. We rely too much on infrastructure development and housing projects, so that many relatively new construction and housing projects are being demolished within ten years.

Sixth, the urban-regional transport system is unbalanced and is causing extreme air pollution. Despite high expenditures on public transportation, the transportation system in cities is primarily auto driven, especially in the Yangtze River delta and Pearl River delta areas.

Seventh, natural and cultural heritage is being lost on a large scale, the identities and attractiveness of cities are being eroded, and livability and human scale are weak. We are not paying attention to the human dimensions.

Eighth, China lacks a regulatory and fiscal mechanism to promote sustainable development and efficient resource use. Problems relate to the administrative systems, the legal systems, the pricing mechanism, and the external composition mechanism.

Ninth, mechanisms to encourage public participation in environmental aspects of urban development must be improved. We need a complete social governance system to lead the sound development of cities, which means participation from the general public, businesses, and non-governmental organizations (NGOs).

Next, **Gørild Heggelund** briefly presented the international perspective and outlined the study group's policy recommendations:

There is no single best city model. When we look at international perspectives and experiences we find many kinds of city rankings. Cities are ranked according to different criteria, such as leisure area, closeness to water, environmental quality, urban life, culture, and so on. Our study highlights the fact that none of these qualities can simply be copied and reproduced somewhere else. They depend on the local and spatial and historical context, and therefore have to be tailor-made to each city.

Also the study emphasizes that there are a number of dimensions and key issues that should be considered in every well-planned urban design with regard to economic, social, and ecological sustainability and governance issues.

Another important point is that spatial layout endures for centuries. For this reason we need to think clearly and have good planning, because eventually — with an aging population, for example — there might be need for new infrastructure or public facilities.

An integrated, well-informed approach is needed at city level. Our study suggests it is crucial for policy outcomes to have integrated urban planning that increases policy coherence between sectors and silos. And we believe that by using strategic environmental assessment as a tool one will improve integration. Strategic environmental assessment structures the process and discussion in order to have integrated diagnostics and assessment of different policies. One definition widely used for strategic environmental assessment is that it is “an analytical and participatory approach aiming to integrate environmental considerations into policies and plans while evaluating the inter-linkages with economic and social considerations.”

Around the globe, cities lead in their own development. In China, cities already have led development. But they can also continue to serve as engines of growth and as models for innovative development, as leaders in environmental protection, and as places that have a high quality of life, prosperity, and health. This will be done within the national framework and also it should be accountable to the public and to involve the public who should have increased participation in the process.

Chinese cities need stable and balanced financial resources. The study identifies the need for Chinese cities to be more independent: now, income for cities depends to a large extent on land development. This has created an incentive for city expansion which has led to an enormous building boom with high vacancy rates around the country. One should think of alternatives to land development, for instance, rule-based transfers from the central government, budgets, or property taxation.

We also need to retain flexibility in urban planning so that cities can adapt to future demands. Our team visited Almere in the Netherlands, a city founded in the 1970s. Space has been reserved to allow the city to upgrade and eventually expand the city centre. This is something to keep in mind for Chinese cities.

We have ten recommendations. Here are some brief comments.

First, provinces should set up or strengthen spatial control systems and use redlining to protect ecologically sensitive areas in peri-urban zones. We think there needs to be authority at provincial and municipal levels to oversee this spatial development. And redlining can also help to prevent uncontrolled use of green fields for urban development, and stop urban sprawl. Yesterday we saw a good example of this with Art Hanson’s focus on the Shenzhen mangrove line.

Second, prioritize spatial layout which improves the health of residents. This could be achieved through transport and traffic planning.

Third, re-use derelict land and existing building structures. Look at what is happening globally, in many countries: historic buildings have received new functions. Industrial and religious buildings have become shops, museums, libraries. Vacant office buildings are being transformed into residential buildings. China should look into this as well.

Fourth, strengthen regional collaboration. We think this could be important in relation to shared resources. Cities in a watershed could share water structures. Networks of cities could exchange information and increase collaboration.

Fifth, ensure that local public finance is independent of active land development. I have already addressed this.

Sixth, encourage adaptive risk management which includes climate resilience. China is highly vulnerable to climate change impacts, and so greater attention should be given to climate resilience and other urban environmental planning issues within an adaptive, risk assessment framework. In 2013 China released its national adaptation strategy, which will be an important agenda to mainstream climate resilience and adaptation capacity in Chinese cities.

Seventh, establish green bond markets for financing investments in green urban infrastructure. It is important to look into new funding sources. Cities could be permitted to engage in green bond markets as a means to invest in green urban infrastructure

Eighth, provide training for officials. This could include awareness campaigns and urban educational initiatives, for example on different ways of saving resources or on promoting low-carbon green development.

Ninth, human-scale urban design should be to the scale of pedestrians. Protect and use existing qualities such as landscape and cultural heritage to strengthen the identity of the city and residents. Chinese cities are large. It is difficult to cross the streets, but we hope to guide urban layout and road networks toward a reasonable scale, suitable for pedestrians and bicycles. As for city identity, we find it is important to avoid just copying what has been constructed in every other city around China.

Tenth, China needs a system to monitor and assess urban developments, to set targets and carry out performance evaluations, and to facilitate and structure meaningful participation. China needs to

establish a full set of environment and resource use targets for the performance evaluation of city officials, and to create a framework for monitoring and performance evaluation of planning decisions. This system would offer accountability to the government and would inform the public. And of course it is important to have the public participating in decision making. It raises the public's awareness, and also creates a sense of ownership for the public.

Special Policy Study on Institutional Innovation of Eco-Environmental Redlining

Li Ganjie introduced the co-chairpersons leading this special policy group. **Ouyang Zhiyun** is Professor and Deputy Director at the Research Center for Eco-Environmental Sciences at the Chinese Academy of Sciences. **Derek Thompson** is former Deputy Minister of Environment, British Columbia, Canada. **Derek Thompson** opened with these observations providing background and analysis:

This policy study models practical implementation delivery on the clear statements of policy direction from government leaders. You will hear echoes of much that was discussed already, particularly in the task force on institutions. Our study shows that identifying potential red lines, although technically challenging, is actually pretty straightforward. The tough task will be weighing competing interests and managing inside those lines. Ecological redlining is a vital and necessary step for China, but it will be expensive and difficult, and it will be meaningless without bigger shifts, including but not limited to institutional change.

When we began work on this, I asked: What is the issue? What are we trying to solve? What are we trying to fix? We must recognize that China is not dealing effectively with the critical risks and consequences of diminishing ecological security. If these problems are not dealt with, they will severely limit China's ability to achieve the great goal of ecological civilization. Climate change and irrational human activities are leading to ecological degradation. As a consequence, critical ecological services and functions that support society are being impaired. And this in turn creates a series of ecological problems, putting at risk trillions of yuan in value and support for social and economic progress.

It is true that China has made often heroic efforts and is achieving real progress in identifying critical environmental issues and putting solutions in place, for example, major reforestation works and programs to deal with desertification, as well as programs to clean up ecological damage. However, the underlying trend of increasing ecological degradation has not been reversed, and relying on the

development and construction solution is not working. In that context, ecological redlining seeks to define an unbreachable barrier, to prevent and reverse this continued degradation.

Fortunately, Chinese leadership has stated a clear policy and intent and direction, consistently over a number of years. The leaders have succinctly set the vision, and by implication at least, recognized the nature of the problem, and also provided clear expectations and set some limits that have informed our investigation. However, as we have heard from many officials, the implementation has been weak and uncertain.

In that context, our work assignment was about how to establish ecological protection red lines (EPRLs) — not whether to do so. In short, it was about identifying the key pieces of the puzzle, about finding what will translate policy into effective practice.

So what did we find? What are the challenges? Pretty well every official who talked to us confirmed there is a significant gap in institutional focus, clarity, cohesion, direction, and capacity to undertake redlining. In the absence of this clarity and direction, we see generally — but fortunately not exclusively — competition, rather than cooperation, between strong silos. As a result, to paraphrase one senior official, “China has enough lines and colors to knit a wonderful sweater, but not to run a country.”

There is no accountable central agency that is responsible for work on ecology, its conservation and management. Unsurprisingly, therefore, there is no agreement on what this is all about, or on how to move forward, let alone on how to coordinate the work. Plus there is a lot of uncertainty about the knowledge and technical underpinnings for doing that work. In consequence, there is little cohesive direction, no incentive, and no delivery on a practical, national implementation mechanism. Particularly troubling is that, at local levels where it matters most, there is no sense yet of a consistent direction.

Fortunately, in China we do find models that are helpful indicators of the right path ahead. For example, the pilot work on ecological protection redlining that is underway in Shenzhen, and the positive course being charted by some provinces. And China is now technically the equal of any country I’ve worked in on the quality of its reference data on the nature and status of environment and the ecology. And I think the work on ecosystem assessment by the Chinese Academy of Science’s Research Center for Eco-Environmental Sciences provided us with a world-leading information baseline for our analysis and recommendations. There is a strong foundation. In fact the technical analytic by various ministries, including but not only MEP, demonstrates the potential for integrative analysis.

There were also some useful lessons internationally, but we must be cautious in how we apply them. Some of the cornerstones that we see for ecological protection redlining include land use planning. Many countries have systematic approaches to inclusion of ecological concerns and identification of protected area in land use planning and in marine and water planning. And they have learned how to reconcile competing interests.

As for functional protected area systems, internationally there are many examples of national parks and protected areas at the core of these sorts of initiatives. These systems are established by clear and forceful laws, and managed through dedicated budgets by professional specialists. Cooperation and coordination is a priority. There are practical lessons in many countries now on initiatives to enhance coordination while also ensuring increased and clear accountability. Transparency of course, and wide engagement are strong lessons.

Finally, the rules for monitoring and professional enforcement mechanisms are foundations on which is built an effective, predictable, and accountable management approach. While China has made a strong start on this, the provision of positive incentives is a particular concern.

Having said all this about the international experience, let's recognize that no other country has done what China intends to do here, and certainly not at this stage of development.

Our conclusions are based on the above analysis and they underpin our recommendations. Clearly, things as they stand show severe ecological damage that undermines the ability to achieve ecological civilization. But fortunately China is well positioned to tackle these problems. Particularly, the reform process is timely and if properly focused can give effective direction. There exists a strong technical knowledge base that is necessary for this sort of work, and the strong experience in a limited land use planning approach gives a good basis to begin. China also has some outstanding protected areas, even if they are poorly managed at this point.

Undoubtedly, there is overwhelming need to make significant institutional change. This will affect many power bases, and the impacts on existing resource management and economic programs will be challenging to manage. Ecological protection redlining is one — but not the only — essential part of the response to ecological degradation. Although challenging to do, it can become a practical tool if these institutional changes are made and consistently followed up.

So what needs to be done? Stop the infighting. Set one definition, and set the direction in law with clear rules and enforce them. Deal with the lack of any conservation outcomes from land use planning at this time, and set clear targets for the redlining in order to drive decision makers. Establish clear institutional structures and approaches that focus on ecological conservation and management. Enable the inclusion of local communities and build the capacity for both planning and management solutions. Enable a proper and fully functional protected area system, and show clear intent by immediately freezing development in the identified areas of key national ecological value. This will allow planning to proceed, spur decision making, and protect the nation from nuisance applications for compensation (I don't make that recommendation lightly). Finally, establish incentives for local governments and local people to do the job while simultaneously having transparent, monitored, and effective rules and enforcement.

Next, **Ouyang Zhiyun** presented the policy group's recommendations, and made these points:

The first recommendation defines the characteristics of ecological protection red lines (EPRLs). An EPRL defines the minimum spatial area within which strict development controls ensure sustainable provision of ecosystem services vital for national and regional development. EPRLs include natural and constructed ecosystems, terrestrial, freshwater and marine, and degraded areas with potential for ecological restoration to valuable health. EPRLs include three components: an ecosystem services protection line, a living environment security protection line, and a biological diversity protection line.

We need to set a goal for the red line. A national target of 35% of China's land area should be within EPRLs in order to guarantee ecological security. This can guarantee ecological services and at the same time make it more secure.

Second, we must reform spatial planning systems to include EPRLs. It is important to develop a management approach. Furthermore, we need a new land use category called ecological land. At present we have land use for agricultural and construction purposes, but we should add ecological land in the existing land use categories in China.

Once ecological lands have been identified, we must ensure that all urban development planning for land use involves ecological red lining. It is important to apply it also to marine ecology.

Third, we need to establish new national coordinating and monitoring mechanisms. We need a new organization to integrate national ecological strategy and coordinate among different agencies and protected areas. At present we have different kinds of protected areas which are managed by fragmented

and overlapping functionalities. We need to implement a unified monitoring plan and organize regional major ecological restoration projects, plan and implement the new payment system for ecological performance, and further improve the capacity of ecological development. In the past we invested a lot; however, it seems a lot of resources have been wasted. Therefore we need an organization to coordinate the use of resources.

Fourth, we need to renew and expand a national protected areas system. At present there are all kinds of different protected areas with a lot of overlapping functionalities. Therefore the system cannot play the role it should. We should develop a single integrated national protection system that includes national parks, nature reserves, and so on. And we also need to examine the needs and requirements for a national parks agency and its administration. We also need a protected area law in order to strengthen management. The system needs to be well coordinated, otherwise it may lead to a waste of resources.

Fifth, we should design and implement a payments system for performance in ecological protection redlining. Owners and operators should be compensated because the area where they are located has been redlined.

There are some implantation priorities. Immediately we need to coordinate offices on redlining so that we can have a better and more effective system. In one year's time we should have renewed the institutions for land use planning, drawn proposed ecological protection red lines, and developed a new ecological compensation system. In about five to ten years we should have set up the complete mechanism to define ecological redlining.

Special Policy Study on Performance Evaluation on the Action Plan of Air Pollution Prevention and Control and Regional Coordination Mechanism

The chairpersons of this study group are CCICED member **Hao Jiming**, Professor in the School of Environment at Tsinghua University, and **Michael P. Walsh**, founding Chairman of the International Council on Clean Transportation. **Hao Jiming** opened the presentation with these points:

In China the emission of main pollutants is tremendous. Although people are concerned about air quality, emission levels remain very high. For the discharge of main pollutants, China has been world #1 for some time. If we compare China's emissions in 2012 with those of the United States in 1990, it is

almost equivalent. To bring China's emissions of sulfur dioxide (SO₂) and NO_x to the level of the United States in 2009, we will have to cut emissions by 60% and 45% respectively.

As for PM_{2.5}, China is still far from meeting the standard in most cities. Some regions are particularly bad, for example, Beijing, Tianjin and surrounding areas. The Party leadership and the new government have paid great attention to PM_{2.5} control. Last year the State Council issued its action plan on air pollution, which is called Ten Guidelines for short. Objectives and actions are laid out in this document. These objectives and the action plan reflect the people's desire for improved air quality. This plan indicates strong political will and the people's aspiration.

As for how this plan can be implemented and how the goals can be met, our research aims to assess whether the existing capacities and programs can help meet all these goals. We also look at the future air quality and air pollution control roadmaps.

Our group has had strong support from MEP and others. All the team members worked hard. As for the contents of this project, we have looked at performance evaluation indicators and methodology for the action plan. According to the action plan, the Minister of Environmental Protection has signed agreements with 31 provinces concerning targets. Of course these targets are not the same for every province, and the conditions of the different locales have been considered. For example, for PM_{2.5} there are four levels of targets, and for PM₁₀ there are five levels.

But can we meet all these goals on schedule? We believe we should have a pre-evaluation of the action plan goals. We should first consider the extent to which these measures will reduce pollution. How much can air quality be improved? What other enhanced measures will be needed? This is pre-evaluation. On this basis we should also do a follow-up evaluation. There are two parts. One is to enhance performance evaluation, that is, the air quality improvement results. Second, we should also look at the level of efforts that have been put into this. With the adjustment of the energy mix with the industrial upgrading, we want to see real action and real outcomes.

On this basis we did a case study for Beijing, Tianjin, and surrounding areas including Hebei province. Their action plan is ambitious, but if we use the model to assess whether Tianjin and Hebei can meet the target by 2017, we can see that these areas are at risk of failing. In fact, Hebei is now developing enhanced measures after hearing these results. The very purpose of this pre-evaluation is to promote enhanced measures.

The second task in this research is an air pollution prevention control roadmap for the 13th FYP and the 2030 long-term plan. The assumption is that by 2030 most cities in China should meet the air quality requirements and targets. To meet this objective, the emission of the major pollutants will have to be reduced significantly. SO₂, NO_x, and primary PM_{2.5} will have to be cut by 50% or more. For key regions, such as Beijing, Tianjin, and surrounding areas, they will have to reduce these particular emissions, among others, by a great extent.

How can we achieve this ambitious objective? If we continue with business as usual, there might be an increase in the emissions, so we will have to emphasize end-of-pipe treatment and adjust the energy mix.

We also have to look at the scenario with the greatest potential. To meet 2030 goals, it is important to emphasize the clean and efficient and sustainable use of coal. This includes the forms and efficiency of utilization of coal. In the meantime we have to adjust the energy structure and increase the share of clean energy. The research team looked at the scenario analysis for coal. By 2020 it is possible for China to see the peak of coal use. After 2020, if energy growth is no longer based on coal consumption, by 2030 coal will be no more than 50% of total energy consumption. In this situation we will be able to achieve the total emission goals.

Minister Zhou also mentioned that we should enhance coordinated control of multiple sources and multiple pollutants, and we should achieve synergy between climate change actions and air pollution control measures. If we can do that, then I believe we should be able to meet the 2030 goals.

Michael Walsh presented the group's conclusions and recommendations:

The challenges that China faces with regional air pollution are those that the United States and Europe have faced in the past. We have developed indications of some of the key elements of a comprehensive regional approach that could enable us to achieve some progress here in China. These elements include cooperation, coordination, common modelling approaches, and a reliance on emission inventories and cost-effective control strategies that are carefully worked out by all of the players in the region.

If we look at the elements that have been successful in bringing about emissions reductions, there are three: improvements in energy efficiency that decouple GDP advances from energy consumption; changes in fuel input, that is, moving from coal to cleaner fuel sources; and end-of-pipe controls that

reflect the best available control technology on all the major new and modified sources. In the case of China that would include sources that are being moved from one location to another.

Mobile sources in Europe and the United States present, as they do here, unique challenges. They move within a region, or from region to region, especially the heavy duty vehicle sector. And so they need special national attention. Local authorities can have only a limited impact on the mobile source contribution. We find that even the most advanced state of the art controls have been cost effective in both Europe and the United States. Once the state of the art clean fuels are available, we see no reason for China to delay moving to these same emission controls, especially for heavy duty vehicles. We are pleased to see that in the past year China adopted a clean fuels roadmap that will provide less than ten parts per million of sulfur by the end of 2017 across the country. Therefore we have recommended that — at least for the eastern part of the country where we have the most severe pollution problems — China's six emission regulations should be adopted by 2018, right after that fuel is available.

One of the key lessons we have learned in Europe and the United States is that standards alone, whether on stationary or mobile resources, are of limited value unless they are combined with a strong, well-staffed, well-funded compliance effort. This is a critical element to any successful control program.

The backbone of a good comprehensive regional strategy is adequate air quality standards that are based on public health protection, and a process for measuring the success in moving down the path in terms of clean air — a process that not only monitors these improvements but does so in a fully transparent manner, so that the public and all interested parties can stay abreast of these developments.

We have learned that measures taken to address air pollution — moving away from coal use, improving the efficiency of vehicles, or cleaning up diesel vehicles which are a high priority for reducing particulate matter and black carbon — have significant climate benefits. It is important to emphasize the win-win nature of the strategies we adopt. They are good for public health, but good for the climate at the same time. This element of the strategy should be particularly highlighted.

China has begun to wrestle with these regional air pollution problems, and has taken some of the initial steps to coordinate, here in this region and in the Yangtze River delta region. We should recognize that these initial steps are underway, but we should also recognize that they are inadequate at the present time. The regions currently lack unified plans, objectives, control requirements, supervision, and administration. And significant progress in all these areas is going to be necessary.

We have four major research conclusions:

First, a thorough appraisal system is needed for air pollution plans. We recognize that regional air pollution problems — not only PM_{2.5} but also the emerging ozone problem — will be the major air pollution problems in the future here in China, as they have been in Europe and the United States. Therefore it is important that we establish mechanisms for a pre-appraisal of the adequacy of control measures, and then have an ongoing appraisal underway.

The significant research work that the team at Tsinghua has carried out has indicated that here in Beijing the prospects for achieving the 25% reduction by 2017 are reasonably good, but not so good for Tianjin and Hebei province. So more work will need to be done.

Second, China faces great challenges to reduce emissions and meet the air quality standard. To achieve these standards by 2030 will require on the order of 50% or more reductions in most of the pollutants, and what is more bring into the equation ammonia emissions which have not been a high priority in most areas in the past.

Third, international experience is an important reference for regional air pollution control and coordination. If we look at the international experience, the local and state and regional authorities have to be mandated to achieve certain air quality levels within certain fixed time frames, and they have to develop comprehensive air quality plans. In the United States we call them State Implementation Plans. These plans lay out precisely what control reductions need to be done, who will do them, what the funding sources are to carry them out, and how to monitor progress in the implementation of these measures.

Fourth, China lacks strong regional coordination institutions and unified plans, objectives, and management. This is clearly going to be a great deal of the focus of future efforts. We hope that the work we have prepared will inform China with these efforts.

We have four major recommendations:

First, China needs to build an air quality-oriented air pollution management system. The atmospheric pollution prevention law, which we understand is in the late stages of being prepared, has to explicitly state that provincial and local governments must implement and enforce air pollution prevention programs based on agreed air quality objectives. The regions themselves should no longer be based on

political boundaries, but on scientific assessments of the actual air movements, meteorological conditions, topography, and so forth. For example, a good case can be made for having the entire eastern part of China be considered one region from the standpoint of air pollution.

Second, deepen joint prevention and control for regional air pollution. As I indicated, the whole of the eastern provinces could come up with a schedule for implementing a variety of measures that could bring about substantial improvements, with a regional decision-making body that could play a key role in coordinating these cost effective measures.

Third, enhance air pollution control based on the existing measures. To the extent that coal is used, it should be used in facilities that have high efficiency control technologies, not in facilities with marginal controls. The adjustment of the energy structure should be accelerated to move away from coal to cleaner or, even better, renewable fuels.

Fourth, establish a scientific appraisal system. Science has to play a key role in all future measures. The pre-implementation and annual appraisal system should be established so that we know what should be happening — and what is happening. Again, China has a good head start with the analysis that was carried out for this region. It's good at the start of the process to learn that the plans currently on the books are probably not adequate for the region, and that we need to be enhancing them early in the process. And we must be sure to have a final appraisal system that we can use to identify the gaps, the areas where we need to make improvements, and continue toward the 50% or greater reductions that we are going to need in all the major pollutants.

Special Policy Study on a Chinese Environmental Audit System for the Government

The report from this policy study group is presented by the co-chairperson, **Wang Jinnan**, who is Vice President, Chief Engineer, and Professor at the Chinese Academy for Environmental Planning, and by **Robert Smith**, Associate at the International Institute for Sustainable Development. Robert Smith opened the presentation with these points:

It is appropriate — and maybe intentional — that the group that looked at the question of environmental performance auditing should be the last group to present, because we have heard a lot today about the importance of making environmental change, and of course, of holding the officials responsible for making that change accountable for their performance.

The group identified a number of the factors that are driving some of the challenges the country is facing. Of course there is the rapid economic and social development, as well as the structure of China's economy and particularly its energy system. But there is also weak accountability for environmental performance — and that was really what we looked at in particular. As well, China suffers from weak government policy decision making.

In our group we adopted the mantra that managing environmental performance requires managing the officials who are responsible for it. In that regard two institutions are particularly important. One is the China National Audit Office and the other is the disciplinary committee of the Chinese Communist Party.

The government has been doing its part by promoting ecological civilization and institutional innovation. We all know about the pronouncements from government leaders about the need for ecological civilization, and the need for audits of the environmental performance of senior officials. In fact the new Environmental Protection Law that will come into place January 2015 explicitly states that government officials at all levels may be the target of environmental performance audits — something we think is important and valuable to see in that legislation.

We spent a little time looking at environmental auditing in other countries. We noted that this kind of auditing has been happening in a significant way for a long time internationally. There is more than 20 years' deep experience with environmental auditing in countries such as Canada, the United States, India, Korea, the Netherlands, and others. And the institutions that have been doing this work have undertaken well over 2000 environmental audits. So there is a lot of international experience that China can draw upon.

We think it is important to emphasize a few characteristics of the audit institutes that undertake this work. One of these is institutional independence. It is almost universally the case is that institutions that do undertake national audits are independent of government. This is an extremely important point. Obviously, if the findings of an audit institution are felt to be in any way influenced by the government of the day they are not going to have much credibility. This notion of institutional independence is something on which we placed a lot of emphasis.

In most cases, audit institutions report directly to national legislatures or parliaments. This is also an important part of ensuring transparency and independence of these institutions.

A final point we recognized is that the work undertaken by audit institutions in other countries is broad in its scope. It includes audits of financial performance, but also audits of compliance with environmental regulations and laws, and audits of environmental performance — that is, how well is the government doing against its own established environmental targets?

We have a couple of examples of the experience in other countries. In Brazil the audit institution is a body of the national congress. Furthermore, Brazil's constitution guarantees a healthy environment, which sets a strong legal basis for the institution to undertake its work. Likewise, in South Korea the audit institution is a constitutionally established body that reports directly to the president of the republic. Its independence is guaranteed by the Board of Audit and Inspection Act. And it is a substantial institution with substantial resources: 1000 employees with an annual budget of US\$ 100 million. An interesting aspect of the work in Korea is that ordinary citizens have the right to request audits themselves through a formal petition or through a telephone hotline (Canada has a similar hotline system). The audit office in South Korea doesn't shy from controversial topics. It undertook recently a high profile audit of the "four major rivers" project, and took the government to task for its performance and activities with respect to that project.

In China, we see a positive trend in the development of environmental auditing. There is a long history here too. Going back to the early 1980s, there has been positive development of the institutional capacity over that time. When we looked at the situation in China, it was not that we were aghast at the complete absence of institutional capacity — there is something there. The work is largely undertaken by an organization called the China National Audit Office. What we found however is that the environmental audits that are undertaken by this institution are largely undertaken not by a specialized group of environmental auditors but by other auditors who are undertaking environmental audits as part of their normal function. For example, an agricultural auditor might include an environmental component in it, or a financial auditor might look at an environmental question as well. But there is not a great deal of specific environmental expertise within the institution.

This is in part because we find that environmental auditing is still very much subsidiary to economic auditing in China. When it comes to auditing, China invests the majority of its efforts to undertake what it calls "economic responsibility audits." These are the audits used to hold individual Chinese officials or organizations responsible for their economic performance targets. This is an elaborate system of auditing, a well-established and sophisticated system. But it greatly overshadows the environmental system — to the extent that the environmental system exists. As a result, the research and methods and standards that are available for environmental auditing greatly lag behind those that are available for economic

auditing. They require substantial strengthening if China is to make an effective use of an environmental auditing system.

Another observation is that the breadth and depth of environmental auditing in China has to be increased. Until today the majority of China's efforts in environmental auditing have been on financial responsibility. Its goal has been to ensure that the use of funds earmarked for environmental projects is appropriate and there is no misuse of funds. Which is fine of course, but this is only one-third of what the full scope of environmental auditing might include. It ignores legal compliance auditing and environmental performance auditing.

Our final observation is that the institutions that undertake environmental auditing in China lack the professional environmental auditing teams that are required to do this work well. That is obviously a problem. Without trained environmental auditors, it is unlikely the country will be able to tackle the problem of environmental auditing with much success.

If we compare quickly the international situation to that in China, we can see that environmental auditing is taken seriously and given a good deal of emphasis in a lot of countries. Here in China, environmental auditing is not nearly so important. Elsewhere, environmental auditing has a broad focus — on compliance, financial auditing, and performance auditing. Here in China the focus has been narrow, and mainly on financial audits. Elsewhere, the methods and standards and techniques are highly standardized. Here, they remain regrettably weak. Elsewhere, there are strong professional teams of environmental auditors. Here, environmental auditing tends to rely on auditors who are trained in other areas but are asked to do environmental auditing as a sideline.

Wang Jinnan offered some additional background commentary and presented the group's recommendations. Here are the main points he made:

In designing and implementing a new environmental auditing framework, we think the Chinese government should have three goals: compliance with environmental laws, policies, and regulations; improved government environmental decision-making; and improved environmental quality and sustainability.

We propose four "major entities" or main audit institutions: the National People's Congress can be responsible for environmental auditing at the highest level; at the national level, the China National

Auditing Agency could also be responsible; environmental protection agencies could carry out a form of internal auditing; and auditing institutions and environmental protection authorities can carry out this auditing work jointly.

The targets for environmental auditing should be primarily local governments as well as post-term officials.

As for the content of the environmental audit, we propose to draw on the best practices of other countries to include: audit of the use of funds for environmental protection; environmental performance audit, that is, a measure of how the environment has improved in a given area; and environmental compliance audit, that is, compliance with environmental laws.

The topics of audits could be water resources, atmosphere, ecological protection, waste management and control, and special environmental audits such as on energy conservation. These issues could all be tackled together, in a combined way.

We have five recommendations for the Chinese government:

Recommendation 1: Establish and improve the legal basis for government environmental audit.

This measure involves three steps. China must revise its existing audit law and other relevant auditing guidelines with new provisions. It must revise its existing environmental protection laws and regulations with new provisions. And it must strengthen communication and collaboration between the National Audit Office and MEP.

Recommendation 2: Strengthen government environmental audit capacity.

This includes building up the professional teams — the institutions, audit teams, investment, and methods. So it is comprehensive capacity building. The National Audit Office has put in place endeavors in this regard, to improve capacity. Also we need to improve the independence of auditing institutions. This can happen in stages. We propose that, during the next two years, auditing agencies would undertake strengthening in collaboration with environmental authorities. From the third to the fifth year, the auditing institutions would achieve independent control of the strengthened environmental audit systems. Beyond five years, the National Audit Office should be established as a body of the NPC, to oversee the Chinese government fulfilling its responsibility.

Recommendation 3: Improve technical guidelines and standards for government environmental audit systems. These guidelines include those for the government environment audit standard systems, the technical guidelines on environmental audit of government programs, and especially, the guidelines on environmental performance evaluation for those officials leaving their posts. Also we propose that CCICED can support this kind of endeavor.

Recommendation 4: Strengthen coordination between government environmental audit systems and other environmental evaluation systems. There are many different performance assessments required of officials. There is a need to coordinate these assessments.

Recommendation 5: Initiate a series of pilot audits to gain experience with strengthened audit systems and gradually promote government environmental audit. We recommend implementing pilot audits at the provincial, municipal, and county government levels. We also recommend conducting special environmental audit pilots for key environmental protection tasks, involving water, air, and soil. For these pilots to happen, two agencies need to join hands and work together. No local authority will volunteer to work on this kind of project, and in certain areas you may need to pressure them. I hope CCICED can support these pilot projects.

Finally, here is a suggested three-phase roadmap for the Chinese government to undertake this environmental audit as part of its overall comprehensive reform roadmap. This year and next, we need to do some basic, preparatory work, developing basic methods and processes of environmental auditing. Next year, we should choose at least one city, one province, or one special area to conduct the pilot project. Without this pilot project, we cannot accumulate any experience. And starting from 2017 or 2020, we must establish a new environmental auditing system as part of green transformation.

Item 7. Draft Policy Recommendations to the Government of China

Li Ganjie introduced CCICED Chief Advisors **Shen Guofang** and **Arthur Hanson**, who presented the revised policy recommendations to be submitted to China's State Council. **Shen Guofang** opened with the following summary of the recommendations:

The task forces and special policy studies have just reported their research findings and have shared the specific policy recommendations in their research fields. Now I will share the summarized draft policy recommendations on the basis of their findings.

At present we should note three important facts. The comprehensively deepening reform and rule of law are becoming the most important path that can guarantee ecological civilization. The government has also been decentralizing, the *hukou* system is being improved, and family planning policies are being improved. At the same time, we have a reasonable growth rate and a growing employment rate. These are all the important components of what we describe as the "new normal" situation.

We have also the strictest ever environmental protection law. The *Atmospheric Pollution Prevention Action Plan* is showing its achievements. Most mandatory targets in the 12th FYP have been achieved. And the strategy of a new type of urbanization has been deployed.

So the Chinese government has made economic and social and environmental achievements. The success of the APEC meeting has indicated the value of China playing a proactive and important role concerning global development agendas. The air quality control actions taken during the APEC meetings confirmed that China's pollution control strategy and measures are on the right track and have potential to achieve strong effects.

The Beijing declaration of APEC fully embraces green, circular, low-carbon development with green supply chains. The United States and China have made a commitment for the reduction of GHG emissions.

At present we are in the "new normal" situation for environment and development in China. However, the Chinese government has been making great efforts to move China toward a green transition, and we have achieved some promising results. In spite of that, we still have an uphill battle with certain complexities, not only in China but around the world. The global economic recovery is slow and the new

order of international politics is yet to be formed. There are difficulties in reaching consensus on the post-2015 sustainable development agenda. So China at present is at a crucial point. The adjustment of the structure, the growth rate of the economy, social conflicts, and so on — all these are challenges we face at present.

Yesterday we heard repeatedly that, because of the accumulated effects of environmental problems, we are at a tipping point — which has also given us a big window of opportunity. If we take quick action we will achieve our goals. We must take full advantage of the window of opportunity to further deepen reform and enforce the rule of law in order to accelerate the pace of green development.

There are four important components of this:

First, decision makers must expand awareness of the seriousness of the consequences of delay, in order that we can better understand the window of opportunity.

Second, the FYP title, “National Economic and Social Development Plan” should be changed to “National Economic, Social, and Environmental Development Plan.” This idea was proposed last year and we will propose it again this year because we are now formulating the 13th FYP.

Third, we should develop a long-term road map for a green transition strategy.

Fourth, we should have some breakthroughs in environment and development in the 13th FYP.

Under the general recommendations there are specific recommendations that are based on the research findings of the task forces and the special policy studies. Because of the length of the report it is impossible for us to include everything. Therefore we have condensed the information in the specific policy recommendations.

Recommendation 1: Reform the environmental protection institutional system towards the objective of Ecological Civilization.

Under this recommendation are more specific suggestions:

First, enhance administrative system reform, clarify responsibilities, coordinate policies, develop integrated goals, and form synergies among organizations.

Second, promote modernization of the national environmental governance system and strengthen governance capacity.

Third, strengthen social governance of environmental protection, and develop a multi-stakeholder governance approach and various models.

Fourth, reform environmental management institutions in order to improve efficiency and effectiveness.

Fifth, establish incentive mechanisms to promote environmental protection.

Sixth, implement environmental audit for leading government and party officials.

Recommendation 2: Formulate green transition policies and achieve a rebalance of economic structure.

To implement this, specific actions must be taken:

First, correct the imbalance of the economy and industrial structure in a way that fully and explicitly takes into account environmental and development concerns.

Second, reform resource taxes and electricity pricing, and adopt multiple economic tools to promote a green transition.

Third, adopt total energy consumption control targets, and build demand-based energy policies.

Fourth, build a green financial system to provide financial support for China's green transition.

Recommendation 3: Explore new urbanization models under the context of ecological civilization.

Actions to be taken include:

First, use integrated spatial planning to set objectives and limits for urbanization development.

Second, plan for a financially sound fiscal and taxation system and adaptive development mode.

Third, adhere to people-centred urbanization that also fully respects ecosystems, ecological services, and green space.

Recommendation 4: Innovate a broader regional air pollution control mechanism robust enough to stop severe air pollution and to restore air quality.

Actions to be taken include:

First, build an air quality-based air pollution management system.

Second, deepen the organization and effectiveness of the regional joint air pollution prevention and control mechanism.

Third, improve policies for regional air pollution control.

Recommendation 5: Implement a national Ecological Protection Red Line (EPRL) system.

Specific action to be taken:

First, set into law the national EPRL system and related systems.

Second, improve the spatial land use planning and marine use planning systems with clear identification of EPRLs.

Third, establish a new national coordinating mechanism for ecological conservation and for monitoring and enforcement.

Fourth, improve the nature protection area system and establish a corresponding management system.

Fifth, improve eco-compensation and incentive mechanisms based on EPRLs.

Li Ganjie introduced **Arthur Hanson**, who made these remarks about the policy recommendations:

In preparing this set of recommendations, which are based on the task force reports, it has been exceedingly difficult to reconcile some of the differences among the research groups. But in a sense this reflects the richness of change that has taken places over the course of this past year. We have seen one announcement after another. In some cases we are trying to catch up to government; in other cases we are trying to stay ahead of government — but uncertain as to what is coming next. It has been a roller coaster ride.

I view this past two years as an historic turning point in China in terms of how environment and development will be treated. Our final recommendations this year must be a contribution toward that historic point that takes us to the next level of thinking about ecological civilization, and also prepares us for the work we will undertake in 2015 and 2016. So we want to get it right.

General debate and comments

As this document needs to be short, I suggest try to build narratives around the recommendations. For example, the institutional reform discussion is about transformative change. Germany in the 1970s had a vital debate about transformative change. It was an era of profound reforms in social policy and education, and the German government was active. But, the implementation of these reforms failed. In response the government created an implementation research program. The studies found that there are three clusters of problems that always emerge when you go into the dynamics of transformative change. First, it is about making people in ministries and public institutions more knowledgeable, about training, capacity building, and the link between ministries and research. New knowledge has to come in. The second problem is legitimacy. Even when you have wonderful policy concepts, people might not follow. They might not have understood what you have in mind. There might be tensions. So legitimacy is a different sort of challenge. It is about outreach, about the interaction with stakeholders. And the third problem is complexity of institutional structure. If you go towards a new development paradigm — in this case ecological civilization — the existing institutional setting is no longer appropriate. So it is about rethinking the whole institutional setting and architecture. If you apply these three basic problems, which always characterize transformative change, you might subsume the detailed items among the recommendations below this focus.

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We always worry that the recommendations are too long. I wonder whether we can develop a one-page covering note — a *chapeau* — that is written newspaper-style, that says all the most important things we want, and so on a single page captures the essence of what we are talking about?

Another worry is that we sometimes recommend inconsistent and overlapping instruments. For example, in the material about GHG we have supported emissions trading — but we also have other proposals for an energy cap and energy trading. We need to decide what it is we are trying to do and what instruments we are trying to use. If we are worried about GHG, then we have a greenhouse cap and a trading scheme. If we are worried about excessive investment in energy intensive sectors and in infrastructure, then look at why savings are so high. That means looking at the household sector, the corporate sector, and the government sector. In the corporate sector you might increase competition, reduce monopolies, or reduce subsidies. In the government sector, you might broaden the tax base, lower taxes, or increase the social security network. And increasing the social security network will almost automatically drop private savings, as will the aging of the community. So we have to be much more careful as a Council in choosing the instruments we want to back.

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This year's crop of papers are very much about implementation. The special policy study papers converge at three levels. These need to be highlighted as they are quite important in terms of implementation. First, there is this whole question about the lack of coordination bodies, whether at the central government or regional level. For example, are you going to structure regional bodies by political jurisdiction or by geographic assessment of the impact of smog? The second issue is devolution, that is, distributed leadership, down to the provinces and even the local level. After all, a lot of environmental activities — or damage — happens at the local, municipal, or provincial levels. Third, there is the daunting challenge of building capacity to do all these things that we aspire to, from technical tasks such as environmental auditing to measuring air pollution, to the "soft" tasks such as monitoring, evaluation, and performance management. How do you make it happen? We have to create demand so that you can have the supply side of those capacities increase, whether by way of linkages to academics or training institutions, or other means that will enlarge the supply of these skill sets.

* * *

We are addressing institutional innovation here today. There is another word that is important, and that is evolution. Institutional evolution. The Third Plenum talks about putting markets in the decisive role.

Often people understand the importance of market pricing in terms of resource allocation, efficiency, avoiding waste, and so on, but sometimes that emphasis on markets and the decisive role also implies a change in terms of government regulation, maybe a reduction in government regulation as burdensome to the economy. Instead I think that this turbocharging of market pricing is going to stress environmental governance systems and I think it has important implications for the mandate, organization, and operation of MEP. In fact it places an increased emphasis on the importance of the role that MEP plays in terms of bridging this gap between private and social costs — what economists call the internalization of the externalities.

And I want to point to something specific that came out of the environmental governance task force which is the change in terms of a consolidation of the environmental impact assessment and the permit system. We know that the new basic environmental law that comes into force 1 January will emphasize the local permit system. I think this represents a transition from MEP's traditional focus and approach of dealing with growth — trying to manage growth through the environmental impact assessment process — to one more of managing operations on the part of enterprises. I think this implies a different focus in terms of the choice of instruments used to intervene in the economy. This has significant implications for the strengthening of MEP in its role of producing the pathway to ecological civilization.

* * *

I agree with the absolute necessity for building capacity, training technicians and so forth. As we go into implementation, everything changes. It's not any more about experts putting theories on paper. It's about dealing with much less expert people on the ground, so it is much more difficult. And if you don't advance in that, if you don't have traction, then you start discouraging people, and losing credibility and motivation, so it's essential that the focus be placed on training and on building capacity.

China is speaking of making an ecological civilization. That is an ambitious proposal. If you are going to change civilization, then you are going to change culture, the basic day-to-day life of the people. This cannot be done just by MEP. That has to be done by the Ministry of Education. In other words, Chinese primary school children have to be taught the importance of the environment, just as they study geography or mathematics or literature. This means that the Minister of Environmental Protection, in order to implement the construction of an ecological civilization, must work with the Minister of Education. This is a long-term process — a process of changing culture and consumption habits. It goes well beyond technology and capacity building. The Council's policy recommendations should suggest

working groups be set up with the Ministry of Education to start preparing new curriculums, new school systems, and new information mechanisms, so that you can really start changing society.

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The word “business” cannot be found in the recommendations document. This is an unfortunate omission, given that in the field of corporate governance globally there are many developments now, whether it is natural capital accounting or integrated reporting that will further the transparency of business and the accountability that we are all seeking.

In the section on the modernization of governance we should add two recommendations. One is to modernize corporate governance in China, focusing on transparency and comparability of financial and non-financial performance. Second, something along the lines that business in China should adapt and implement a standardized integrated reporting framework. These global initiatives are crucial elements in aligning Chinese business with global corporate governance discussions.

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China is in a process of drafting its 13th FYP for economic and social development. How can we incorporate ecological civilization and environmental governance into this plan? How can we develop specific indicators in the plan? This is an important question and we should revise our recommendations along this line. Here are three proposals:

First, how can we develop coordination mechanisms so that ecological civilization and environmental governance can become integral parts of social and economic development, and can be well reconciled and connected with other targets? Sometimes we know that this will put constraints on those polluting activities.

Second, quantitative air quality targets and timetables can be proposed to be incorporated in the 13th FYP, because now people are demanding pollution control. So far we haven’t got a timetable for that. We always talk about “20 years later” but that kind of language is too vague. We should propose to the government that in the 13th FYP there be some quantitative milestones or targets set for the improvement of air quality. In this way we can have an overarching objective.

Third, the data in the recommendations on total energy consumption and total energy consumption control are rather conservative. The State Council already issued an energy action plan for 2020 and also we promised to reach our energy consumption peak by 2030. This means in terms of total energy control we need to adjust the action plan, because current targets may look somewhat conservative.

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Every innovation starts with transparency, accountability, and legitimacy. That's why we need an additional central, general recommendation built on these elements. It implies that you need good knowledge — for example, impact assessments — before you start any project or plan or policymaking. You also need a good auditing system on all aspects of ecological civilization. It is an instrument that asks governments and departments at every level to take their responsibility, to show what they do and what is the result.

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Regarding the legal basis for promoting ecological civilization, first of all, quality legislation should be a focus. People speak highly of the new Environmental Protection Law, but we have to put in place the corresponding implementation rules. In some cases, we tend to be a bit too general without identifying the priorities. What should be covered by laws, versus what should be covered by rules and regulations?

Second, to harmonize legal disorders, we should note that many current laws conflict with the newly revised Environmental Protection Law. This kind of legal chaos has to be done away with.

Also we have to be more specific about the improvement of the permit system for discharging emissions. There are many areas for improvement compared with our newly revised Environmental Protection Law. The priorities and focus are not clearly and explicitly identified. We need to pass laws that are of higher quality to be more scientific and more accurate.

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Generally speaking the policy recommendations are informative and comprehensive. But they should be innovative as well. For example, the general ideas and specific recommendations should be combined together. When this kind of report goes to the State Council, they need to convene a three-day meeting because the report involves many big topics or else very general topics. In other words, the

recommendations need to be more specific in order to stand a better chance of being implemented. For instance, changing the name of the FYP — adding the word “environmental” to the title — is a small thing, but it is important. If this title change is backed up by something more detailed, then it may stand a better chance of being accepted.

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Recommendations II and V are about putting in place incentive mechanisms to strengthen environmental protection for green transformation. We have a good chance of doing that, starting this year. We are already levying a resource tax for coal in terms of sales, and also we raised the fuel consumption tax. This rate however is still not very high. In fact we should not only levy tax for fossil fuels, but also for water resources and for auto purchase.

Also, we should unify the descriptions for this kind of tax. For recommendation 2 we should promote the reform of the resource tax and we should impose the same rate of tax for imported coal. All these taxes should be imposed based on the sales volume. Also we should also consider an environmental tax for those who are damaging the environment.

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Indeed, business is increasingly stepping up to leadership roles on sustainability issues. It is important that this Council address that, ideally in these recommendations but also in the future.

Internationally we now have half a century of experience in green transitions. We know that in one country after another, green transitions often mean exporting pollution, outsourcing pollution by exporting heavy industry, and outsourcing resource demands by relying increasingly on water, timber, fish, and other resources from other parts of the world. As we talk about a green transition, it is important that we look not only at what needs to happen within China, but also the transition that needs to happen in terms of China’s role in the rest of the world. China has in the last couple of years increasingly taken its rightful place on the political stage internationally, but also as one of the larger players in global markets. As a Council we need to be speaking to what an ecological civilization means for those engagements, and how a green transition affects China’s role in the world.

Rightly we are talking about the importance of shifting from investment to consumption as the driver for economic growth. Clearly this will have environmental benefits. But if we are calling for driving

consumption, then we need to be talking about how to shape that consumption, how we make sure that the consumption that grows in this country is sustainable. Specific recommendations here already speak to aspects of that, but there would be value in looking at that agenda holistically. There is much that can and will need to be done to shape the trajectory of consumption, which is partly about standards, partly about regulation, partly about incentives, partly about education — but a critical part of shaping an ecological civilization.

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I appreciate this “window of opportunity” concept. Organizations are entering a fast development track, and it is the very last window of opportunity for them. Otherwise this kind of legacy keeps going, and there is no time for us to change.

I endorse the idea of adding an ecological word to the title of the FYP.

Considering that China will implement the 13th FYP in only two years’ time, our proposals in Recommendation IV are a bit too general and “soft.” This recommendation should be backed up with more binding or specific proposals, especially in the area of urbanization.

We also need a recommendation for changing the taxation system for municipalities. Many of the problems we witness are a result of the taxation system, because we primarily rely on land finance and outside investment. Furthermore, this kind of practice is energy intensive, leading to much pollution.

The central government is determined to improve the environment in the Bohai Ring area. This is the most serious ecological crisis we are facing in China. Could we include some specific recommendations for making breakthroughs in this region?

* * *

As a Council we have not emphasized enough the international dimension of China’s role. Optimistically, I assume that 50% to 60% of our recommendations will be implemented by China during the next five years. China will learn a lot and will innovate in moving its institutions toward ecological civilization. In that respect we should have a strong recommendation on China extending its new knowledge to other developing countries. Let us emphasize the international cooperation dimension of our role. For 23 years the Council has provided internal advice to China. If what we recommend here is applied, there is a huge

opportunity for China to create opportunities for other developing countries to learn and move toward ecological civilization.

Thanks to China and the low cost of solar PV, and other innovations to come, we can for example end energy poverty. In the same vein, if some of these recommendations are implemented, there will be innovations of institutions that other developing countries can copy. Ecological civilization will become the norm around the world.

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We have been hearing many interesting and complex ideas. Ecological civilization implies that we are going to have a change in value systems, in lifestyles. It implies we would need to recognize the tradeoffs between the way we do things today and the way we desire to do them in the future. These tradeoffs need to be sold to a large public, to a large population who have become used to the idea that today's consumption patterns make sense. But, as others have noted, consumption patterns will have to change.

We have mastered the ability to improve productivity. We know we can achieve certain things by doing them better. But the new mindset that we will need, the new value systems we will need, these are going to have to be sold. One thing that the public in every country — and in China too — is used to is the high growth rate of GDP. We have to recognize that we must start offsetting that GDP growth by highlighting what we are losing in that process. What is the liability that we are incurring every year, to nature, to society? And I don't think enough is being done in any country, but China is going to have to be at the forefront of redefining what economic growth means. And it's not enough just to talk about GDP.

There is also the issue that, if we will go into renewable energy, renewables are usually decentralized. They are small and local. And you are going to have a different kind of infrastructure and utility pattern — in terms of water, energy, production generally — than you have today. Building a huge centralized infrastructure, roads and railway systems and so on, may lock you into things you may not necessarily want 30 years from now. So you need a mechanism — in government, but maybe also in the academic and other sectors — to have the foresight, to be able to look at the long term into which China's FYPs have to feed. This is especially important now since our technologies are changing not in centuries or decades, but in years. Cell phones, the kind of communication and transport we have today, these didn't exist just ten or 15 years ago. Yet here we are, planning for a world in the future that looks like ours. It won't.

Finally, we must recognize that every speaker, including the Vice Premier, referred to the need for more participation, more transparency. This does imply a stronger civil society. This does imply strengthening and nurturing the kind of organizational frameworks that will be able to present credible alternatives, that will be able to exert the oversight of government from the outside that is needed in actually enforcing the audit functions. We need to see civil society — even when it is inconvenient — as an essential part of the transformation into an ecological society.

On the business front, the private sector front, we need to recognize that the profit-maximizing corporation that we have had for the past 200 years is not enough. In fact the United States has pioneered laws on what is called the B corporation — the benefit corporation — which allow businesses not only to make money, but also to do what is desirable from a social and environmental point of view. We have to start exploring the implications of the desire for an ecological civilization and a green transformation. Those implications translate into specific areas of institutional innovation that we need to do more work on, particularly in the area of not-for-profits and civil society organizations.

Item 8. Open Forums

Open Forum 1: Institutional Innovation for Ecological Civilization

This forum was co-chaired by CCICED Vice Chairperson **Achim Steiner** and CCICED Secretary General **Li Ganjie**. In their introductions they set out the framework for the discussion. Here are the main points of **Li Ganjie**'s remarks:

The theme of this forum is one of the important components under the policy research framework of CCICED. As everybody knows, the Third Plenum of the 18th Communist Party Congress was held last year. It points out that we should set up an ecological civilization institution with integrity in order to protect the environment. In October 2014 the Fourth Plenum was held. It further points out that we should speed up legislation for the protection of the eco-environment with the rule of law. And we should set up the legal system which can promote green development, circular development, and a low-carbon economy in order that we can further develop ecological civilization.

China at present is at an important crossroads for economic and social transition. In spite of achievements that have been made, there are still many weak links with great tensions between economic development and resources and the environment. Ecological degradation and environmental protection are still serious issues. The public is worried about this. This the result of some of the poorly designed and lagging institutions. Therefore the Chinese government is committed to the transformation of the economic development mode in order to achieve the goal of the well-off society by 2020. Institutional changes and adjustment and innovation are not only the priority of priorities, but also the most important link in order that we can realize the coordinated development among the environment, the economy, and society.

Last year witnessed a series of policy research studies with a focus on institutional innovation in the framework of ecological civilization. This is in line with the Chinese government's policy of comprehensively deepening reform. It also shows that our policy research is forward looking.

Today we gather to discuss institutional innovation for ecological civilization, so that we can better understand the new requirements and new goals. The innovations of our governance and sustainable development mechanism are pressing issues today. Research on this is of great significance to China's ecological civilization system and green transition.

Here are the highlights of the introduction by **Achim Steiner**:

We listened to many fascinating presentations yesterday. The idea is that these forums are an opportunity to drill deeper, to provide a wider lens on some of these issues and particularly to draw on experiences and journeys that have happened in other countries. None of the issues we are dealing with in the context of the China Council is unique to China, and yet the moment in time is unique to China's moment in time. This is always what makes this Council such a remarkable experience for all of us — that we are able to both reflect on experiences elsewhere and feed them directly into a live experiment of reform.

I encourage us all to provide a frank and reflective a set of presentations that will allow us to feed back into the session this afternoon with strategic messages. My preoccupation, my great interest in making a contribution to the Council, is premised on the understanding that this Council is a point of synthesis — a synthesis of China's own learnings and also a synthesis of a global community's learnings. If we can bring these together and make the advice politically relevant and policy relevant, then I think we are able to fulfill our role as we have often done in the past.

Keynote speeches

Li Ganjie then introduced the first of the forum's keynote speakers, CCICED International Executive Vice Chairperson and Canadian Member of Parliament **Peter Kent**. He spoke about protecting wildlife by combatting the illegal trade in endangered species. Here are the main points of his presentation:

This is a complex, environmental, economic and security challenge that has gained significant prominence on the international stage and one where China, as the largest market for illegal wildlife products, is uniquely positioned to have a substantial and positive impact.

The illegal wildlife trade — the taking, trading, importing, exporting, processing, possessing, obtaining, and consumption of wild fauna, in contravention of national or international law — has experienced significant global growth since 2007.

Wildlife crime has now been ranked as the fourth highest illegal activity worldwide in terms of value after narcotics, counterfeiting, and human trafficking. Key international organizations, including the Organisation for Economic Co-operation and Development (OECD), UNEP, and INTERPOL now value the illegal trade and poaching of plants and wildlife in the billions of dollars.

This growth directly threatens endangered populations of iconic species such as rhinoceros, elephant, tiger, and other wildlife such as reptiles, primates, civets, and pangolins — but the consequences are much more widely spread.

Within developing countries, wildlife crime deprives governments of critical revenue, while deterring conservation, threatening biodiversity, and undermining security. Capitalizing on a seemingly endless demand for both legal and illicit wildlife products, transnational criminal organizations have become major players in this black market.

The international community has long recognized the value of wildlife preservation and in recent years, it has taken action to counter the threat posed by the illicit trade.

In the 1960s, countries began coming together to regulate the trade in wildlife, with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which came into force in 1975. With a strong record of achievement and an ongoing commitment to scientific expertise, 180 governments, including China, are now committed to working together in this important forum.

This ongoing work has been complemented by recent, high-level meetings that continue to build momentum for integrated global action to tackle this complex challenge. In June 2014, the High Level segment of the United Nations Environment Assembly of UNEP had a ministerial dialogue on illicit wildlife trade, and the Assembly adopted a resolution that strongly encourages member states to implement their commitments, mobilize resources, and promote cross-agency cooperation in order to tackle the security dimensions of the illegal wildlife trade.

In February 2014, the government of the United Kingdom, in conjunction with their Royal Family, hosted the London Conference on Illegal Wildlife Trade. Delivering US\$44 million in financial commitments (including a \$2 million commitment from the government of Canada), this event built a critical mass of political support for the London Declaration — a robust roadmap for international action to eradicate the market for illegal wildlife products; ensure effective legal frameworks and deterrents; strengthen law enforcement; and promote sustainable livelihoods and economic development.

The declaration also set a one-year timeline for action. Signatories — including China and 45 other countries — meet again in March 2015 in Botswana to report on their progress in delivering on the London Declaration, as well as national progress in tackling the illicit wildlife trade.

So, how does all this affect China? China is the largest consumer market for wildlife and wildlife products. Food and traditional medicine have typically driven this demand. However, with growing consumer affluence, illegal wildlife products have also come to symbolize improved social status and wealth. Indeed, “wealth” is replacing “health” as a primary driver of illegal wildlife consumption.

The Chinese government has taken important measures to counter this growing demand:

First, the government is strengthening legal frameworks to curtail demand. For example, in April 2014 the Standing Committee of the NPC adopted an interpretation of the criminal law which will jail consumers of rare wild animals for food.

Second, these legal actions are supported by public awareness campaigns. Chinese celebrities, including actress Li BingBing, actor Jackie Chan, and basketball star Yao Ming are championing campaigns to reduce consumer demand for illegal wildlife products. This is complemented by government awareness-raising activities — through posters and information kiosks in major transportation centres, such as airports and subways.

Third, traditional Chinese medicine practitioners and users are discussing the sustainable use of wildlife products, to move away from the use of endangered plants and animals protected by national and international legislation in medicinal products.

Enforcement capabilities are also being strengthened to help China implement its “zero tolerance” policy toward the illegal wildlife trade. The National Inter-Agency CITES Enforcement Collaboration Group was established in 2011 and is the largest organization in the world dedicated to combatting wildlife trafficking.

China is playing a key role in international efforts to combat the illegal wildlife trade, working in partnership with other countries and international agencies to carry out several law enforcement operations. For example, Chinese customs and law enforcement officials recently worked with partners in Africa, Southeast Asia, and the United States — leading to hundreds of arrests and seizures of contraband in several countries.

With growing recognition of the scale, complexity, and costs, there is strengthened international resolve to address the illegal wildlife trade at the national level and through enhanced international cooperation.

This offers a unique opportunity for action, and China is encouraged to continue its efforts and build on its accomplishments.

To this end, I submit the following recommendations for further research and action by the China Council and the Chinese government in countering wildlife crime:

First, to eradicate the market for illegal wildlife products, take actions to support improved understanding of the drivers of demand and supply. Key activities include scientific research on consumer values and behaviour towards endangered species and the use of legal and illegal wildlife products.

Second, to ensure effective legal frameworks and deterrents and to strengthen law enforcement, conduct an assessment of intelligence and enforcement procedures; reporting mechanisms; and tools, including emerging technologies. Such work would support an assessment of China's intelligence and enforcement capabilities. Are they sufficient? Are there new technologies or partnerships that could be useful in combatting poaching?

Third, to secure sustainable livelihoods and economic development, engage local communities. Canada has a long history of working with indigenous communities to support sustainable wildlife management. Such engagement could improve understanding of the relationship between local communities and species of high significance that are illegally and unsustainably harvested and traded in China.

Finally, this is not an issue that any nation can address in isolation. I encourage the Council to continue to explore opportunities for China to pursue international cooperation to counter wildlife crime. This could include international enforcement activities through INTERPOL or CITES, high-level political engagement through regional forums, or targeted cooperation to address the drivers of wildlife crime.

The second keynote speech was delivered by CCICED member **Hao Jiming**, Professor in the School of Environment at Tsinghua University. He spoke on challenges in regional pollution control in China. Here are some of the points he made:

In China we have had a successful record of joint control of pollution. Between 2008 and 2010, China initiated regional joint control projects in the regions of Beijing, Tianjin, Hebei, the Pearl River delta, and the Yangtze River delta during the Olympic Games, the World Expo, and the ASEAN Games, and also in

2014 during the APEC summit. In terms of the short term regional joint control of air quality we have accumulated some experience.

In terms of institutional setup we began our explorations in 2010. In that year the State Council issued a guideline promoting regional joint prevention and control policies and improving regional air quality. In 2012 MEP issued the 12th Five-Year Plan for Air Quality Prevention and Control in Key Regions. The target area has expanded to three regions and ten city clusters, including Beijing, Tianjin, Hebei province, the Pearl River delta, and the Yangtze River delta, including ten city clusters.

But the practices and institutional setup cannot meet the requirement for effectively controlling air pollution. The joint regional control of air pollution requires scientific innovation. So we are met with the following challenges:

First, we need to designate air pollution control regions. According to the ground and satellite observation we can see that the whole eastern region has serious air pollution. The pollution is closely connected with the distribution of PM_{2.5} emissions. So we need to set up a whole region to jointly control air pollution. In terms of the emissions of PM_{2.5} and sulfate-nitrate-ammonium, the provinces surrounding Beijing, Tianjin, and Hebei province — especially Shandong, Henan, and Shanxi — contribute a lot. That is, if we do not control the air pollution of Shandong, Henan, and Shanxi then we cannot effectively control the pollution in Beijing, Tianjin and, Hebei.

Second, we need to establish an air quality targeted pollution control mechanism. For a long time, the Chinese government focused on control of total pollution emissions and incorporated this measure into the performance evaluation of officials. In the 11th FYP we mainly targeted SO₂ and NO_x. Although air quality improved somewhat as a result, the improvement as an explicit goal was neglected by the government. In other words, emissions reduction was not linked with air pollution reduction. Also, local governments do not pay attention to the monitoring and control of emission sources of particulate matter and volatile organic compounds, which goes against cost effective control measures to improve air quality.

Third, we must further improve the coordination mechanism of regional air pollution control. In China we have established joint pollution control in key regions, but those mechanisms only focus on providing early warning and relief for a heavy pollution episode. They do not establish routine pollution control, supervision, and monitoring. Also there are no formal rules and procedures for interregional coordination. For example, the scope and the content of the discussion between different regions have not

been set up. Information sharing is far from adequate. For example, major construction projects seldom pass through the full consultation process involving the different regions affected.

Fourth, we must establish a scientific decision-making system for air quality improvement. The major sources in the transport trajectories differ greatly in different heavy pollution episodes. Therefore cost effective emergency response measures should be developed.

Fifth, we need a medium- to long-term air pollution control plan at the national level. Currently, the 12th FYP takes us only to 2015, and the Ten Guidelines for air pollution control only formulated the requirement up to 2017. We need to have a plan to 2020 or 2030. If we do not have such a plan, then the scientific integrity and effectiveness of the policy will be affected.

Sixth, we must establish a thorough and complete performance evaluation system for air pollution prevention and control. Currently we do not have a pre-appraisal system for the action plan. We need to have a tracking and evaluation system, and we need to decide who is in charge of the evaluation of the effectiveness of the policy and the plan.

I can give two international examples of joint pollution control. In the United States they have a cross-state air pollution rule. They divided 28 eastern states into different regions to improve the air quality. Data show that from 2003 to 2014 the air quality of the eastern region has been dramatically improved. There is a remarkable reduction in the number of counties that fail to meet the PM_{2.5} and ozone targets. In the EU they have a Convention on Long-range Transboundary Air Pollution, formulated in 1979, followed by eight protocols to extend this convention. They take uniform actions across the whole of the EU. The latest development is that in May 2012 the Gothenburg Protocol was revised. It sets the emissions ceiling for all EU countries by 2020 for a list of five pollutants. So we need to learn from the experience of the EU and the United States.

In terms of policy recommendations, I wish to focus on these points:

First, we need to further improve the definition of air quality control regions. Eastern China can be regarded as a whole region in terms of air pollution control. If you focus only on the Pearl River delta, or the Yangtze River delta, or on Beijing, Tianjin, and Hebei province, while neglecting some major polluting provinces like Henan, Shanxi, and Shandong, you will not be effective in reducing pollution.

Second, we must establish an air quality oriented management mechanism. An evaluation system for officials based on their attainment of air quality standards should be documented in law. Also we propose to set a target that all major cities in China should attain PM_{2.5} standards by 2030. Finally, the leading official of the central government should be responsible for the nationwide attainment of air quality standards; local officials should be responsible for the local attainment of air quality standards.

Third, we need to further improve the regional coordination mechanism. We need to establish a clear-cut, unified, and integrated regional air pollution control and management mechanism. We should establish a consultative mechanism for regional environmental impact assessment, so as to make the decision-making process more standardized and institutionalized. Also we should further improve environmental information sharing — in this regard we have a long way to go.

Fourth, we must establish a scientific decision-making system, to ensure we can meet the air quality targets and also to consider the costs and benefits of air quality improvement.

Fifth, we need to formulate national level medium- and long-term work plans, including the plans for meeting the target for air quality and also the target for every five years. We need a national plan and also plans for the key regions.

Sixth, we must establish a scientific performance evaluation system. We need pre-implementation and annual appraisal systems so that local governments can assess progress and adjust measures. After each period we should make a scientific evaluation to check the problems in the previous period. It can provide a basis for decision making in the subsequent cycle so that the targets we set will be realistic and feasible. Summing up our experiences is important.

The final appraisal system indicators should include the PM_{2.5} concentration; the number of heavy pollution days; and economic, industrial, and energy structures. In particular, PM_{2.5} concentration is important, and we need to consider at least a three-year average to see whether we are making progress. Also in measuring PM_{2.5} we shouldn't just be averaging the concentration in different cities; we should also consider its impact on human health. So we need to make a population-weighted average of PM_{2.5} concentration.

Roger Beale is the next keynote speaker. He is a CCICED member and former Secretary of Australia's Department of Environment and Heritage. He spoke about successes and problems with institutional innovation in Australia. Here are the highlights of his remarks:

I wish to talk about institutional innovation — but not so much about the science, important though that is, as about what you need to do. What are the underlying factors that you need to satisfy to make institutional innovation work? I maintain that effective institutional innovation is underpinned by four elements.

First, institutions have to be big enough to capture the problem. We just heard that excellent example that air quality management ought to involve the whole of eastern China. Second, if you are going to get a policy to stick — if it's going to stay there and be sustainable in the long run — you have to develop and hold trust among the government, business communities, and citizens. Third, of course you need good science, good economics, good data to provide the strategic guidance — but that is not enough by itself. Finally, you need rules: the rule of law, effective and corruption-free implementation, and good auditing. If you can get those things together, then you have a chance to make institutional innovation work. I will talk about 3 examples. Two of them are large multi-use zones, with layered protection. The third I am including as something of a cautionary tale, a tale about how things can go wrong to some extent.

The Murray-Darling basin is a large area. From the top to bottom is about equivalent to the distance from Beijing to Bangkok. It has only 2 million people, but the area feeds and clothes tens of millions, including people in China. It is the biggest food and fibre basin supporting our export industries. However it also has many threatened species, and considerable environmental problems.

There is a lot of competition for water use. The water problems include salinity from irrigation and over-extraction; increased nutrients from fertilizer, urban, and animal runoff; changes to flow patterns that do not mimic the natural flows and hence do not support the natural systems; reduced flows; and intense competition for the available flows, involving agriculture versus the environment versus cities, upstream versus downstream.

We all know these problems. We've had a 100-year history of squabbling over these issues. Who controls these water rights? In 2008-2009 we reached an absolute crisis after ten years of drought when the water levels dropped to 47% of the expected flows. At that point the Murray-Darling basin authority was elevated under national law. It was taken partially out of the hands of the five local jurisdictions to establish a sufficient span of control. Scientists and economists were thrown at the program, and a great

plan was developed. The only problem was: it led to a revolt, by the communities and by irrigation farmers along the basin. And governments wouldn't support it. The science was great, but community engagement wasn't so effective. It has taken four years to rebuild the plan, carefully and slowly.

At the heart of this has been talking and listening to all those key groups and then mediating among the interests of the environment, communities, cities, and farms. It's not perfect, but it's sustainable as a plan. Grudgingly people accept it. It is critical that indigenous groups were involved in that process as well and that there was funding from the national level to help provide community infrastructure to reduce water demand.

What made it possible to deliver this scheme was the development of perhaps the world's biggest water trading system. The Australian government — and NGOs — can buy water for the environment from other water holders. It can be temporary water or permanent water. The national water account is set up like a national account balance sheet, and there is excellent data available to all the players.

What underpins the effectiveness of the scheme is that there are clear rights: rights to property in water, an ability to undertake transactions in relation to those rights, and access to relevant market information. This means that farmers or cities can build water into their business plans. They trade it, or they release it temporarily, or they invest so that they can use it efficiently. It has meant that even when under severe drought, production value has been maintained. It has been a great success.

The Great Barrier Reef Marine Park covers an area roughly the size of Italy and its surrounding seas. This is a big system. It is probably one of the world's best managed reefs on that scale. Nevertheless it faces some real threats, such as climate change, acidification, and declining water quality in the catchment because of onshore activities and coastal development. There is some illegal fishing, and crown-of-thorns starfish outbreaks flow in part from the poor water quality and the raised temperatures.

The Great Barrier Reef Marine Park Authority has scope over this entire area. Federal laws — which can be implemented by the states under delegation — cover the whole of the hinterland in a way that means that anything significant that will impact the quality of the water in the reef system, or damage World Heritage values, has to be reviewed in accordance with the federal law. Again there is close cooperation with a multitude of community groups which often have competing interests.

There is extensive tight redlining within the reef itself to protect representative samples of each of the reef's ecosystems from fishing — or even from boaters dropping their anchors. The biggest political threat

to reef management is probably recreational fishers — who are also voters — but there is also a lot of sugar cultivation and resource interest. Again, community engagement is critical. High-tech surveillance is used, but even with that there is illegal poaching activity. Strong controls on aquaculture are vital, and any port development becomes highly controversial.

It's a good, comprehensive plan through to 2050, but stopping global warming and acidification needs global action. China can probably do more about that than Australia can. I just hope that Australia plays its full part.

Among the innovative rules for getting people onside are reverse auctions to improve water quality. If farmers can bid an improvement in the runoff from their land — for a price — the farmer who produces the most reduction in runoff for the least price gets the money prize.

As for meeting Australia's carbon emission target, I want to get one thing clear: governments, even when they have changed, have consistently undertaken to the target they have committed to. Even when Australia didn't ratify the Kyoto Protocol, it was one of the few nations that actually over-met its target. A carbon tax was imposed in 2012 but was repealed in 2014 after becoming an election issue. Although most economists said this was the best possible, lowest cost way of meeting our emissions target, the public just didn't get the link between a pricing mechanism and emissions reductions. They rather put their faith in things that they could see happening, which they think won't hit their power bills. That's right, but they will pay for it another way, through the tax system. So my big lesson here is this: even if you stick to your principled target, and you deliver, the cost of losing public faith can be high. In particular the impact on business of changing the rules constantly is severe. Confidence is damaged.

Underpinning both the previous scheme and the current system is an absolutely rigorous system of clean energy regulation, that is, a national carbon accounting framework and a greenhouse registry that is comprehensive, corruption-free, and can provide a base for anything from trading through to direct action measures.

The fourth keynote presenter is **Feng Jun**, executive vice-president of the China Executive Leadership Academy Pudong (CELAP). He spoke about leadership improvement for building ecological civilization. Here are some of the points he made:

In the 19th century, Engels pointed out that mankind should not be intoxicated in its triumph over nature, because each triumph means nature's revenge on us. Now we understand this better because of the anxieties and worries resulting from industrialization. So China's central government has decided to promote ecological civilization. President Xi emphasised that we not only want silver and gold mountains, but also we want clear water and green mountains. This means that an ecological environment is important for a beautiful China.

Today I focus on the importance of leadership for ecological civilization. There are three important issues, under which are several subsidiary points.

The first important issue is the improvement of leadership for building an ecological civilization. This is reflected in four areas:

First, the decision-making capacity of governments. It is important to improve this capacity. Ecological civilization is about nature and society and development. Government is the major provider of ecological public goods. It should take the paramount responsibility for the protection of the environment. Only in that way can we have a mechanism to protect the environment at the source. All Party and government officials must understand the strategic significance of ecological innovation, and ecological systems must be deeply rooted in the mindset of government and Party officials. Green investment, green enterprises, green development, and sustainable development cannot be guaranteed without this.

Second, the innovative capacity of enterprises. Enterprise leaders should have a new mindset in order to promote ecological civilization. They should research their own processes, for example, to improve the energy conversion ratio in their production links so that they can develop low-carbon and circular development. Green supply chain is also important with this kind of market power. To help realize ecological civilization, enterprises should be supporters, initiators, and practitioners of innovation.

Third, the public capacity to participate in the process of ecological civilization. The public are beneficiaries of ecological civilization, and at the same time they are an important power to help safeguard it. So it is easy for us to solve the ecological problem that we have been accumulating. The solution lies not only in the responsibilities of government and enterprises, but also with the public. The government should set up a framework involving all stakeholders so that the public can take part. And there should also be a system that guarantees the public has a right to information. Environmental NGOs need to further motivate the public to pay attention to ecological civilization. And citizens need to change their behavior and lifestyle to fulfill the philosophy of ecological civilization.

Fourth, the capability to participate in global cooperation. We need to further improve the capability to build ecological civilization, so we need to participate more in international cooperation. With China's sustained economic growth the problem of environmental protection and the energy issue have attracted worldwide attention. The Chinese government needs to participate in the global cooperation of building ecological civilization so as to demonstrate our sincerity and efforts in solving the problem. Concepts like the scientific development outlook, the harmonious society, the harmonious world, and ecological civilization show China's determination and attitude in responding to environmental problems. The Chinese government will participate in international cooperation with a broader vision and more tolerant spirit so as to demonstrate internationally our image as a responsible country.

The second important issue is the policy guarantee for the leadership of ecological civilization. To improve ecological civilization, an institutional guarantee is essential. We need to incorporate ecological civilization into several institutions:

First, into the performance appraisal system for government officials. If we just focus on GDP and fiscal revenue, then leaders and officials will pay more attention to rapid growth than to green development. Therefore we need to incorporate ecological civilization, a green GDP accounting system, environmental protection, and ecological benefits as indicators in the economic accounting system so that we can evaluate officials in a scientific way. Also we need to increase the weight of indicators related to environmental protection and emissions reduction in the evaluation of officials so that we can make the protection or the damage of the eco-environment an important indicator.

Second, into the selection and nomination of officials. We need to change the ecological civilization indicator from a soft constraint to a hard criterion, and connect it with the selection and appointment of government officials. The goal is that government officials with an awareness of ecological civilization will be selected.

Third, into the training system for leaders. In the training of government officials we need to increase the attention to ecological civilization. Such courses need to be mandatory. We can adopt flexible means to improve the awareness of officials about ecological civilization and its policies and regulations, green industry, the eco-economy, and so on. Also we can improve their ability in decision making by incorporating environmental considerations.

Fourth, into the national education process. We need to incorporate ecological civilization into the whole process of education, from kindergarten to college. And also we need a scientific and a reasonable ecological civilization educational system and plans. And we need to focus on school education — but supplemented by family and social education.

The third important issue is that we need to establish a leadership training system for the improvement of ecological civilization. CELAP is a national level leadership training academy. This is an important base for training senior officials and public servants. In the past ten years we have focused on reform and innovation, on socialism with Chinese characteristics, and on improving the ability of officials in performing their public duty. We have created our Pudong model. We have provided training for more than 100,000 domestic officials and party leaders, and for more than 5000 government officials and business executives from 123 countries.

Also we have provided 15 training programs dealing with topics like coordinated and sustainable development, green economy, circular economy, and low-carbon economy. Every year we have training programs for mayors and directors-general of central government ministries and departments. We have courses about the urban development of ecological civilization, and urban water resources management based on ecological civilization concepts. Altogether we have 180 courses related to the concept of ecological civilization.

We also have developed some ecological civilization bases, for example on Chongming Island off Shanghai, at Anji and Tonglu in Zhejiang province. These are examples of building a beautiful countryside. Also we have the “liveable city” construction example, for instance, Taiceng and Yancheng in Jiangsu province. Those sites are used to provide training to our officials.

In future, according to the direction of the central government, we will incorporate ecological civilization into the training of government officials and business leaders so that we can improve their abilities and they can become more aware of ecological civilization in their decision making. And we will improve the content of the training. For example, we will cover ecological cities, smart communities, low-carbon technology, the circular economy, green agriculture, and so on.

Under the leadership of the central government we further stress our cooperation with ministries and functional departments at the national level. We will provide training to officials on the climate change response, environmental governance abilities, and green development leadership abilities.

CELAP also holds a forum on climate change policy and action, together with MEP and CCICED. We will invite domestic and international experts to participate in the forum and also disseminate the outcome of the forum.

We also want to develop a database for cases of green, low-carbon development. We encourage the participants to develop their own cases. Also we solicit cases from society so that we can provide these cases as part of the curriculum for government officials. We will further develop some green and low-carbon development cases so that we can use those exercises in the classroom and turn those practitioners into our teachers.

CELAP has signed a long-term strategic cooperation agreement with CCICED. We will share and disseminate the policy research results of CCICED in environmental protection and development. Together with various parties we are willing to make our contributions to improving the leadership abilities of government officials. We also hope the experts can give lectures in CELAP.

The final keynote presentation was delivered by **Daniel J. Dudek**, CCICED member and Vice-President of the Environmental Defense Fund, USA. He spoke about carbon emissions trading and institutional innovation. Here are the main points he made:

I am here to talk about a remarkable set of experiments that are going on in China now, and to tell you that I think the emerging carbon market in China has the potential to catalyze and advance many of the institutional innovations that we have been discussing over the years here in the Council. I focus especially on things like monitoring, reporting, the pricing of resources (especially by putting markets in the decisive role for an environmental commodity), bending the carbon emissions curve, and harnessing market incentives to produce emissions reductions.

China actually has a long experience with pollution caps, going all the way back to the 9th FYP. This is when the policy of total emissions control was first announced for SO₂. I had the opportunity to begin my study of pollution caps in China with another council member, Ma Jun, who also served with me on the Task Force on Environmental Governance. Together we published the first book in China, in 1999, on total emissions control, which is China's term for a cap.

We went on develop the single largest experiment in conventional pollutants — this was with SO₂ — in cooperation with the forerunner of MEP, the State Environmental Protection Administration. This experiment involved a third of China's SO₂ emissions, in various regions of China. Importantly, perhaps for the first time in China, the project included a company, Huaneng, one of China's big electric generators. The results were published in 2004. They reported on a common framework that was set up by the State Environmental Protection Administration for monitoring, allocation, trading, and enforcement. By 2012 this became the hottest and most sought-after book in China because it was the first place where people had talked about the step-by-step approach in setting up an emissions trading system.

We move to now. Why is China focusing on an emissions trading system? First, it's important to understand the role of China's transition in terms of the economy. The movement from an export led system to a domestic demand and urbanization driven economy is one important reason. The decisions of the Third Plenum is another factor. Co-benefits in the form of addressing fossil fuels and air quality concerns are also huge drivers. And not least of which we have 14 November and the historic commitments made by China and the United States.

These commitments will not be easy to meet. These will require sustained and systemic effort. Now, China already has a range of policies that it has taken and is implementing with respect to climate, but none of these is systemic. They are mostly targeted measures, for example: "lets us have a target on generating natural gas from non-traditional, non-conventional sources like shale gas" or "let's have a target on the introduction of new-energy vehicles" and so on. So a systemic approach is needed, and that is the emerging national carbon market.

In terms of what has been done and what is needed to go forward, an important element here is harvesting differences in marginal costs. This is the engine that drives a market in emissions reductions. If you don't have differences in marginal costs, you are not going to get trading. You are not going to get the benefits of stimulation of innovation. China's traditional approach, particularly with conventional emissions, has been to establish a discharge obligation and associate that with control technologies, for example, in the case of SO₂ it is flue gas desulfurization through responsibility contracts, coupled with subsidies for the emitter. In the rest of the world most often that is a formula that is a "control responsibility" coupled with flexibility in terms of meeting that control responsibility.

With this emerging carbon market we will see a transition in China's approach to controlling emissions, one which I think is important from the standpoint of stimulating innovation. If you are just adopting a

specific technology and being paid to do that, there is not much opportunity to innovate. And there certainly isn't much opportunity or scope for a market.

In terms of innovation, these markets give you, first, a significant incentive from the standpoint of opportunity to gain revenues from the sale of emissions reductions, and also the opportunity to bank excess reductions for future use. For companies with long-lived capital, particularly electricity generators, this is incredibly important because it allows them to synchronize their investments over long timeframes. Secondly, the flexibility allows us to, in effect, guarantee compliance. There is no real reason, with a true-up period, for penalties either to be limited or for sources not to comply, because they have massive opportunity. Third, public accountability is enhanced in these systems, because they require transparency in terms of functioning as a market. Lastly, there are significant co-benefits in terms of air quality and other important social goals.

Concerning air quality, we did some modelling with the China Electricity Council where we looked at the implications of a four gigaton cap on carbon emissions in the electric generating sector, were it implemented in 2016. The model projected cumulative reductions in emissions of a number of conventional pollutants. This leads us to think again about multiple pollution control. We need to recognize that emitters in the process of combusting fossil fuels are really emitting a stream of different emissions, and we ought to be thinking about a coordinated control strategy.

Another opportunity provided by carbon markets is to address poverty alleviation in China. We carried out experiments that engaged over a million farmers, in five provinces, who were involved in a range of agricultural production practice changes. These included methane digesters, paddy water management, fertilizer application changes, and planting of biomass for anti-desertification measures. These are important experiments because China still has the middle and western part of the country to develop. It is large enough in terms of the diversity of the economy that a kind of clean development mechanism, applied within the country, is a way to focus investment for green development in those emerging parts of the economy.

Market infrastructure enables things like emissions tracking and reporting. One example is the China-Beijing Environmental Exchange, launched in 2008. These important institutional innovations are critical for enhancing and tracking performance over time.

The current seven pilot projects operate about 1¼ billion tons. It covers almost 2000 company sources, and an area with more than 250 million people. In relation to emissions trading systems around the

world, only the European Union Emissions Trading Scheme is larger. California is under 400 million tons, quite a bit smaller. The regional GHG initiative in the northeast United States is only 90 million tons. Only in China would something on this scale be called a pilot. Look at the range of experience. The individual pilots are anywhere from 100 to 650 different enterprises covered.

I want to point out two core issues; the synchronization of climate and environmental goals, and the national and provincial roles in these pilots. These two areas are the focus of discussion by CCICED.

Regarding timelines, the national market is expected to emerge during 2016-2017. Draft regulations have already been submitted to the State Council.

I have some specific recommendations.

First, MEP is in transition from being a permitting process for new sources to being a permitting process for the operation of existing sources. In many places around the world these permit systems are designed nationally to be implemented provincially or by states. In terms of the carbon market this is an opportunity for some synergy between this emerging program, managed by NDRC, and the emerging permitting programs managed by MEP.

Second, MEP should be studying the synergies, especially the co-benefits, associated with carbon trading, and trying to understand how to enhance the effectiveness of that program by looking at any existing constraints.

Third, MEP has unparalleled enforcement resources. More than 80,000 people nationally work at enforcement. This is absolutely critical for the performance of a carbon market.

Lastly, there is an opportunity for an integration of monitoring, reporting, and verification. This has been demonstrated over and over. In many countries the combination of conventional pollution data on fossil fuel combustion and fuel utilization has been used as a way of creating an internal system of checks and balances providing an opportunity to validate data.

Leading comments

With **Achim Steiner** now presiding, the Council heard from two speakers who delivered brief “leading comments.” The first presenter was **John Forgách**, CCICED member and Chairman of the Board of ForestRE, UK (Brazilian). Here is a broad summary of his remarks:

I would like to indulge in some philosophy. We are talking about changing human behavior, about innovating. I would like to address the two drivers of human behavior, which are fear and greed. We have been hearing a lot of suggestions that are top-down, regulating, auditing, taxing, penalizing, or punishing. That is one of the necessary ingredients of change. You have to have rules and people who disobey them have to be punished, have to be brought into line. But there is another ingredient to change, which is the driver around greed, making money, becoming richer, becoming more powerful. You need both these drivers to make institutional innovation. But you will be much more successful, much more permanent and sustainable, if you work with human greed rather than punishment. Humans are good at escaping punishment, at cheating. Corruption is endemic all over the world. Humans are fantastically equipped to escape their bosses’ oversight. Sometimes it becomes institutional, the corruption. China has a long history of that. India does. In my own country, Brazil, the government is collapsing because of corruption. If you want to bring institutional change, particularly in the environment, I find it much more productive to address the driver of greed. It’s basically the carrot and stick issue.

In the environment, contrary to other sectors like banking, finance, and so on, the damage done is irreversible. In wildlife, it’s irreversible; in pollution, it’s irreversible. It’s difficult and expensive to repair. So I think when you are trying to innovate and to create a new civilization, you should focus on trying to pre-empt disasters such as wildlife degradation or pollution. It’s much cheaper, and much more durable.

I’m talking not just out of philosophy but also out of experience. I give you two examples.

One of the largest health and cosmetics companies in South America is Natura. When they started they decided they would give bonuses to the top management at the same level as the bonuses to the middle management. Typically what you see is that the leaders, the chairmen or chief executive officers, are the people who come to meetings like this, who look environmentally correct and green and progressive. But the middle management of the company doesn’t understand what the bosses are talking about. They don’t buy it. It’s not their business. They are in it for a job, for salary raises and vacations and security. So Natura gave the same bonus arrangement to the middle management for environmental performance, so they were competing with the senior people on bonuses. The result is that this company is green across the board, from the garbage collector at the bottom up to the chairman. It is doing good work in the

Amazon in terms of its footprint and working with the community, and it is adopting bottom-up regulations with encouragement and bonuses. That's the formula for success. Again, it's carrot and stick.

Here's another example from my experience in the timber business. We were the largest timber operation in South America. We employed about 7500 people, more than half of whom were female. The women were empowered because they took care of the nurseries and some of the more delicate timber operations. They regarded 15 years of timber — or two cycles of eucalyptus — as the term of our investment in the field. So they married the cowboys and sugarcane cutters and itinerant laborers, and created communities.

My best partners in the business were not the finance people but were the people with whom I aligned interests 2000 kilometers from my headquarters in Sao Paulo. They were protecting our plantations because they wanted us to stay there, because they wanted the kids to have schools and health, and they wanted the certifiers to approve every step. So the middle managers of our company were well rewarded by our presence and our investments. Again, our companies are all certified by the Forest Stewardship Council. Our companies are safe. There is no stealing or corruption, because the employees have an interest and are compensated for that. It works much better than having some corrupt official come and tell them what to do and what not to do.

So the message here is: if you want to do institutional change in the environment, it's not enough to come with punishment and police action. You need to have the local populations buy into your ideas. It is they who will protect the wildlife. It's too late once the punishment comes in. Look at the macro and the micro. Top down, bottom up.

The second of the leading comments was presented by CCICED member **Zhou Dadi**, former President and Researcher at the Energy Research Institute, NDRC. Here is a summary of what he said:

China's task of building an ecological civilization is arduous. In the past two to three decades, China has had rapid economic growth and large-scale urbanization and industrialization which have caused serious environmental pollution in many areas.

Many pollution problems are complicated and have far exceeded the abilities to use targeted, single pollution control, for example in the case of large areas and serious smog. We don't even know the composition of the pollutants, or the sources, or the ratio of local sources to trans-boundary sources. We

don't understand urban layout and its impact on the source of pollutants. The scientific community until now has not identified the one single source of pollution as the most important reason for the smog. Of course, we have different ideas about the contribution of different sectors — for example, transportation — but those are uncertainties. Now the problem is that all the economic activities seem to be linked with pollution and smog.

In addition, this is a trans-regional and trans-sectoral problem. It is difficult to identify and punish one single source of emissions. We have a lot of offenders but we do not have total emission control. This is also true with water pollution control. There are not just a few sources of emissions that result in the pollution, but we are faced with emissions from different sectors and regions. For example, in Beijing we also have emissions from household activities, so it is difficult to control and manage.

Pollution control in China should not just treat the pollution as an end in itself. Ecological degradation is closely connected with economic development. The pursuit of ecological civilization is closely connected with our investment in industrialization, urbanization, and economic development. Therefore we need to treat the problem from those perspectives, otherwise we cannot meet the goal of environmental protection.

In many regions we have already exceeded the red line for the eco-environment. That is, for land, water, air, mineral resources, and so on, our development of those resources has exceeded the bearing capacity of the eco-environment. Therefore, urbanization and new economic growth need to consider reducing emissions and the development of resources. The current expansionary development of different localities and regions didn't take into consideration its impact on the environment. Take energy as an example. Various kinds of energy forecasts and energy plans already touch on the issue of emissions control — but in the process of making the energy forecast. As for what kind of environmental impact it will have or whether it can reduce emissions, smog, and pollutants, we didn't do a careful analysis in the energy forecast.

Of course we do not have sufficient technology, but the awareness and institutional setups are lagging far behind. For example, we have a lot of data related to energy development and energy forecast, including the local building of energy bases, but we do not have effective assessment means to say what will be the impact on the environment.

Currently, institutional innovation for ecological civilization needs to enable the ecological civilization component parts of China's socio-economic development plan, and also to become an important binding indicator. We can stress the following areas:

Environmental governance and protection need to have clear objectives and effectiveness at the national and regional levels. In the 11th and 12th FYP periods we only focused on controlling some representative pollutants — but for the effectiveness of the control we had no binding mechanism. As a result some pollutants were reduced in terms of total emissions, but the air pollution is more serious instead of being improved. So, for air and water quality control we need binding indicators or targets that are time bound. We need a schedule and roadmap for meeting air quality targets and we need to incorporate them into the five-year development plan. In this area we need to learn from the practice of the EU and the United Kingdom in their use of phasal targets and their constant adjustment of these targets according to the actual situation. Up to now, in the air pollution control program we have the Ten Guidelines, but we didn't talk about the results for air quality improvement in the roadmap. Therefore it is not so binding.

We need to establish a regional air quality control mechanism. We need to stress these areas:

The total emissions reduction of the major pollutants in any region needs to have a binding target. Sometimes it is difficult to have a reasonable distribution of the emissions reductions among provinces. It is difficult to be fair in allocating those targets to different provinces and cities, but the total emission reduction is imperative. In these circumstances as long as you belong to a certain region of pollution you need to reduce all pollutants by 20% or 30% — or you use the trading system. Currently, it is difficult to trade emission rights between the cities and the provinces, because if you do not accomplish the target then you will be punished. Some places will exceed the target, and other places that cannot meet the target will pay.

We need to establish a uniform monitoring and reporting system. We are talking about joint regional controls. Of course we have several regions designated, but generally speaking each city is only concerned with their own situation and not concerned with the surrounding cities and provinces.

We need to establish a permanent response system at the regional level. Up to now even when the PM_{2.5} hit 400 or 500, we do not have an emergency response system. If you have some emergency response and take concrete actions in those episodes you can fully demonstrate the determination of the government, otherwise you are just testing people's patience. You wait for the wind to solve the smog problem. As a

result, nobody pays attention to a solution for the smog. Once we hit 200 to 300, then the emergency measures need to be taken, just as we did during APEC.

Another point is that we need to have environmental system evaluation in our development plans. That is, the environmental assessment for the planning for certain sectors and provinces is important — for example, the energy sector in some key provinces.

My last point is that the central government and the NPC need to further stress their legislative work and institution building for ecological civilization. Every point that I have made in this talk should be confirmed through the legislative process.

General debate and comments

This topic is important because in terms of sustainable development and ecological civilization, institutional innovation is the most important foundation of the five presentations we have heard. The first presentation was about the preservation of wildlife. For China this is a difficult task but we have seen some initial results. By coincidence today we received an invitation from Qinghai province to participate in the application for World Heritage by the Kekexili Nature Reserve, an area for the protection of rare animals and species in the plateau area. And I was wondering why it wanted to apply for World Heritage status, because it is already a China national protected area. I think the local government wants to improve its reputation. On the one hand it pays attention to economic development; on the other hand it pays attention to its own image and reputation. If Kekexili can become a heritage site, this will improve the government's image. So, we can take advantage of the motivation of the local government in seeking a better reputation. It is an incentive for them to take action to protect wildlife. As we heard, we need to appeal to two aspects of humans. We need to turn fear into enthusiasm for doing good things and we need to curb greed. So this is good for wildlife protection.

Regarding the presentation on joint original pollution control, in Beijing, Tianjin, and Hebei province — which suffers the most serious air pollution — we have found that in addition to urban pollution we see there has been a relocation of polluting industries to rural areas. More than half the most polluting industries are not in urban areas, but in rural areas. So the supervision and evaluation of those industries is important.

Again regarding joint original pollution control, there is an important precondition, that is, the equality of development opportunity. In China there is competition among different governments. For example, Beijing has competed with Hebei province for some projects to develop the auto industry. During the past decades Beijing has reduced 10 million tons of coal consumption — but Hebei has increased 100 million tons of coal consumption. So, the efforts of the Beijing municipal government alone cannot reduce regional air pollution. How to ensure equality of opportunity is the job of the central government. We need to take that into consideration in joint regional pollution control.

Two points about the presentation on improvement in leadership. First, not only should we train the top decision makers, but also the mid-level officials, because it is they who formulate and provide plans to the decision makers. If that plan itself is not environmentally friendly, it will be difficult for the decision maker to make a final plan which is environmentally friendly. Second, local government officials increasingly regard the eco-environment as important, but sometimes they do extreme things. For example, they may build a green building or an eco-city, but the cost is high. If you consider the cost of the whole cycle, it is not sustainable. So in providing training to those people we need to ensure they are aware of green development which can give tangible benefits to people.

About the presentations on institutional innovation and carbon emissions trading, I think those are important for China. This reminds me that, in the case of management innovation in the river basins of joint areas, there is poor coordination of downstream and upstream. They have conflicting interests.

The task force on urbanization recommends that we should have a spatial management mechanism at the provincial level according to the development stage and characteristics of each province. We should also develop a compensation mechanism between provinces. As well, we can develop some emerging industries in well-developed areas in order to attract more migrant workers to these areas. We have already observed something interesting in Tianjin, which has started its emissions trading mechanism. Jixian is a county near Tianjin that has benefited a lot from the emissions trading system. This is an experience we can disseminate across China. Different cities and counties might have different geological advantages so we should create conditions so that they can benefit from these mechanisms.

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Institutional innovation is not easy to come by. A lot of work has to be done to have a holistic management framework that can be implemented. I would place particular emphasis on the importance

of monitoring and evaluation. In addition, it is critical to have independent review of performance. Only in that way can you begin to establish a baseline to feed into how you want to take the institution forward. I'm glad to see the thinking that has gone into leadership training, particularly the aspect involving the private sector and enterprises. And I agree about the need for cascading this training downwards, to different levels of government and to different sectors.

Regarding the presentation about the importance of public consultations, I agree that a lot of the ideas for innovation come from public engagement. Clearly the public and most importantly the stakeholders have a lot to offer in that respect. Let me give one example of how this is not easy to come by. The African Development Bank for some years had been working heavily in infrastructure. The infrastructure financing needs was about US\$90 billion a year, but the financing gap was \$45 billion a year. No World Bank money, no African Development Bank money, no bilateral donor money would be able to fill that gap. At the same time, the private sector capital inflows to Africa dwarf the development assistance flows by a ratio of about three to one. So they came up with an innovative idea, which is to establish a for-profit corporation outside the bank's normal institutional structure.

The ambition is to leverage private sector flows and thereby reduce the number of years it takes to develop a bankable project. It is a pipeline issue. There are plenty of ideas out there, and plenty of money whether private equity or otherwise. This scheme is called Africa50. It has been incorporated as a separate entity and run as a business. People invest in it not because they care about development, but because they want to see a healthy return. The idea is to boost the pipeline, to bring down the project development time of bankable projects from seven years to three or four years.

The other innovation of Africa50 is that it provides a one-stop financing business line that saves time. You have a project development business line plus a project financing line, which offers development financing, bridging loans, debt financing, guarantees, and so on.

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During the establishment of Australia's Environmental Protection Authority in the 1990s, what was needed was a structured process of going to the community and to industry on a regular and predictable basis to test whether the mechanisms that were being utilized for the authority were the most efficient, effective, whether they were addressing issues of concern, and whether that connectivity with industry was sensible and workable. Now, decades later, the authority officials will say that was one of the most useful processes for providing a structured forum for adjustment, rather than relying on a reactive

approach in the face of circumstances. It also ensured that the various regulatory settings reflect the technology available at the time but also provide necessary incentives instead of relying only on a punitive approach. An added benefit is that it involves the community as a partner in those relationships. Legislative changes have also arisen as a result of those reforms. It's a simple mechanism to build into an ongoing regulatory review. Very simple, predictable, but also ensuring there is innovation.

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Everybody knows that we should take an economic approach to solve environmental problems. The FYP in China is like the constitution in economic development. However, I am finding more and more environmental factors in this economic development plan, with more binding targets. Therefore I suggest we change the name of the FYP to the 13th Economic and Environmental Development Plan. It is important to send some signals. At the beginning it was referred to as the Five-year Economic Development plan, later the Economic and Social Development plan. Now we must add Environmental Development plan, so it can become a three-dimensional rather than a two-dimensional plan.

CCICED has no representatives from local governments. We have set a lot of goals that will be assigned to local governments. Therefore it is important for us to have the representation of local governments and of different industries. We have discussed quite a lot about the taxation problems and about the reform of different industries. However, local governments do not have the final say in these issues and so we need to consult with them.

Emissions trading systems are the pride of China to some extent. They are a good example of cooperation between China and the international community, and are greatly supported by international experts. The clean development mechanism in the framework of the Kyoto Protocol has been important in this process. In addition, funding is a significant factor. So it's important for us to tell the international community and the general public it is worthwhile for us to spend the money. And the diplomats and officials should summarize the experiences in this process. If we can implement phase II of Kyoto, if we can develop the carbon market as quickly as possible, we will definitely benefit a lot.

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One of the other things we are discussing here, well beyond China, is the recalibration of environmental rule making. India's new government has commissioned a fundamental review of some of the principal pillars of environmental legislation. The new EU union president has commissioned reviews. We have an

interesting moment where the agglomeration of environmental rule making has sometimes hit a point of diminishing returns, in the view of some. At the same time we have in our team here the need to become more systems oriented — to move away from individual measures to a more systemic approach, to enabling economic development to be informed by environmental change, environmental criteria, to the point where not everything is solved best by creating an individual set of rules.

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I feel privileged to have seen the progress that China has made — that no society in history has ever made before. Almost anything else is petty to talk about. When you look at the United States or Europe or Japan, you see that early rapid growth doesn't always mean you will keep on growing. There is an S-shaped curve to the developments of economies which is perhaps a law of nature. Leaders of countries like China or India need to recognize there are forces at work that tend to limit how fast one can grow or for how long one can grow. If you are going to take an active approach to the betterment of the lives of one's citizens, then one has to learn to expect the unexpected and be able to deal with that.

One of our underlying themes here is that we do need to train people — the public, government officials — but ultimately it will happen only if the whole value system starts changing. Many countries have inherited 5000 years of value systems which are appropriate when the pressures on land and water systems and forests were much lower, populations were smaller, and their expectations were lower. But these value systems are no longer necessarily appropriate today.

We need to consider this whole question of ecological footprint — meaning the footprint of the world on China, through the export-led model. After all, China is using up energy and water building things for other people. It is exporting embedded — virtual if you like — water and energy in huge quantities and taking the blame for it.

Then there is the ecological footprint of China on the rest of the world. We know that many countries have poor records on wildlife conservation, but the imports from two or three East Asian counties, including China, have driven this trade more than everywhere else. We also must consider the footprint of the dust, not just from factories but from China's degraded lands, to Korea, to Japan, maybe even to the west coast of the United States. There are no mechanisms of international governance to enforce redress, but we will have to start addressing them. This was the message of the Club of Rome 45 years ago. There are limits to growth that you have to take account of in designing that growth. If you do take them into account, you will have a better outcome in the long term.

My Chinese friends tell me there is still a significant problem of poverty and inequity in China. If so, in spite of this country raising hundreds of millions of people over the poverty line, there are still some poor left, maybe a significant number. The economy, going from export-oriented to domestic, has to recognize that the factors of production — capital, labour, land, and environmental space — no longer exist in the same manner for the people who got left behind. For them, you will have to restructure their economy into things which are more labor intensive, smaller, more local. Local production for local markets. For example, there is no point having decentralized renewable energy sources feeding into the national grid when you can use them in a local and cost-effective way.

There has to be some rethinking about going fast up this S-shaped curve and recognizing that it will slow down. How are you going to handle that, for the betterment of the citizens of China? The message is about strengthening civil society, because people are not only the subjects and objects of development, but they are the sole purpose of it. They need to have a voice in their future. The Chinese leadership has recognized this and is saying it over and over. Within that civil society there has to be room for a totally new model of business, one that both makes a profit and does things which are good for society. We don't have many examples of that. This is something the Chinese government needs to look at because there would have to be legislation for a new kind of institution.

India is way behind China on most of these issues. India cannot present any great lessons. Indians are tremendously concerned about the degradation of environmental quality — particularly of land and water resources — much more than about pollution. Delhi however is much worse than Beijing in terms of PM_{2.5} and smog. As a whole, India suffers more from deforestation, land degradation, and the disappearance of water and rivers. India has many problems, many of which will take much effort to solve, and not all of which are being adequately addressed by the government. India's strong civil society makes it hopeful that the country can force the pace.

Environmental protection has to be integrated into one's policies and institutions, but also into one's value systems. Both countries have traditional value systems of harmony with nature, so it's not a difficult thing for China and India to find their way to where we need to go. Because of so-called western civilization and its values coming so fast into both our countries, we have missed the boat a bit, and now we have to rediscover our roots. China is in a privileged position to be able to find from its traditions the kind of strength and value systems that it needs.

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Here is a short list of principles around innovation: invest in information as a common product that is openly available and can be used effectively; invest in capacity and learning; recognize and reward innovation; understand the nature and types of change agents, and recognize and reward them in your institutions; targets, objectives, goals — whatever you call them — they drive markets and behavior inside organizations, whether government or business; having clear structures and capturing them so they are clear, not necessarily permanent, but solid; driving accountability to the lowest place that you can, the closest place where the real issues are, and where decisions have to be made; understanding interests, training your people to understand the interests, responsibilities, legal entitlements, and how to deal with them and make effective decisions.

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We need to incorporate health into all policies. Controlling pollution is a long-term process, and in this process the damage to people's health is something we need to consider. If we just consider development and ignore the damage to people's health, we may gain the development but we offset its benefits. Monitoring and assessment are important. Take air pollution as an example. We only monitor six pollutants for PM_{2.5}. But the health damage is not only related to the concentration but also to the components of the pollution. We need to increase the monitoring of the pollutants that damage people's health. In this way, when we do the evaluation we can tell whether our control measures are effective.

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I used to think that China's total emissions are so high — in fact exceeding the bearing capacity of the environment — that the solution was to reduce the emissions, not engage in emissions trading. But today, after listening to the presentation, I have changed my mind. I see that emissions trading can motivate business to meet the target and also to control the total emissions. If we are allocated a straight quota, once we meet that quota we are compliant. But if we promote emissions trading, then we will try even harder to reduce the emissions by a wider margin that far exceeds the target imposed by the state. This will be good for the environment. So I think we need to promote emissions trading more in China.

Our policy recommendations to the Chinese government need proper positioning. There are two types of considerations. One is to emphasize macro issues. The other is to focus on feasible and practical and specific suggestions. We need to combine these two better. We need to have some macro principles and

also some practical recommendations. For example, changing the name of the 13th FYP is a big issue, but also specific and practical.

The overall report needs to focus more on environmental protection rather than ecological civilization. Ecological civilization covers too wide a scope. “Civilization” has to do with culture, values, people’s consumption ideas, the economic structure, the energy structure, the mode of development, people’s lifestyle, and so on. Civilization includes both the spiritual and material aspects of life. Of course ecological civilization is important, and we need to make changes in this regard, but when CCICED submits recommendations to the government we need to make it effective and our targets more limited and specific. We cannot cover too much. We cannot have too big a target or goal. If our report is too broad, it may seem a grand undertaking, but its effectiveness will not be good. As long as we have two or three recommendations on environmental protection that can be adopted by the policy makers then it will represent a big success.

But environmental protection involves many other aspects. I suggest that under this big topic we need to focus more on institutional innovation and capacity building. In terms of institutional arrangements — for example, rules about legal binding power — we need to focus on innovations. When President Xi talks about governance he talks about the fact that various rules constitute the national governance system. We need to focus on institutional innovation, because institutional setups decide your system and your procedures for environmental protection. We need to ensure the stability and long-term perspective of the institutional setup.

As for capacity building, I’m talking not just about environmental protection agencies but also various government ministries and departments and even local governments. Capacity building is important because if you declare a war against pollution you need a strong team. You need to have some backbone, experts — strong troops — to make sure you win the war. In China for a long time environmental protection work was in a weak position. Now, if you entrust such an arduous task to a weak sector, you need to improve its capacity so that its authority and capability is consistent with its goals and important tasks and responsibilities.

Summary by forum chairpersons

Chairperson **Achim Steiner** offered a brief synopsis of the discussion. Here are his main points:

Our discussions have been trying to find the right balance between specific points of intervention at this moment in time and the DNA of a long-term sustainable development pathway, over a country, a nation, and an economy. The contrast is not one of contradiction but one of synchronicity. One of our speakers says: the economic approach to solving environmental problems will be a determining factor. Another speaker says: don't get absorbed by ecological civilization at the expense of protecting the environment. I think what we are grappling with is what every country, every nation, every society grapples with: there are problems to be solved, but they are often linked to a system.

For example, the global marketplace for illegally traded wildlife is a global market *system*. It goes from the international to the national to the local. How do you address the fact that environmental protection cannot happen only through the line management of a Minister of Environmental Protection. You need a team. You need mayors and local officials. You need the full system of governance and ultimately the full system of society to respond. So: international, national, regional.

We talked about the urban versus rural. I was struck to hear that more than 50% of polluting industries are in the rural areas of China. This was not something I was aware of. If you are dealing with pollution, it connects also with the issue: do you deal with single sources of pollution, or single substances — the targeted capping approach? If you don't have an accurate baseline, then chasing individual sources or individual substances can be a losing battle.

Again we have the challenge of a continuum that has implications for policy. We heard about training, but training and capacity building without assessment leaves an empty public service. We looked at the upstream and the downstream in the Murray-Darling basin. This arises all the time in every country. There are those who benefit and those who lose, depending on what is the management equation for an ecosystem and a resource. We heard a great deal this morning, from the basic source of water through to an emissions trading system that is advocating for not just a regulatory and capping approach, but also to mobilize the entrepreneurial, the innovation capacity. Perhaps the most interesting part of the Murray-Darling basin is that sometimes markets can create value for people who are otherwise, by law, owners of a cheap resource. By opening up a trading system farmers suddenly became owners of a precious resource.

The complexity of trophy hunting and trading in wildlife products is also an interesting one, because to an African villager wildlife can be a traumatic experience. Wildlife can destroy a year's crop overnight. But if you connect that local farming community — that is also custodian to the wildlife — to an international market, and overnight you make that cost to the community an enormous economic asset,

sustainably managed. Not everyone is comfortable with hunting, but it is a fact of life. So, global markets can be a positive opportunity or a negative one.

The same logic, of a system and a continuum, exists from senior management to middle management, whether in a government or entrepreneurial setting. We heard a great deal about understanding the system within which we operate. Perhaps it is not so much that we have to choose one or the other, but we have to recognize that we work on a continuum. While initially there are points of intervention you can choose, the further you go along the more you come to the fundamental logic of an economic system — whether it is through values or economic incentives — that will drive people in one direction or another, whether you call it greed or you call it perverse incentives, or perverse subsidies. People are often led in the wrong direction by failure in public policy to shape markets.

Again I want to pick up this notion that maybe governance and markets are not two completely separate systems. Often in public policy discourse we talk about the regulatory versus the entrepreneurial as if they are separate universes. But markets are conditioned by governance: by governments, rules, taxation, fiscal policy. Markets are also an opportunity to resolve some governance conundrums and failures, whether it is on the wildlife front — where we may have to stop an illegal trade in order to protect wildlife — or whether it is the establishment of a trading system, in emissions or water rights. This is the frontier of understanding an economic system within which environmental issues have to be addressed. And the ecological civilization perspective reaches all the way to values traditions — say in India and China — that don't need to discover the relation between humanity and the environment. But at the beginning of the 21st century I think that, like the West, the East is falling into the danger of believing that technology and human ingenuity will allow us to exist without nature. And that clearly is the paradigm shift that ecological civilization is trying to address.

So, maybe our discussion in this forum brings no final set of recommendations but it had a center of gravity that speaks to a specific logic of interventions but also the need to understand ecological civilization as a challenge to everyone to accept that we operate in a system. And if you do not accept and comprehend the system you will fail on individual policy measures in the long term.

Finally, Chairperson **Li Ganjie** offered a summary of the Forum:

We listened to five presentations by five Council members, and ten other Council members made comments with good suggestions. I am much enlightened by their constructive insights. I hope that the Chief Advisors and the supporting team can take these comments into consideration.

We focused on institutional innovation from different perspectives with good suggestions. We have reached some consensus on these three points: management and institutional innovation is the key and also a pressing issue for the building of ecological civilization; we must take a comprehensive and holistic but integrated framework to build ecological civilization, including legal and economic instruments; and we are at a crucial stage in the development of the 13th FYP. We should do more work in order that some of our policy recommendations, such as the qualitative and quantitative requirements, can be integrated into the new FYP. I think this is the consensus we have reached through our discussions.

Open Forum II: Green Transformation and Outlook for China

The first session of this open forum was chaired by CCICED Vice Secretary General **Xu Qinghua** and the second session by CCICED member **Siebe Riedstra**, who is Secretary-General of the Ministry of Infrastructure and the Environment, Netherlands. These are the main points of the introductory remarks by **Xu Qinghua**:

Our theme is an integral part of CCICED's policy research for the year. Green transformation and development are intrinsic requirements for China's sustainable development. It is a natural choice to help our economy grow. In recent decades China has been exploring the path of green transformation. Some progress has been made. We now have a basic green transformation framework covering strategic direction, targets, pathways, and specific measures. The next five to ten years will be an important phase for our green transformation. It is urgent that we sort out obstacles and bottlenecks in this process, and identify opportunities and challenges. We have to come out with detailed strategies and pathways. What kind of top-line design should we have? What laws and legislation, measures and methods should we adopt to ensure a more scientific and reasonable and stable transformation?

In recent years the Council has conducted policy research on green development and transformation, especially during 2013 and 2014 when we studied the evaluation of China's green transformation and outlook. We compared Chinese and international experience. We analyzed data and came up with policy recommendations for China's economic transformation and green transformation for 2015 to 2030. Today,

on the basis of our research results, and also taking the policy recommendations as the basis of discussion, we will talk about green transformation. I look forward to analyses from the experts.

Xu Qinghua then introduced the first of the forum's keynote speakers. CCICED member **Kandeh K. Yumkella** is Special Representative of the United Nations Secretary General and Chief Executive for the Sustainable Energy for All Initiative (SE4All). He spoke about South-South and triangular cooperation, in particular about enhancing China's energy-sector cooperation with Africa and beyond. Here is a summary of his presentation:

I want to give you an update on SE4All, but also make the case why we are convinced China can help African countries leapfrog into new energy technologies in the same way African countries were able to leapfrog into digital communications, almost fully bypassing the need to establish more cable lines. So if you take anything from my presentation, it is to say how China can help Africans leapfrog immediately into a green transition, because they can start a number of things new. China being their biggest trading partner now, their biggest friend, it is possible through South-South cooperation to make that happen.

The context is the following. When leaders met in 1992 in the so-called Earth Summit, the first Rio summit, there was hardly any discussion of energy. In the second Rio summit in 2002, in South Africa, a number of countries tried to put energy on the agenda — but it became a discussion breaker. Compromises were made and energy was left out of most of the discussion.

So part of our challenge was to make sure that energy would be included in Rio+20. Without sustainable energy we cannot have sustainable development. You know that when the Millennium Development Goals were declared as well there was no mention of energy? How could anyone assume that you can have clean water without energy? How could anyone assume you could reduce poverty without energy, or for that matter, run hospitals without energy? Probably we took energy for granted.

So, when the new United Nations Secretary-General was elected we approached him. We said: we see you are interested in climate change, but your climate change story will be incomplete if you do not also talk about energy. So we said: how do we find a narrative that can describe the global energy challenges in a way that appeals to the developed, rich countries but also begins to address the energy needs of the poor countries and address sustainable development and climate change? So we came up with the Sustainable Energy for All Initiative.

We established one goal: achieving sustainable energy for all. In other words, ending energy poverty, connecting the 1.3 billion people who have no access to electricity, and removing from the use of biomass the 2.7 billion people who rely on biomass for their primary energy needs. We were convinced that if we do that then also the Millennium Development Goals can be achieved and perhaps we can nudge the world toward a greener global community.

We established three targets in this narrative: universal access to energy — that is, ending energy poverty — doubling the annual rate of improvement of energy efficiency, and doubling the share of renewables. As for rich countries, instead of universal access to energy they can talk about energy security, which they do in the United States, Europe, China, and other places. But the other two targets of course apply also to the rich countries. They can change their energy needs too. In the case of China, this green transition rests a lot on how they produce and use energy.

At the same time, poor countries can achieve universal access quickly using renewable energy technologies through distributed decentralized power. If everybody benefits from energy efficiency, of course this lowers emissions as well. So you can see that one narrative addresses everybody's interests.

We have been successful. In the past three or four years we have been able to make energy central in the development agenda. In the new post-2015 development agenda, energy is goal #7.

How does this apply to China? If you look at the targets we have established, China is way ahead. China is looking at having 20% renewables by 2030. They have done a lot as well on energy efficiency and savings. China almost saved as much energy as they consumed over the past few decades. China is already the biggest market for solar and wind. Thanks to China, the cost of solar PV dropped by almost 75% over the past five to ten years. We are convinced that if we develop a cooperation framework between China and some countries in the OECD to help poor countries in Africa and in South Asia we can help them leapfrog into the new green economy and begin to promote the whole idea of ecological civilization even faster in those countries.

China's targets are way above what we are setting for the world. Therefore China and some other countries can lead this new transition to a green economy, but at the same time lifting many of the poor countries.

SE4All is a mega-partnership, involving government, business, and civil society. We have scored a number of achievements over the past 2½ years. Our first political victory: we have a goal on energy, goal

#7 in the post-2015 development agenda. What we couldn't achieve in 20 years we have been able to anchor now. Nobody takes energy for granted. It is in.

Of course, the challenge will be whether we can execute programs fast enough to help those countries gain access, or convince the rich countries and the emerging economies to change their energy mix. About 80 countries are fully committed with us. We have partnerships with leading businesses in energy efficiency: Johnson Controls, Siemens, Danforth, Philips, just to name a few. We have partnerships with oil companies that are looking at how they can use their expertise, particularly in their operations in developing countries, to develop capacities there to achieve these three targets.

More importantly, with oil companies we want to reduce gas flaring. We've set a new target, to get five or six major oil companies to agree to zero flaring by 2030, and zero flaring in the Arctic by 2020. That's a tall order, but we are driving that heavily.

Why is gas flaring important? The gas flared in Africa could supply about 50% of electricity needs — but it is burned. That is not a fair world. That is not a world that is inclusive. We want to end that flaring and move, in fact, to more gas-to-power projects. But we also want some of that gas for household cooking.

Every year, according to the World Health Organization (WHO), UNICEF, and others, 4.3 million premature deaths happen due to household air pollution. It is worse than HIV/AIDS and malaria and tuberculosis combined. 80% of the victims are women and children. I know that in China the number of deaths due to household air pollution is also high. In the case of Africa, India, and Bangladesh, a lot of that is due to use of biomass.

China has emerged as Africa's biggest partner, trading US\$ 198 billion per year. It invests quite a bit in the energy sector. The question then is: what is the African context and why do we believe China should take the energy sector more seriously and probably accelerate how much aid and investment goes into the energy sector? Let me give you a glimpse of the situation in Africa.

Of about a billion people, about 620 million of them are without access to electricity. We see, like in China, rapid urbanization. We see the demand for the automobile rising significantly. But one of the key successes we've seen is the massive move in the adoption of mobile technology. So we dream that the same can happen for renewable energy in Africa — doing for the energy sector what was done for mobile telephony.

Sector reforms, clear public policy, clear strategies and incentives for private investments to come into that sector all make for a win-win scenario that will lift many people out of energy poverty and will power those economies into industrialization. It is a big business opportunity for trade, for China, but for other economies too.

That's the power situation. You can see the distribution of where the energy sources are. As I mentioned, 620 million are without electricity. We believe this is a great market opportunity for investments in the energy sector.

As for oil and gas, the important fact is that 30% of the new discoveries in the last five years were in Africa. Many of you know about the interest now to invest in Tanzania and Mozambique in liquefied natural gas and to export to Asia. Of course my point with the African presidents is this: it's good to export liquefied natural gas, but we hope you keep the lights on at home as well. We hope you take energy access seriously so that we don't treat gas and oil as we treated cocoa and coffee — you pick it, you just ship it out, and your people remain in poverty. I believe this is a big opportunity. We know China needs that gas. We know other Asian economies need that gas. But we can also invest internally in Africa to address our own energy access needs.

We believe SE4All gives a good platform for China. We can use our partnership to leverage China's investments and aid to create bigger energy markets in Africa. We can deploy those renewable energy technologies now in that region. We in the United Nations can work with Chinese companies and with the Chinese government through a South-South cooperation framework.

In my last job, as the director general of the United Nations Industrial Development Organization, I created a South-South program together with China and India for Africa. We want to use the same framework, working with UNEP and the United Nations Development Programme to see how we focus more on moving renewable energy technologies and knowhow.

The key interest here is investment: a win-win scenario where in this triangular cooperation we can have a partnership between China and our main partners in the EU to support African countries. Now we are working in about 20 African countries developing energy strategies funded by the EU. These strategies can be made available to Chinese companies to collaborate in bringing in investment and capacity building. We have a number of corporations from western countries now in SE4All. We want to bring more Chinese renewable energy companies into this partnership. We are collaborating with all the

regional development banks. We want to see how we blend financing to de-risk investment going into some of these countries.

From the EU and Germany we have a firm commitment that under SE4All they will endeavor over the next two decades to provide access to energy to 600 million energy poor. The US also has a new program called Power Africa that guarantees about 300 million having access to energy in Africa. Those commitments mean we can reduce energy poverty by 50%. This is real, this is not imagined. They are backing it up with cash. Already, programming missions are going off to Africa.

Just imagine what would happen if we combine that with China's powerhouse in a triangular cooperation. We are convinced that we can leverage Chinese technology and expertise. China has already nominated a member to our advisory board, Wu Xinxiong, who is the administrator of China's National Energy Administration. I have also visited a few Chinese companies and research centres to see how we can spread the message of ecological civilization with real investments and real technology in green growth.

If CCICED will form a task force, I am willing to work with others to lead it, in order to make this real. We can make energy poverty history — but it's also a win-win for all.

The next keynote speaker is CCICED member **He Jiankun**, Dean of the Institute of Low Carbon Economy at Tsinghua University. He spoke on the topic of energy reform and adaptation to climate change in China. Here is a summary of his talk:

During the APEC summit, the Sino-United States declaration on energy and emissions reduction declared strategic objectives that are based on domestic need as well as on international objectives. Not only will it turn around emissions of CO₂ but will also help mitigate the fundamental cause of environmental degradation. The rapid growth in the production and consumption of fossil fuels is the main reason for this grim situation of current tight resource constraint, serious environmental pollution, and ecosystem degradation.

Also because of the fast growth of fossil fuel consumption, we see a short supply of the resource within China. China has become the largest importer of fossil fuels, and so we are faced with worries about energy security.

Now China is in the rapidly developing stage of industrialization. Our energy consumption per GDP as well as the decrease rate of CO₂ emissions per GDP per capita is much faster than that of OECD countries. In spite of this rapid drop of CO₂, still in absolute terms it is a large number. So we need to turn around this situation. We should not only control the per capita CO₂ carbon intensity, but also we should control the total CO₂ emission target.

So, by 2030, when CO₂ emissions reach their peak, we will have total CO₂ emissions under control. In order to achieve this objective, on the one hand, we have to raise energy efficiency. At the same time, we must vigorously develop and substitute forms of new and renewable energy.

In terms of the speed of development, annual investment, or installed capacity of new and renewable energy forms such as hydro, wind, and solar, China is #1 in the world. But the total energy consumption is going up too, and the growth of the new energy development cannot meet the total energy demand. Coal consumption is still going up, which results in the rising CO₂ emissions. In order to check the further growth of these emissions, we have to develop new and renewable energy as a policy option.

In the 11th FYP our focus was on reducing the per capita energy consumption and CO₂ emissions. Of course we made a lot of strides. At the Copenhagen summit we said that by 2020 the per capita CO₂ intensity is going to drop by 40% to 45% compared with 2005. By 2013 we have decreased the intensity by 28.5% and by 2020 we will overtake our upper limit target of 45%. At the same time, during the Copenhagen summit we established a target of increasing the percentage of non-fossil fuels from 6.8% in 2005 to 15% in 2020. If we are going to reach this 2020 goal, the supply amount will be 700 million tonne coal equivalent (TCE). So what does it mean? It means the total energy consumption of Japan, which last year was about 660 million TCE.

This kind of speed in China is unprecedented. By 2013 the incremental installed capacity of non-fossil fuel units is far greater than that of the installed capacity for coal. Investment in new and renewable energy has reached the level of investment for traditional energy — actually two to three times more than the investment for conventional energy. So the substitution of energy is going to happen fast.

China has established the target of an increasing percentage of non-fossil fuel to around 20% by 2030. That means that from 2020 to 2030 we are going to put in place 500 million TCE equivalent of traditional energy, and in 2030 the supply of non-fossil fuels will be around 1.2 billion TCE — which is about twice the energy consumed in Japan.

In order to achieve this urgent target by 2030 the increase in new and renewable power generation capacity is going to be amazing. For nuclear, hydro, wind, and PV power, in less than 20 years we will put in place 800 to 1000 gigawatts of new energy installations, which is about the total installed capacity in the United States. That is a very big number.

This fast growth of renewable energy is a daunting challenge for us. In order to attain our target of reaching peak CO₂ emissions by 2030, not only should we focus on reducing the per capita CO₂ emissions and energy consumption, but also we should control the total emissions and total consumption – that is, transform from focusing on relative targets to overall. That’s why President Xi said, “To promote energy consumption revolution, curb unreasonable energy demand, firmly control the total energy consumption.”

If we achieve these objectives, we would reach the peak earlier compared with developed economies. For example, developed countries reached the peak period in the post industrialization period – in the 1980s for Europe, about 2005 for the United States and Japan. In China we will reach this CO₂ emission peak by 2030, when we are not yet in that post-industrialization period.

In the developed OECD countries the GDP rate is no more than 6% and energy consumption remains stable, which means they can use their renewable energy to keep CO₂ emissions stable. Many Chinese experts estimate that by 2030 China’s GDP rate will be 4% to 5%, which is much higher than the GDP rate when developed countries reached their peak. By 2030 China’s energy consumption demand would still be growing at around 1.5%. That is to say, by 2030 we will have to meet incremental energy demand with renewable energy, and we should not see any further growth in conventional energy. Only by doing so could we reach the peak for CO₂ emissions.

This means we should put in place about 100 million TCE of renewable energy every year. Every year we have to put in 20 million TCE of wind power capacity, plus 20 million TCE of solar capacity, together with many KW of nuclear. After 2030, every year we still have to invest a lot in new and renewable energy so that we can satisfy the increase in demand. This will lead to stable or even decreasing fossil fuel consumption.

In other words, for China to reach CO₂ emissions peak so early, we will have to make more sacrifices than developing countries. More efforts have to be made.

For China to achieve such a target we have to break down these numbers into sectors and regions. The industrial sector is now the biggest emitter in China, and it consumes about 70% of China's energy. In developed countries the industrial sector consumes about one-third the energy. Since the construction and transportation sectors may continue to increase emissions because of people's demand for their services, the industrial sector must reduce its emissions to offset that. Therefore the emissions of the industrial sector should peak by 2025 so that nationwide we can reach the CO₂ peak in 2030.

Different areas of China are at different stages of development. The eastern coastal region is more developed, with per capita GDP at US\$ 10,000 and per capita CO₂ emissions also high. If conditions allow, those areas should take the lead in achieving the CO₂ emissions peak, and after 2020 should arrive at the peak gradually. In this way the energy consumption and emissions in the west and central regions would be offset, so that nationwide we could reach the CO₂ target by 2030.

To achieve this target, we have to adjust energy production and consumption. We have to come up with a safe, clean, highly efficient, low-carbon energy system. Our traditional mindset is to guarantee supply, but when we try to push forward the energy revolution we have to work on the demand side as well, to control unreasonable energy consumption but at the same time to optimize the energy mix.

If we are going to phase out nuclear energy then it will take at least five more years to reach the peak target. Therefore nuclear energy still is a part of the strategy. When we make plans for a CO₂ emissions peak target, we have to consider other aspects, for example: how do we reduce emissions while strengthening the cooperative governance of the economy, energy, and environment, and at the same time address climate change? How do we achieve a win-win for more parties?

We have to conserve energy, and this target is in line with the target of reducing emissions. So we have to achieve synergy among different regions and sectors. Also, within China we should adopt different types of policies as guarantees, since the 13th FYP will bring a nationwide emissions trading market.

The forum next heard from **Jim Leape**, member of the China Council and Consulting Professor at Stanford University's Woods Institute for the Environment. He focused on the topic of China and global green market supply chains for renewable resources. In making the introduction, **Xu Qinghua** noted that, since 2011, CCICED has been doing policy research and demonstrations on green market supply chain. This past November the Council recommended the establishment of an APEC green supply chain cooperation network, and this idea has been included in the declaration of the 22nd APEC leader's

meeting. This concept has received a lot of interest and support, and **Jim Leape** will share with us global experiences and practices in supply chain for renewable energy. Here are the main points of the presentation:

I would like to take us into a dimension of the sustainability challenge that we don't often talk about in this forum. We've talked a lot about green transition and green transformation, but we tend to focus in those discussions on the daunting challenges here in China — the challenges of domestic pollution control and domestic resource management. There has been promising progress in addressing green supply chains, but often that discussion has focused on manufactured goods, electronics, clothing, and building construction. In fact, a large part of our impact on the earth's resources comes from the global trade in commodities — the commodities we rely on for the food we eat, the clothing we wear, and the materials to build the houses we live in. The production of those commodities is driving the destruction of many resources around the world, whether it is commodities we grow as crops or commodities that even in this century we harvest from the wild.

I want to talk about the challenges of the global commodity markets and what they mean for building an ecological civilization, China's role in both driving those problems but also its potential role in the solutions, and what actions we might take in moving forward.

First, let's get a sense of the scale of this challenge and how much it has grown in recent decades. A map of the world shows the few isolated areas of the ocean where in 1950 we were taking 30% or more of the biomass every year. The same map in 2006 shows that today we are fishing heavily everywhere. The consequences are that across the world we are fully exploiting our fisheries — or beyond — in 90% of existing stocks. Almost all stocks are either exploited or depleted.

You see the same problem if you look at the impact of agriculture. 70% of our water use is for agriculture. Many of the most important producing regions of the world face a future of water scarcity.

Furthermore, this is a climate issue. Nearly one-quarter of global GHG emissions come from agriculture and deforestation. Those two things are linked. 70% of tropical and sub-tropical deforestation is driven by agriculture, that is, by the conversion of forest to produce crops.

A lot of this is illegal. In many cases, governments have acted to manage their resources, but those management regimes are being undermined by illegal trade on a massive scale. 20% of the soy in trade, 30% of tropical timber, and 40% of palm oil are illegal products from illegally converted lands. That is

important because that illegal trade undermines government management. It undercuts the producers who are trying to do things sustainably. And of course it fuels corruption on a huge scale in many producing countries.

China on this issue, as on so many, is of transcendent and rapidly growing importance. The assessment of the ecological footprint that the Worldwide Fund for Nature and the Council did some years ago shows that. China's total ecological footprint is the largest in the world. Per capita it is still well short of footprints in Europe in the United States, but it is above the global average, and rising fast.

If you translate that footprint into the context of commodity markets, you will see that China is a significant importer of fish, and by far the dominant producer of farmed fish. China is the second largest importer of palm oil, which is driving the destruction of rainforests across Southeast Asia, especially Malaysia and Indonesia. China is the largest importer of timber. And China is by far the largest importer of soy. Soy and beef together are the drivers of deforestation in South America.

So China lies right at the heart of this challenge, and the decisions made here in China about how to engage those markets will determine whether we can harness those markets as engines of sustainability or whether they will continue to be the engines of destruction, as they often are today.

This is not all gloom and doom. There is a good answer at hand. Over the past 20 years we have seen a growing interest in private, voluntary standards for defining sustainability and bringing sustainability into the market. The Marine Stewardship Council, created 15 years ago, is doing that for fisheries. The Forest Stewardship Council, created 20 years ago, is doing the same for timber. Similar regimes are in place for many of the most important commodities in trade: palm oil, soy, cocoa, coffee, cotton, and many others. What these provide are emergent global norms for what sustainability is. What does a producer need to do to take care of the resources upon which he depends? How can he manage his production responsibly? Those standards are having increasing adhesion across the world among major players in these markets.

The Forest Stewardship Council, created in 1994, now has about 17% of the global market. The Marine Stewardship Council, created in 1998, has about 10% the total global annual harvest of wild capture fish. The Roundtable on Sustainable Palm Oil, created just in the last decade, now is at 16% of the global market. These and several others have become significant, credible players in the global market. The question is, how do we take them from this niche of 10% to 15% and make these efforts mainstream? China obviously is central to this.

Already you have many of the world's biggest companies and well-known brands joining this effort. McDonalds across North America and Europe sells only certified sustainable fish. They don't talk about it, but they have moved strongly in that direction. Walmart made similar commitments, also Aeon in Japan, and others. Many of the world's biggest brands have made commitments to sustainable soy and have supported a moratorium on deforestation in Brazil in support of those commitments. Similarly in palm oil, again we have many of the world's leading companies stepping up to sourcing only sustainable palm oil, produced without deforestation. Note that the Chinese trade association that represents all the palm oil importers in this country — the China Chamber of Commerce of Foodstuffs and Native Produce — takes an active role in furthering this effort.

At this point we have commitments, from players who add up to more than 60% of all the palm oil in trade, to end the sourcing of palm oil produced by deforestation by 2020. This is a commitment from Wilmar, which by itself represents 45% of the market. Also we have commitments from Golden Agri, an Indonesian company, which accounts for another 5% of the market, and from Cargill, an American company, which accounts for another 10%. 60% has got to be close to a tipping point. So we have big players saying: we can no longer be part of driving the destruction of forests in Indonesia, Malaysia, and other regions of the world that are moving into this sector.

In the last few years you have seen finance also begin to step up in support of these efforts. That of course is crucial, because all this production depends on finance. The China Banking Regulatory Commission was a leader in this, and was one of the first regulators to establish guidelines for sustainability in the lending that it does. And now we have something called the Banking Environment Initiative in which a dozen of the world's largest banks have come together to say they will work with their clients to support this shift to sustainable production of commodities, providing the financing that allows the suppliers to move in this direction, and tightening the standards under which they give credit, so that they are beginning to weed bad actors out of the business. Note that this involves many of the world's largest banks: Goldman Sachs, Deutsche Bank, Barclays, and also the China Construction Bank.

It is important to note — as I highlight the need for China to act — that Chinese companies are already moving in some ways that matter. One way is on transparency. Obviously one foundation for assuring sustainability, for assuring legality, is transparency, that is, knowing where your commodities come from. Who produced them and how? DaChan, the largest seller of poultry in China, has initiated a program to provide transparency across its supply chain. You can scan that barcode and find out where the chicken was raised and how it was processed and how it got to your store. Presumably that is inspired by concern

about food safety, but it is the perfect foundation for also assuring sustainability. So, that move toward transparency is an encouraging start.

As well, China has actively embraced one of the leading sustainability issues in this domain, and that is around timber. A 2007 partnership between the Chinese government, big Chinese companies, and international NGOs has now taken the Forest Stewardship Council to a strong position in this country with more than 3 million hectares of forest certified in China, and more than 3000 businesses certified for dealing in sustainably produced goods. It's a start.

On palm oil, the trade association responsible for all the companies in that business has already been clear about it: this is the future, and we as an industry have to move in this direction.

What specifically needs to happen? Why is it in China's interest to move? One reason is climate change. Agriculture and deforestation together account for nearly one-quarter the problem — and in many ways they are most tractable part. This is one area where we can act to make progress quickly.

A second reason is China's often expressed commitment to being a good partner for the countries with which it works, and this is about being a good partner in trade and investment in the countries that produce these commodities. In many cases the trade has been illegal, and so you are undermining those countries' management of their resources.

Finally, this is about China's brand. Every country has a brand. China's brand suffers from the behavior of Chinese companies investing in trading overseas without regard to these principles. China has been a philosophical leader in defining and setting out the goal of ecological civilization. That is the philosophical underpinning for these efforts, and engaging these efforts will be an important part of building that aspect of China's brand.

Several things need to happen. One is of course that the government has to say: this is the direction we need to go. If the government simply says that clearly, many things become possible, many things start moving. We need to start engaging in these international initiatives to drive sustainability in commodity markets. It takes government efforts to crack down on illegal trade. We have seen other importing countries already begin to do that, notably the United States and Europe, and notably on timber trade. It takes action to ensure transparency, to begin to put in place the mechanisms to know where commodities come from. We need to create financial incentives. Preferential tariffs are a good start for actually shifting consumption and imports to sustainably produced products. Development assistance, which has often

been used to build infrastructure important to partner countries, can also be used to help those countries build the capacity to better manage their resources, to better control the illegal trade that is undermining their efforts.

That will require training for Chinese companies to know how to operate within these standards, as well as for their partners. It can be fueled by a shift in procurement. The Chinese government buys a lot of stuff. If that purchasing is made under these standards, then of course that by itself shifts the market.

China has often started these kinds of transformations with pilot programs. And palm oil is an obvious place for a pilot program. You have a lot of momentum in the international market. Half the imports into China are by international companies. It's a natural area to step up, and it's a big part of the climate agenda going into Paris.

Companies don't have to wait for the government to act. There are three obvious things they can do. One is to get transparent, to be clear about how their products are sourced and where they come from. The second is to be legal, to say that we as a company will not traffic in illegal goods. That by itself is a huge step forward. And a third is to get certified, to say that under these regimes we will shift our purchasing to products that we know are sustainable.

NGOs have important roles here. Trade associations are at the centre of this. Trade associations can make a big difference in facilitating this transition, in helping their companies to make the transition, in helping the government form the policies that are needed to support it. And other NGOs, whether domestic or international, can help in that effort, providing technical support to help it happen, as we have already seen in the experience of the Forest Stewardship Council.

The message I hope you take is this: as we focus on climate there is a set of challenges we need to address, and it is the impact we have on the natural world from the global market in commodities. China is at the centre of that, and here is an opportunity to step up and make that market work for sustainability. That is an opportunity we should go after.

CCICED member **Wang Jin**, who is Director of Resources, Energy, and the Environment at Peking University's Law School, spoke about the law guarantee of green development. Here are the main points:

In April we promulgated the new Environmental Protection Law. The media, the international community, the public all spoke highly of this revised law. Some argued it was the strictest law in China. I was involved in this process from 2011 to 2014. I think there are still many areas for improvement in this law, still many loopholes to be closed.

First, this is only one of a series of laws for environmental protection and natural resources management, but this law is positioned to be comprehensive and fundamental. However it cannot address and standardize all the issues, which means there are areas for improvement. We went 25 years without a revision, but then from 2011 to 2014 the legislative body went through limited changes and then a comprehensive enrichment to the draft. The draft has gone through four reviews. It is a controversial law, but people have high expectations for it.

So it's not a law that could directly be used to deal with all the issues with regard to natural resources and the environment. All the new mechanism to deal with that will be put in place as a result of this law. As yet there are no implementing rules or regulations from the State Council or rules from MEP. That's why much remains to be done in coming years.

So what are the areas for improvement? Again, it established or improved environmental protection systems and made changes to unreasonable areas, and it streamlined matters of principle. The big disadvantage is lack of clarity about whether it is implementing law or a policy law. Another question is how to connect it with relevant regulations and with earlier, less comprehensive legislation, including the Atmospheric Pollution Prevention Action Plan.

Second, this Atmospheric Pollution Prevention Action Plan also went thru a long period in which I participated. Because of smog issues and revision of the Environmental Protection Law, revision of the Atmospheric Pollution Prevention Action Plan was put aside until last year. After several earlier revisions, the number of articles had tripled, and ministries and stakeholders were not enthusiastic about the 2014 draft submitted for comment. Many of its 194 articles were what I call rubbish articles. They just repeated provisions from the Environmental Protection Law.

By the time the draft was submitted to the public for comments, the number of articles had been reduced from 194 to 102, but many that remained were still rubbish or not detailed enough, in my opinion. Let me give you an example. In the United States or the United Kingdom, the practice of applying a *per diem* penalty is the main form of industrial punishment, and in continental law it is one of the options for judicial bodies. Of course, China should draw upon best practice from developed countries and use this

type of penalty mechanism. But the Atmospheric Pollution Prevention Action Plan makes reference to this only once and as a broad matter of principle. The draft says only: The agency responsible for environmental protection should carry out this penalty.

If other laws like the soil protection law are going to be the same way, then I don't think it's going to be good for our legislative work. That's why we need to improve the legislative quality in general in China, to make it more relevant and detailed. Perhaps we should put this as part of our agenda in CCICED.

It is hard to assure the combination of environmental administrative control and improvement of environmental quality. That's a big issue for us.

Regarding basic system reform and innovation in the post-Environmental Protection Law era, we should do this in multiple ways. We should put in place solutions via legislation, amendment, and abolition of law. We should reform environmental impact assessment and link the "Three Simultaneous" to the pollutant discharge license. And monomial environment law should not just repeat the provisions in the Environmental Protection Law.

And regarding penalties for violations again, the amount should be scientifically based, especially in the case of soil and water pollution. Also we should consider: improvement via formulation and amendment of State Council regulations; improvement of environment protection planning; and linking the pollutant discharge license to the total quantity control. As well, we should carry out the improvement via formulation of rules of departments, including the reform of environmental quality standards, and we should link on-site inspection to the environmental administrative guidance.

Many businesses discharge more than they should. Should we always impose penalties? As soon as they discharge their limit, we should look into details before we impose penalties. For the first time this Environmental Protection Law gives authority to the administrative enforcement agency. But how can we materialize and substantiate such a provision? I don't think we have good rules or regulations in place.

Yesterday we also made recommendations that new rules should be made regarding different types of laws. The 4th Plenary of the 18th Party Congress also mentioned the use of litigation. So, we have to solve problems through judicial guidance and explanation. I think this an important way for us to improve, for example, in the case of infringement and ecological damage. Through public litigation we can get money and solve and manage this problem, plus engage the public.

Lastly, some things can be solved through local laws and regulations. In the past we emphasized laws being comprehensive and systematic. In 2011 and 2012 the previous president of the NPC, Wu Banguo, mentioned we already had a basic legal framework here. Now the problem is how do we improve the quality of laws and regulations? How do we make sure our laws are more feasible and applicable? With the help of international members of CCICED especially, we can do a lot.

The forum's final keynote speaker is **Kaveh Zahedi**, Regional Director and Representative for Asia and the Pacific, UNEP. He spoke about green transformation in China and in Asia, and the role of pollution control and prevention. Here is a summary of his talk:

Air pollution is one of the most fundamental issues China faces — but it is not just about air pollution. This is an issue of human health. We heard some of the indoor air pollution figures that the WHO has put out. If you combine indoor with outdoor air pollution, there are something like 7 million premature deaths annually, including about 5 million here in the Asia-Pacific region and about 2.8 million in the region called the Western Pacific, which includes China. These are phenomenal figures. This can only be seen as an emergency.

But it doesn't stop there, because we are also losing our food. The loss of yields in four important crops — wheat, soybeans, rice, and maize — from ground level and tropospheric ozone is up to 50 million tons a year. So air pollution is reducing food security. And of course there is a link to climate change, not only to near-term climate warming but also to the accelerated melting of glaciers, in the Himalayas for example, and also the disruption of local rainfall patterns which again will affect crop production. And all of this has enormous economic cost. So when we see Art Hanson's image of the coal tumbling out of the side of the mountain, the cost of that coal is not putting it into some ship and taking it to the power station. The cost is in the human health cost, it is in the food security cost, it is in the climate cost, and it is in the economic cost. All of those costs need to be factored in when we use any of our resources.

Air pollution is at the heart of China's — and any other country's — green transformation. But it's not just a China issue. Air pollution, as the WHO said this year, is now the world's largest single environmental health risk. And of course this is a call to action. We saw at the United Nations Environment Assembly earlier in 2014 a strong resolution to move forward on air pollution for all of our countries. And at the World Health Assembly in 2015 we will see a resolution on air pollution, already with quite precise guidelines on indoor air quality, which links with the SE4All presentation you just saw.

So there is a global rallying. This puts the Chinese treatment of the issue in the global context, and there is a regional context too. Air pollution is not just a national issue. It is a trans-boundary issue, one that is picked up in this region by many countries. The Tripartite Environment Ministers have recognized it as one of their priorities. We cannot look at China issues in isolation. We have to look more broadly. We have the platforms and mechanisms in this region to do that: the acid deposition network, the ASEAN haze agreement, clean air partnerships, and so on.

We have seen much evidence that China is not meeting air quality standards, whether they are Chinese, European, American, or WHO standards. One worrying thing is that recent research shows that most of the health gains from a reduction in air pollution, especially the cardiovascular benefits, only happen when you reach very close to the WHO limits. In other words, you can reduce pollution by half, but you are still not making the biggest difference when it comes to saving lives. That heightens the urgency of dealing with air pollution in the context of China's green transformation.

Of course it's not all bad news. For example, renewables technologies such as PV already exist, and have seen an extraordinary fall in price. We have to note that, although China has a huge PV manufacturing capacity, a lot of the products are exported and are not installed within the country itself. In terms of transport, very simple particulate filters can take away 99.9% of harmful fine particles. It's a no-brainer, and what's more, the fuel is of the right quality now so that we can do this. In power plants, there are ways of cleaning the emissions. In terms of residential, clean cook stoves can bring extraordinary benefits health-wise from simple technologies. The technologies all exist already.

And what surrounds the technologies is also in place. In China we have seen extraordinary legislation providing action plans and targets. Action is being taken to control industrial and vehicular emissions, to scale up renewable energy, and to phase out coal — and we should not be shy about saying that.

Agricultural practices are being transformed. For example, rice is a crop that emits a lot of methane, then the stalks and husks are burned, and that creates a lot of wet carbon. It's very simple: we don't have to do it that way. We can have alternate wet/dry systems that reduce the methane emissions. Again, we already have basic technologies that bring extraordinary gains and don't get in the way of economic development.

We need to enhance the capacity for air quality monitoring. Already we have seen remarkable movement in China on that.

And because of the rush — because of the need to make this happen so much faster than it has ever happened — we have to learn from others. Learning by doing won't work here. We have to learn from others doing. We cannot commit the same errors here. We have to learn the best practices from elsewhere in terms of dealing with vehicular and industrial emissions. And of course communication is the key. Here in Beijing you can download an app and know more or less what is happening with the air quality.

Promoting air quality is not only a priority for protecting health, but it provides multiple benefits. It is just as much about ecosystems, just as much about agriculture and agricultural productivity. The benefits in this case for China are somewhere in the range of crop yield losses of 15 million tons that can be avoided by reducing methane, black carbon, and tropospheric ozone. We can avoid huge numbers of premature deaths. We can contribute to avoiding near-term warming of maybe half a degree, certainly in the East Asia region. And we can prevent some of the disruption to rainfall patterns and the knock-on effects that it is having.

A previous presenter said that China needs to make more sacrifices. But those sacrifices bring with them extraordinary multiple benefits that justify them and make them worthwhile.

In summary, we are seeing great progress. We have seen the laws, the legislation that has passed. The momentum is here for dealing with air pollution as one of the main indicators of progress in China, and a key one for green transformation. But the pace needs to be faster. This is why we need to leapfrog. We cannot just go step-by-step like Europe or the United States has done in terms of vehicle emissions. We need, for example, to bring in particulate filters immediately. We need to broaden the equation. We must consider all the costs of using assets, such as coal. Those costs have to be part of the decision-making process. That would be a huge step forward in the kind of policy analysis China and this Council can undertake.

Investments clearly need to be smarter, and directed toward more renewable energy, toward the natural capital basis of much of our growth, toward green credit. Otherwise we lock ourselves into obsolete technologies. We lock ourselves into energy production that is and will be obsolete very fast. We lock ourselves into inefficient buildings that will be obsolete because of the energy they are losing.

And of course, enforcement needs to be stricter. Somebody spoke about the large number of new enforcement officers we would need in China to tackle this issue properly. Wonderful! Those are green jobs. In a country that is passing through an industrial transformation, those enforcement officers would be part of the new wave of green jobs.

So, as China looks to redefine its 21st century pathway toward a green transformation strategy, we need to look more broadly so that this transition is also about embracing opportunities that cut across the sectoral areas we have been discussing. Nowhere will China's overall success in terms of green transition be watched more closely than on the issue of air pollution, both by its own people and by the rest of the world. For me, looking across in an integrated way at the multiple benefits in health, agriculture, ecosystems, climate — global and local — is a way of bringing about the tipping point that Art Hanson referred to in terms of action toward for China's green transformation.

Leading comments

With **Siebe Riedstra** now acting as chair, the forum heard from three speakers who delivered brief "leading comments." The first presenter was Council member **Lars-Erik Liljelund** who is former Director-General of the Swedish Environmental Protection Agency. He made these points:

I agree with that last presentation. We have to recognize that there is a unique pathway for each country. Often — especially people in the West — we think that everyone has the same pathway toward sustainability, but that's not the case and I think that presentation shows it clearly.

We must beware that in solving one problem we might create two other problems. Always there is a risk of that. So we need to take a holistic approach, to look at everything. China for a long time had the concept of the harmonious society, and now it has the concept of ecological civilization, both of which, for me, take the same kind of holistic approach. We must also remember that China is a world leader in forced transformation. If we had a discussion 15 years ago and said, Where will China be 15 years from now? nobody could describe in detail the situation China is in today. It's important to have this holistic approach, especially when your transformation is so fast.

In response to Jim Leape, one way to solve the complex situation of different type of impacts and to have good market communication is to use standards and certification. It is a good way to communicate with the public, especially with people who are not experts. Standards and certificates — from the Forest Stewardship Council, the Marine Stewardship Council, and so on — shows that something is fair, and good, and contributes toward sustainability.

Legislation is of course extremely important. But legislation may also “freeze” politics. Even though you create a legislative package, politics devolve. Things change. Yet you still have to follow the old politics, because they are written into the paragraphs of the law. So, while the country developed toward a green transformation, there is also a need for transformation in the legislation.

The second of the forum’s leading commentaries was presented by CCICED member **Zhang Hongtao**, Counselor of the State Council and former Chief Engineer for China’s Ministry of Land and Resources. Here are his main points:

Let me talk about energy restructuring in China from a technical perspective. This is a fundamental issue for this forum. For a long time coal consumption has been one-third [sic] of total energy consumption, far exceeding the 30% world average. Also clean energy accounts only for 15.6% against the world average of 30%. So that is where China stands. That’s why we see this deteriorating smog. I believe that it is a product of China’s unreasonable energy structure. Compared to most countries, China’s coal production and consumption are high. Which is bad news for us.

In order to build a wealthy society, industrialization will be achieved by 2020. During 2011 to 2020, GDP will be doubled, which requires GDP to grow at 7.8% annually. This means energy demand in China would be long-term and rigid. For us to improve the environment, we have to lower the percentage of coal as a first step. We plan that our coal consumption will be equal to or smaller than 57%, which is difficult because we have a lot of coal resources and little natural gas and crude oil. We cannot fundamentally change the dominance of coal, so we have to develop vigorously the proportion of non-fossil fuel and lower the percentage of coal consumption by phasing out obsolete capacity and taking other measures. Because more than half our coal is for power generation, the most pressing issue is to do a clean coal innovation for power generation. In Shanghai some power plants has been advanced by collaborating with Germany. We should speed up the local legislative work based on the local context to offer tailor-made solutions. So if we proceed from the local context and put in place clear policies then in the distant future we do have a chance of dealing with the smog. But still it is a difficult task.

The final presenter is Council member **Dirk Messner**, Director of the German Development Institute. Here is a summary of his talk:

I see a half-dozen basic elements for transformative politics. Most of these elements are new to us. We are still at the beginning of the learning curve.

First, resource efficiency, GHG efficiency, carbon efficiency. This is one element that we know about, what we are good at. This is part of what we have been doing for the past 200 years. We have a lot of experience with this element.

Second, new dimensions of transformative change. Here, we do not have experience.

Third, phasing out GHGs, phasing out fossil fuels, coal — and within strict time frameworks. If you take seriously the report of the Intergovernmental Panel on Climate Change, we need to phase out GHGs by 2070, that is, within 55 years. So, phasing out is something new.

Fourth, the circular economy, which means moving any resource we use in a circle. This is a field where we don't have much experience and we are bad at this. Evidently we only use about 15% of the potential technical solutions that already exist in terms of the circular economy. This is a field where we need to make huge progress.

Fifth, don't touch protected areas. This is obviously an area of tension when it comes to economic dynamics and protected areas, but it's also about politics. This is not just about technological solutions. It's also about new cultural perspectives on global heritages. We need to keep this in mind.

Sixth, lifestyle and cultural habits. Ecological civilization goes far beyond technical solutions and quick fixes. It's also about cultural change. We need to emphasize this more in the work of CCICED than we have done. We talk about efficiency gains in technologies, which are important of course, but looking into these lifestyle and cultural changes is also important. I would suspect 35% of what we need in terms of solutions is here — in cultural changes and changes in habits and lifestyles.

Another point is this: concerning energy and the energy revolution, we need to do a lot of research and learn from the pioneers in the field in the transition toward new and renewable energy. China is important here, and so is Germany, but 30 other countries are moving in this direction. What we have seen also is that it becomes difficult at the beginning. In Germany now we have seen that when you move toward 20% renewables in the energy mix, you run into new kinds of problems, about institutional change, new types of regulatory frameworks, and so on. A new institutional setting is required. You need to think about how to balance decentralized and hierarchical solutions. It goes beyond technologies,

which we already have. It goes also beyond the investments needed. So, having good knowledge about these pioneers of green energy transformation, this group of 10 to 30 countries which are moving in this direction now, seems to me important to mobilize knowledge.

My final point is that all the speakers have mentioned the key role of China in all these processes of global environmental change. China is part of the driving force of this change, and it is also part of the solution. I suggest the Council should focus more than we did in the past on this international dimension of global environmental change. What China does has implications around the world — that is the first dimension. But also China can learn from international experience. This is why we are all here — that is the second dimension. The third dimension is what China can do in its activities around the world, in the World Bank, the BRICs Development Bank [now the New Development Bank], and its work with Africa. What can China do to make the global transition toward sustainability possible?

General debate and comments

I feel pressure, especially after hearing the presentation about China's consumption of fossil fuel and also the challenge in terms of non-fossil fuel consumption. I am an economist. From an economic perspective by 2020 non-fossil fuel will be similar to the Japanese non-fossil amount at this moment, and by 2030 our amount will equal that of the US non-fossil amount at this moment. That means we must make a huge investment.

How do we work to achieve this target, or move beyond this target? We must mobilize the whole of society to come up with an innovative new energy framework. Mostly now it is government investment. We have not yet mobilized the private sector. Actually our citizens are enthusiastic about joining in. People are willing to contribute. So if we spread out this cost and effort then the pressure is less.

The core is always money. That is the essence of economics. If we have enough money to invest, we can speed up the process. But the problem is that now we depend on public finance. That is not enough. The target we set at the moment is 20% renewables by 2030. But that target is not ambitious enough. Why not 30% by the year 2020? Or an even more ambitious target? We have solar, wind, nuclear, and other types of new energy, but because of the high price of new energy as compared with coal, it's not easy to promote them.

So why not encourage people to share the cost of different types of new energy? For example, we have committed to achieving 15% renewables by 2020. To achieve 20%, why not ask the people to share another 5%, or the cost related to that renewable energy. When people pay their electricity bill, they can pay a little more for the renewable energy. We can mobilize this amount of money to accelerate the investment in renewable energy. We can learn from the Nordic countries. We can set the prices for wind, hydro, solar, and so forth, so people can voluntarily share the cost so as to achieve another 5% of renewable energy in the overall mix.

Enterprises can do the same. We can provide certificates or awards for enterprises. If they use renewable energy we can provide them with an acknowledgement. After three years, the scheme becomes compulsory. We as a country make a commitment, and every household or enterprise has to accept the cost or price. So that is mandatory. If we mobilize the whole society it is not a big cost on the side of the government. If we do it voluntarily at the very beginning we can encourage people more. Of course if they do not want to, they don't have to take part in this.

Lastly if we are going to do this, we need to monitor for better efficiency. If we can mobilize the whole society, it can help us achieve the target. We have to make breakthroughs. We have to think out of the box. Otherwise, just continuing with the current status is a huge burden on the government.

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I am struck by the international dimension of this, the international significance of China's work in this field. We have just heard of the need for a functioning legal framework in order to implement and enforce environmental legislation. Sweden has had good experience doing away with a lot of sectoral environmental law and has created a comprehensive environmental code. It was created in the 1990s and has worked well since. But as we just heard, we also must beware that the laws don't freeze political ambitions. We always have to change laws in line with the political order of the day.

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I fully agree that we have to be willing to learn. Some countries have made the transition successfully, but at different speeds. One size does not fit all. What China is doing now that is promising is joining the Global Green Growth Forum in Denmark. The Chinese delegate has said: We are joining so we can learn from the Nordic countries, to see how they have made the transition. So I see an interest in China in trying to learn how others have done.

But in that learning process one of the best examples I like is the Norwegian decision 15 years ago — before it became sexy — to put in a carbon tax. They did so, and the oil companies behaved. It encouraged research and development, and provided cash to invest in alternatives. I said to one of our Chinese colleagues: I see all the user fees you are introducing in China, why not apply the ultimate fee, and tax carbon?

The other comment I have for China is : Don't waste a good crisis. The citizens are already concerned about air quality. Our colleagues from UNEP have shown that there is high mortality. I am sure citizens will be ready if you say to them: Look, one cause of pollution is we need to provide you with energy using old technology, but work with us now for a cleaner environment — but you will have to pay a little bit more. Change the incentives. You need to encourage the consumers to pay. Now, there is a heightened awareness that air quality matters. There is high mortality when you add indoor and outdoor air pollution. Don't waste the crisis. The people are listening already. Just push it a little bit more. To get the alternative energy forms you might have to pay a little more for five or ten years. But guess what: we lead the world in renewables already, which means we will lower the cost for you. And then we democratize for you. We do like the Germans do: they have already shown you can do off-grid rooftop power. China can leapfrog.

China could push even more electric cars. Again, something learned from the Norwegians, who are the largest per capita users of Tesla. They are incentivizing it. They are encouraging their consumers to move to electric, and they are also trying to push the use of more renewables even though they have gas.

We see already that these transitions require new regulation. Even the Germans are struggling a little. So we all need to do a lot of learning. We need new institutions, new regulation, and new technologies. I've seen the Americans going through a list of skills they *don't* have for dealing with a new energy future. They are also trying to build capacity, in universities, because they don't yet have the skill to deal with that new energy space.

Several of us have been saying for years consistently that we need to look at that international dimension. China is a big player. China can lead. And I believe in the energy space. We have an opportunity to learn a lot from China — and China has to leverage that influence. China already now heads the International Telecommunications Union. One of the key revolutions we see is the integration of new energy technologies and digital communications. China is also leading the United Nations Industrial Development Organization. So I see China now, whether in the World Bank or in the New Development

Bank, beginning to help the world move faster into this transition. China's experiments are at a scale no other country is doing. These lessons are what we call reverse innovation. Others can learn. In fact China may catalyze a faster revolution for everybody because the Chinese footprint is big. If we are looking at another ten years of CCICED, we must pick up this international dimension, because China's role has changed. China is a leader. We can learn from China.

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Actually, Finland was the first country to introduce a carbon tax. Sweden was #2.

Again as an outcome of this more holistic approach, we should consider the tax shift concept, which means you introduce taxes on the use of resources or emissions of carbon, while at the same time reducing taxes on salaries. This is extremely effective for the future. In my country we have increased the carbon tax to 100 euros per ton, which is fine because the taxes on salaries have gone down.

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Yes, we can introduce that tax, but changing the tax system takes a long time. Also, taxes in China are already high. Like in other countries, if you reduce certain taxes, some people will be happy, but the finance department will not be happy. So it's too complicated.

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I agree with the point about the complexity of changing the tax system, but *not* to use the tax system in China to address the urgent air pollution problems would be a missed opportunity. So if there is a way that the China Council can provide advice and help in terms of reform of taxation it would be an important contribution by the Council.

As for fears that China might miss the opportunity provided by the air pollution crisis, I see three ways that may happen.

First, China could repeat the mistake made by United States and North America in the 1970s, that is, of dealing with our own air pollution problem largely as a sectoral and technical issue. We missed the boat to make some important structural and even political and cultural changes at the same time. China should not miss the opportunity to make those changes.

Second, China should not do what North America and Europe did and externalize its air pollution problem to other places in the world. It would be easy for that to happen. That should not happen because it is simply shifting the burden of pollution and morbidity and mortality elsewhere. So please let's not miss that opportunity.

Third, perhaps most important, it's the opportunity to have the political discussion about what development really means. If development leads to 450 parts per million of particulate matter in your air on a regular basis, everyone can agree that is not what we mean by development. But if we don't mean that, what do we mean? There is a whole alternative theory that is emerging in the West in the discussion around well-being and inclusive wealth. It provides an increasingly robust way to rethink development. China should not miss the chance provided by this crisis to embrace some of that thinking and bring it into the Chinese context. It aligns extremely well with some of the philosophical underpinnings of ecological civilization. We call it going beyond GDP; China can call it whatever it likes. It's really about getting beyond the core traditional measures of what we call GDP.

One connection between inclusive wealth, or well-being, and ecological civilization came during a CCICED breakfast. A Chinese guest told me that ecological civilization is only one of four pillars: there are political, social, and economic civilizations as well. If that's the case, I see a tight alignment between the concept of inclusive wealth — which UNEP has been promoting — and what we think of in the West as inclusive wealth. There is an extremely tight correlation there.

Also, if you embrace the concept of inclusive wealth it's hard to ignore the importance of investing in non-market solutions that drive aspects of well-being that are not provided directly by the market, for example, social cohesion, natural capital, and the value of natural assets. It forces you to get out of market-based thinking entirely, and to begin to realize that much of what drives well-being occurs outside the market, and that governments need to embrace that as well.

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Once, at UNEP, we looked at energy myths. We looked back at projections of the uptake of renewable energy, projections made by big institutions, the World Bank, the International Energy Agency, and so on. All the projections were wrong. They all underestimated by large factors the uptake of renewable energy. There is no point in a Council like ours proposing targets and goals that are more or less where we are headed. That's not transformative, that's just business as usual. It's nice business as usual, because

it reflects the changing technology, but that isn't going to change the pathways that we have been talking about. In setting these kinds of aspirational goals we do have to acknowledge that technology moves faster than we ever realize. And we have seen this in China more than anywhere else. China is the world leader in fast transformation. That applied to the environment as well, on the positive side of the equation.

Where CCICED can really position itself is more on this tension between the economy and the environment. Here is where a body like the Council has the opportunity to broaden the conversation, because that tension will always go in the wrong direction if it's a narrow conversation. I could mention the coal coming out of the mountain, I could mention many others. The cost inflicted by Mr. Leape's chicken, the organic one, is very different from the one that is pumped full of chemicals, in terms of the cost inflicted on society. I think until our economists find a better way of fully reflecting the costs being imposed on society by all production processes — chemicals in the food, pollution in the air, CO₂ — we are not going to make that transition to a new pathway. That's where the Council can be helpful to China — by identifying those pressure points, those tensions, and showing they are not quite so tense. Actually, if you do full cost accounting, if you value your natural capital, you get a lot of benefit on the environment side as well, and that might begin to shift investment in a new direction.

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It's striking that in this forum we don't often talk about the private sector, about business leadership and the role that business can play. There is of course a central role, in any country, for government to be shaping markets, to be defining the terms under which markets operate, to influence prices through taxes and so forth. But as was just noted, it often takes time, for example to get a tax in place. In the meantime, you see companies moving fast. You see companies recognizing a different set of self-interests than they had five years before, you see them looking for a way to address these problems themselves rather than wait for government to act. That's not a substitute for government action but it's an important dimension of our efforts to meet these challenges. It needs attention in our discussion. We can illuminate those interests, but we also need to be looking at how does business factor here? And as business can be inspired to move on some of these issues, what does that then open up for political opportunities, for government to do what it needs to do? But assuming that the change needs to start with government policy, that translates into regulations, that translates into corporate change, is actually much too rigid a logic. We would get a lot out of looking more at what the private sector opportunities are and how we actually develop and nurture those in tandem with the policy discussions we have.

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I support the earlier point about co-benefits. Doom stories do not trigger change. Understanding these co-benefits — energy for all, health, employment, these kind of things — this is one element of the transformative strategy. In addition to that, we need to focus on two other things we haven't emphasized so far.

First, let's focus more on the tensions, difficulties, and tradeoffs in the process of transformation. It's not an easy task. There are technological lock-ins. There are political dimensions. Institutional changes. So it's important to remember and understand the difficulties of a profound transformation.

The other element is knowledge gaps. Where do we need to have better knowledge? In technical areas, storage and renewables is still an open field. Electro-mobility and batteries, we don't have a solution. Zero emissions in 2070, there is still no technology around to achieve that.

Again on the topic of knowledge gaps, I wonder whether China's research institutions are well equipped to give good advice and do good research to help the transformation? My perception is that it is not the case. As we are talking about profound transformations in industrial sectors in the economy regarding markets, we need to think about how to restructure our research organizations and architecture to be capable to give good advice in this process. We need to understand the interactions between our social and economic systems, the natural and earth systems, and the technical systems. In our science systems these elements are differentiated in silos. We don't talk to one another. But we need to understand the interactions, between technical, social, and earth system elements, on a local, national, and global scale. So how to reorganize our knowledge and research systems is of high importance.

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In CCICED I have not seen us take advantage of the possibility of bringing in four or five leading chief executives officers of major Chinese corporations to our discussion. I think sometimes we talk to ourselves. We are policy people. We are researchers and so on. I wonder what difference it would make, as an experiment, if we brought in a few chief executive officers. They don't have to be from the energy sector — but they could be from consumer producing companies. They could reflect on the future.

I give you an example. Three years ago at the Global Governance Forum, in Austria, we were having a high-powered discussion on governance. After two days, the chief executive of a major Korean fashion company said:

I have been listening to you global leaders but you are not addressing one important issue: TGIF. That's the Twitter, Google, Internet, Facebook generation. You guys, you see these kids as problems. We in marketing, we see them as an opportunity. We are selling to them. It's a new group who do not need a political leader. They just use Twitter, and 10,000 of them gather on Wall Street.

This executive changed our perspective. She said that politicians should learn to work with these young people because they are the next generation. How do you influence them for social change? Once in a while we should listen to what Chinese people think about the future, and we can deal with that tension between economics and environment, but also economics and politics. Maybe they can give us insights we the policy analysts are not thinking about.

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All these valuable studies could be embedded in three steps. Our fundamental goal is that all these recommendations be accepted by the central leadership. And also we want the general public to feel that we are proposing something that is closely related to the livelihood of the people.

First step, by 2020. That is a most crucial year, the realization of the Chinese Dream. By 2020 when we are approaching the end of the 13th FYP, so we have this Chinese Dream. We have to report to the whole nation the realization of this dream. It's not just about environment or ecology. How do we show a preliminary plan for the realization of such a concept as ecological civilization? The second step is the year 2030. President Xi and President Obama made a commitment about the carbon emissions peak. The details are not sorted out yet, but it's a target for us to achieve a carbon peak.

And the post-2015 agenda. From 2015 to 2020 will be a crucial period for China and the world. The third step is way down further, for us to achieve green transformation and realize ecological civilization is not something we can do overnight. There has not been a successful experience or best practice. Globally still, we are in a process of transformation, not just transition. Multipolar systems and economic globalization and cultural and ecological diversity, biodiversity — all these are important topics. And digitization in the age of the Internet — there are so many technologies that will disrupt the previous planned landscape.

Even business models can disrupt. For example, Alibaba's business model is an innovator in terms of the business model.

The biggest feature of this era is change, and the biggest feature of change is uncertainty. We have to look way ahead in the future. In the next three to four years, what exactly will happen globally? Of course China is not isolated. No country is isolated. I asked a Council member from Japan why his country dropped out of the Kyoto Protocol. He said: China and the United States did not join, then why should Japan join? Recently when I was in Australia, the newspaper published an article about the joint statement between the United States and China, talking about change. It's not just that the rules of the game have changed; the game itself has changed. Development was the focus, but in future it's sustainable development. That is the priority. The whole global evaluation system will change.

When we provide policy recommendations we should do it on the basis of the year 2048 or 2050. That's my first recommendation for an outlook to the future.

My second recommendation is that it is somewhat passive if we talk only about transformation. For central government policies to be feasible at local levels, all companies – state-owned, private, and companies from Hong Kong and Taiwan – should be willing to embrace them. And local governments are a major driving force in recent decades. The county level, provincial, even village levels are focusing on GDP. GDP has been an important topic with local governments. When local governments hear the word transformation, they are passive to embrace it, but when they hear the word opportunity they always jump ahead to embrace this concept.

I think window of opportunity is a good term, because it encourages participation. It's a push/pull strategy at the same time. On the one hand we attract people to get involved. The first opportunity is the crisis of smog and water. The more serious the problem is, the bigger the opportunity it is for us. If in six or seven years the smog in Beijing becomes better, then our opportunity would be lower, because people would forget the crisis soon. It's the case in every country. People are focused on the sectoral and technological aspects. In China over the years we have focused on the sectoral and technological solutions as well. The first three decades we have worked on reducing poverty. We have helped 500 million people get out of poverty. The Chinese economy is #2. In 1978 per capita GDP was low, but today per capita GDP is US\$ 10,000 in some coastal areas. China is different.

Farmers are having a happy transition. Now, we allow farmers to own the land. Major cities in China do not have ghettos which is also different from other countries. And I think the whole world has noticed

another pathway towards modernization. But in terms of development and protection and management, we developed first, we pollute first, then we treat the pollution later. Unfortunately we are copying the pathways of the western countries. Maybe we were even worse than developed countries. So, to us this is an opportunity. The more severe the smog is the bigger the opportunity it is for us. Let's not lose this opportunity.

The world is changing so fast. I've been in touch with many renowned scientists. They think there have been three big discoveries in the 20th century: quantum physics, Einstein's theory of relativity, and DNA. In the 21st century it is difficult for us to have similar discoveries. In the 20th century the development of technology was driven by the three discoveries. Our mobile phone technology, for example, has been changing fast.

Local city governments think that the central government doesn't provide a clear policy on best practice. Local governments focus so much on GDP. Still, we say: let's seize this opportunity. I think this is a good way to put it to local governments: let's seize this opportunity.

Green transformation should be combined with two major things in China. One is the "five-in-one" integration. That's what we call it. Let's integrate ecological civilization into economic, social, and cultural construction as well as political reform. That's five-in-one. That's very clear.

The second is: change the production model and the consumption model. This is an important resolution. Let's change the way we produce, the way we consume. It's already very clear. Why not use this?

The new government has come up with an important concept, which is the modern or contemporary state governance system. So the recommendation is not just for the government, but also to assist the government to realize the transformation. Mostly it is to carry out reform toward a stage which is market based. I agree with the concept of carbon tax. It is difficult, but let us work on it. The tax system has to be changed and the recruitment system for officials has to be changed. These two systems have to be reformed, and they can be opportunities for us.

The evaluation system in China still focuses on GDP. We have to work on this. Rio+20 mentioned that we have to change the concept and move away from the focus on GDP, especially for local governments.

Now that we are drafting the 13th FYP, we emphasize the integration of different departments. Different departments have their own plans. That is the case for the State Oceanic Administration and other

sectors. So now at the central level we have very fragmented planning. At the local level it's also fragmented. That's why we have to integrate the planning system.

Qinghai is the source of three rivers, and the major role it can play is to restore the natural system. It's not that Qinghai should develop an electronics industry. It can never measure up against Shanghai. Every city has its priority function.

For the realization of the contemporary governing system, we have to work on a lot of aspects. Now we are thinking about emissions standards, but we are not taking economics into account. There have been different markets, carbon and other types of markets. We have to make sure these markets play their role.

Also we have to decentralize. Many of the decisions were made by the central government. In future we may delegate this authority to local levels. But China is still at the preliminary stage in this aspect. How do we transform and where do we transform to? I think now people are more aware of this. There have been more and more appeals for green transformation.

Let me talk a little about one city having a major function. There are 31 provinces and autonomous regions in China. Some of them are divided on the basis of the rivers around them. If we can make a good decision in terms of the major function the city plays, and the tax system, and some other systems for a city, then we can make sure that each city and each region plays its role, and does its job better. And then the city will get compensation as well.

Item 9. Briefings on the Open Forums

CCICED Vice Chairperson **Achim Steiner** introduced CCICED Secretary General **Li Ganjie**, who briefed the wider conference on Open Forum 1: Institutional Innovation for Ecological Civilization. In addition to summarizing each of the presentations, commentary, and discussions that took place during the forum, he made these observations:

The comments were targeted, constructive, and insightful. Many important topics were discussed, including the protection of wildlife, regional pollution control, leadership, emissions trading systems, and institutional innovation. The environment and development opportunities and challenges in China were analyzed. We also shared the experiences of other countries. So, the forum made some supplementary contributions to the policy recommendations.

Through these presentations we achieved some consensus on these matters:

First, the Chinese government has already integrated ecological civilization into the five-in-one framework. Low carbon and green development have become part of the national strategy. These demonstrate the determination of the government to develop ecological civilization in order to harmonize the relationship between humanity and nature. This is an important and pressing issue for us.

Second, to further deepen our reform in ecological civilization we must have the top level design and institutional innovation. This will be an important challenge for the coming new FYP. The Chinese government will take more coordinated, integrated policies in order to develop the economy, the environment, and the society. So we are going to make the best use of the new normal situation. And we need to further disseminate the experiences which have accumulated in recent years.

Third, the formulation of the 13th FYP has started. CCICED should seize this window of opportunity to accelerate the green transformation, develop a roadmap for green transformation, further deepen regional joint control, and improve the quality of the air, water, and soil. It's important for us to further expand our impact in the process of the formulation the 13th FYP. If we can, we will help promote green development and ecological civilization, and this will also help us further our cooperation with the international community.

Achim Steiner then introduced CCICED member **Siebe Riedstra**, who reported on the proceedings of Open Forum II: Green Transformation and Outlook for China. Noting that there was good regional balance but that the forum involved only male speakers, he then gave a short summary of each of the presentations, commentaries, and discussions. As well, he listed these points that emerged:

- The process of implementation is the key;
- Acknowledge and articulate the tensions, difficulties, and lock-ins;
- Never isolate the problems; for instance air quality is interdependent with human health, food security, and climate change;
- Acknowledge the changing role and position of China in the world, and recognize the global impact of China's domestic policies and measures;
- Acknowledge the innovation of institutional frameworks — legal, political, and governance — with the focus on modernization, increasing accountability, and resilient capacity.

Item 10. Final Draft of the Policy Recommendations

Achim Steiner introduced Chief Advisor **Shen Guofang**, who briefly described the technicalities of incorporating the 88 revisions suggested by CCICED members into the draft of the policy recommendations to the Chinese government. Then **Shen Guofang** introduced **Zhou Guomei**, deputy leader of the Chief Advisors' team, and invited her to present the final revised version of the recommendations. Here are the main points she made:

In our revision we focused on one characteristic and on the opinions in three areas.

The basic characteristic is that we need to focus on the overall requirement of the “new normal” situation in the 13th FYP. The report pointed out that the forthcoming FYP period is the best opportunity, especially with the new normal situation. Environmental targets should be tightened rather than loosened, and used to accelerate the green transition. 2015 is the last year of the 12th FYP and also an important year for making plans for the 13th program of national social and economic development. Therefore we pay great attention to that.

That is the first recommendation, that is, the Chinese government should grasp the current window of opportunity within the 13th FYP to comprehensively deepen reforms and accelerate the green transition process. In policy recommendations 2 to 6 we talk about institutional reform and innovation in environment and development, covering economic, social, ecological civilization, and environmental protection, management system reform, et cetera. In this way, the revised version contains six policy recommendations. All six are closely centered on the 13th FYP.

Regarding our ideas for institutional innovation, we want to ensure that all the policy recommendations are strategic, macro, and comprehensive. Those technical and detailed recommendations are not incorporated into the final draft. Rather they will be reflected in the policy recommendations report of the task forces. When we submit the recommendations report to the State Council we will compress it to a shorter version so it will be easier for the leaders of the State Council to read.

We based our revision also on three areas of opinion: the spirit of the important speech delivered by Vice Premier Zhang Gaoli in the opening ceremony; the opinions put forward by CCICED Vice Chairpersons and Bureau members as well as speeches by Minister Zhou and Chairman Kent and Chairman Steiner; and the written and oral suggestions put forward by Council members and delegates.

I would like to talk about the specific revisions.

In order to focus on the 13th FYP, in our revised version we talk about changing the title to National Economic, Social, and Environmental Development Plan. Also in that plan there should be a chapter talking about ecological civilization and address environment and ecological protection with emphasis on the target of ecological improvements and public health. We should develop a long-term roadmap for green transition strategy. Also we need to formulate the roadmap and timetables for the improvement of quality of the environment — such as air, water, and soil — so that we can realize the CO₂ peak before 2030 or sooner. We want a turning point in improving the quality of the environment as soon as possible.

Based on the Task Force on Institutional Innovation for Environmental Protection in the Context of Ecological Civilization, and based on the recommendation of the members, we added a recommendation on speeding up institutional development and reform for ecological civilization and improving environmental governance capacity. The reform will focus on four areas.

First, we need to build a high-level leading and coordinating mechanism that will be responsible for the design of overall strategy, planning, targets, and policies toward ecological civilization. This mechanism will coordinate the actions of different central departments to form synergies. For example, we talk about the establishment of central ecological civilization construction leading group and a State Council environmental protection committee.

Second, we should use the ecological system management approach to clarify responsibilities for regulating natural resources development, and use those of regulating eco-environmental protections and clarify the responsibilities, functions, and power for efficient eco-environmental management.

Third, reinforce integrated supervision responsibility for environmental protection and independent enforcement power with improved implementation capacity. Functions with regard to national supervision and local environmental protection performance should be strengthened. Environmental quality should be treated as a binding index in local governments' performance appraisal system. Mechanisms and measures should be in place to coordinate, assess, and supervise national departments. We need action to enforce legislation, adjudicate compliance, and safeguard a system for ecological civilization and the rule of law.

In policy recommendation 2, in the reform of the environmental protection institutional system, we made three revisions. We added the points about improving the quality of environmental legislation, strengthening the coordination between different kinds of laws and regulations, and protecting the environmental rights of the public and their health rights. We also increase the content about environmental risk and protecting public health. In the multi-stakeholder governance structure we added the part about modernizing corporate governance and also providing training for business to enhance their environmental social responsibility and environmental information disclosure. In the area about environmental auditing we added the independence and authority of government environmental auditing.

In recommendation 3, on promoting green economic transition and promoting the economic rebalance, we made three revisions. We revised the wording on resource tax, consumption tax, and the environment tax, and we promote the principle that polluters pay. Based on the total energy consumption control target put forward by the task forces, based on the national energy development strategy action plan, we updated the data and made the requirements more stringent. We added the carbon trading and set up a pilot. We want to achieve the rebalance of the economic structure and promote economic growth by consumption. We added the recommendation on the policy and model for promoting sustainable consumption.

Fourth, an air pollution prevention and control mechanism and improving environmental quality are issues of concern for members. We want to establish a long-term mechanism to retain “APEC blue” – and “CCICED blue.” We focus on two areas of revision to make it more stringent. We establish the legal status to ensure the air quality target. For those emitters which fail to meet the target we need to impose binding indicators and targets for the improvement of air quality. Also, assuming fuel quality has improved, we want to impose the most stringent vehicle emission standards. According to the international experience, it is timely for us to impose stringent car emission standards.

Fifthly, concerning urbanization development and ecological redlining, the members talk about the health-centered approach in urbanization development. We cannot cross the boundaries set by ecological redlining. And all of these parts have been revised in the report.

During the AGM the Council members discussed other important issues and put forth farsighted policy recommendations. For example, building ecological civilization means we have to redefine the meaning of economic growth while accelerating green transition. We need to promote cultural transition and change our lifestyle. In this area education needs to play an important role. Ecology is not just something

that China should focus on but should be the focus of attention of the whole world. We need to strengthen the cooperation between China and the world, strengthen South-South cooperation, and make sure that China's knowledge and experience can be disseminated around the world. I suggest we conduct special studies in the future on these recommendations.

Achim Steiner then invited Chief Advisor **Arthur Hanson** to add comments. **Arthur Hanson** made brief remarks about the technical process of revising the recommendations and about the practical steps that remained to be completed to prepare the document for submission to the State Council.

General debate and comments

Noting that one part of the Council's role is to translate complexity into political action, Chair **Achim Steiner** invited the plenary to offer last-minute observations, points of synthesis, or strategic advice. Here are some of the comments:

Yesterday, we discussed the interaction between two dimensions: the transformation towards ecological civilization, and poverty and inequality. It is important because there is no necessary relationship between, on the one hand, going green or going toward sustainability and, on the other hand, poverty alleviation and equality. That would be my first point: the interaction between inequality, poverty alleviation, and sustainability.

In the task forces and working group papers I saw strongly the whole knowledge dimension. This is a cross-border structure that impacts all the sectoral issues we have been discussing. I have in mind five elements which have importance for all the sectors we have been discussing. I feel this knowledge component should be a cross-border dimension through the whole recommendations paper.

The first knowledge dimension is identifying the knowledge gaps, and asking whether the research capacities and research investments of the Chinese government are adequate to make the transition which is envisaged.

Second, does the interaction between the knowledge creators, knowledge organizations, research organizations, ministries, and political leaders work well? This is about knowledge diffusion.

The third knowledge dimension is training and capacity building in ministries. We have such ambitious targets and goals here, and obviously the training and capacities in ministries will be the key.

The fourth knowledge dimension is education. This is all about cultural change.

And the fifth knowledge component is: how to learn systematically in international networks. CCICED of course is one of these networks.

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We were all impressed by the joint announcement by the United States and China regarding carbon targets. For people involved in this business, it was fantastic news. But the reaction in Brazil was a mix of optimism and fear. The fear was driven by surprise at the announcement and worries about potential barriers being set up on carbon trading. After all, China is Brazil's largest trading partner. People were surprised they had not been informed about this. The fear is that China is advancing much faster than other emerging markets and some countries will be left behind. It's vital that China communicate more, inform more, and open up the channels of communication on these issues, because the ecological civilization that is being proposed is good for the whole planet. It is important that the other nations who are interested in the same things work at the same pace and don't fall behind and feel intimidated. So, opening up channels of communication and intensifying that with pro-active behavior is important for the success of this enterprise.

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The policy recommendations have highlighted the long-term emission reduction goals in the coming 15 to 30 years, so we know what we need to do. It's important to develop a roadmap and timeframe for the control of air, water, and soil pollution. A roadmap and timeframe will make it easier for us to monitor progress and to identify risks and uncertainties.

We also need to enhance our capacity to project the impact of emissions on the quality of the environment. Carbon emissions should peak by 2030. Until then, these emissions will exert great impact on the quality of the environment. We should have more research on these links and use the results in the development of the roadmap. We need a forecast that will couple emissions reductions with climate change in 15 years' time, and allow us to get a good idea of what are the uncertainties or anything that

would be emerging by that time. MEP or other agencies should lose no time in formulating this action plan and roadmap. It will help us evaluate our progress and achievements and remaining challenges.

* * *

I very much support a shortened summary. Still, I hope that a few matters could be given priority in that abbreviated summary. Most important is the name change in the FYP to embrace the concept of ecological civilization. That obviously carries such a number of underpinning commitments and a significant shift in direction. Sometimes even minor changes can have a large impact on the behavior of the bureaucracy and the signals that go out to the community.

A number of the recommendations in the task forces have obvious resource implications for the government. I strongly encourage the Council to give priority to certain recommendations to acknowledge the importance of broad taxation reform, which are matters that at the moment come later in the body of the document but are an effective incentive toward behavior change — but also a source of revenue to fund some of the initiatives that are recommended by the task forces.

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The notion of coordination has become much clearer here, although I thought it was too heavy on the compliance side of things since, when coordinating, you will want to get at the effectiveness of the policies and plans that are being implemented. Along the same vein, I thought the studies this year talk about the need for regional coordination, and this is something that could come out a bit more clearly.

Regarding communication and sustainable consumption, the concept of *xiaokang* — a “moderately well-off society” — has been in existence for some time. It first came about at least 20 years ago. Within the context of ecological civilization and particularly sustainable consumption, what expectations do Chinese citizens have of the government? What services do they expect? What kind of lifestyle would *xiaokang* comprise? Bearing in mind the 13th FYP, we should remember that during the next ten years or so it will be important to have a good sense of what citizens need, or what they perceive as *xiaokang*. And that speaks to the need for a more active and robust public engagement.

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What are the bigger things we can pull out of this? I want to highlight several.

One is something that Art Hanson has emphasized, which is the importance of focusing on the transition, the ecological transition that needs to happen and that transcends the FYP and is on a longer horizon.

My impression is the new environment law is a fundamental step forward in terms of the rule of law in China. That kind of fundamental reform has to happen on many other fronts, for example, redlining.

As the country moves strongly on market reform, it needs to place emphasis on the signals that are sent to the markets. Our recommendations about taxes are especially crucial in that context. A market economy needs a different kind of steering than a managed economy.

We should bear in mind the transcendent importance of cities. In such a rapidly urbanizing country, the future is largely determined by how cities are built. This report addresses many aspects of that, and I would highlight that.

Spatial planning is in many ways a counterpart to all our focus on emissions controls and markets. Part of solving these problems involves getting serious about how we use planning, how we use the land and water we have, and redlining in particular.

There is much interest among Council members paying more attention to China's role in the world. This is about making sure that China's ideas and innovations in building an ecological civilization are getting out. It's about helping those ideas shape China's growing leadership in the world, since China has become a more important player on the stage. And it's about helping China walk the talk — an ecological civilization needs to shape how Chinese companies and the government operate around the world in trade and investment as well as shape action at home. One idea that has come up is how that discussion can be built into our look at South-South cooperation, because China's role in the world is particularly interesting if you see China's engagement with other emerging economies. There is much potential in those relationships, and it's an entirely different dynamic than if you focus only on China's relationship with the United States and Europe.

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We should identify some priorities for next year's work so that foreign and Chinese experts can be involved in case studies or pilot projects on, for example, how to make new use of old buildings. While

maintaining its basic structure, how to prolong the life of an old building? How to make it more energy efficient? This would be a kind of sustainable and circular use of resources.

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People in China are seriously concerned about air pollution, and they hope there will be a solution as soon as possible. The public want to participate in this process. We need to find a way for them to do this, voluntarily, and soon. By 2020 we need to ensure that 20% of our energy is non-fossil. If the public can participate in the process we can accelerate it. This is a financing issue. Can we find a way for the public to voluntarily pay part of the price for clean energy, for example, for wind or solar, in the electricity bills they pay? Initially they will participate voluntarily, but after two or three years we can make the participation mandatory. In addition to the financial investment by the government we can have this contribution by the public. Of course we have to ensure transparency so that people can feel that they are making a contribution.

At the conclusion of the discussion, **Achim Steiner** invited the Chief Advisors to respond. **Arthur Hanson** made the following comments:

I come back always to this central point: we do not yet have an adequate environment-to-economy relationship. The environment is still chasing after economic change. We've gone through this with earlier governments, with former Premier Wen Jiabao for example, who say they want the environment to be treated equally with the economy. But the reality is we are not there yet. We are a long ways away. I think we should bring this out strongly in the recommendations.

This goes to the point that many of you were saying, which is the need for better analysis and understanding — not just an understanding of problem, but how can we change things? How can we affect the pace of reform so that the deepening of reform on the environment and the deepening of reform on the economy don't go just on parallel tracks, as they do now, but they actually intersect? And what is the implication of those points of intersection? And how can we make that relationship turn into something genuinely positive? And can we do that in the next ten to 15 years? Specifically, how can we do this most effectively using the 13th FYP as a starting point?

Yes, we do need a clear roadmap to get through this transition period. We need indicators of a different kind from the indicators that apply even to the *xiaokang* society, and certainly of a different sort from the

indicators that use a GDP-driven approach. I think we have some of the building blocks in this year's recommendations. We will have to come back next year and revisit this effort.

The work that UNEP and others are doing on finance is important. We can learn from this and maybe next year we can follow up and amplify the recommendations we have on the financial system. That is clearly one of the next big breakthrough areas for the world, and for China — to devise new ways of thinking how we finance things such as infrastructure. In the case of cities, how can we move away from this terrible situation of land development financing which encourages all the things we don't want to see in terms of suburbanization and so forth?

Basically the world is dragging. The world is not going well now in terms of economy. We're seeing a world that is going differently, but what we are calling for here is a very, very different approach. We have made some good progress this year. Our transition task forces recommendations are putting us on a pathway. This leads into the next round of discussion: what are we going to do next? Let's keep environment and economy front and center in our work for the coming year.

At this point **Achim Steiner** formally summarized the discussion with the following remarks:

I want to pick up on the recurrent theme that Art Hanson mentioned just now. It is critical that this Council be seen to be cognizant of some of the tensions and polarities that are there. Economy and environment is the most prominent one. Let us also bear in mind some of the arguments about ecological civilization — that some of the issues we've touched on also have a social dimension, whether it is employment, whether it is the rural/urban divide — that we have covered in the past. One of the great contributions we can make to giving ecological civilization more strength is not only to rationalize it in terms of its environmental benefits, but also in terms of economic and social outcomes. That is what I understand ecological civilization seeks, in part, to address, and we have to capture this.

I still suggest that we capture in a framework the core of what we have been trying to do. It's certainly not an easy thing one can do in one go. The challenge we have now — and a challenge that China too will again address in the 13th FYP — is how do you move forward in terms of a green transition and ecological civilization while having to manage today and tomorrow? That is also a tension between the future and the present, and here in particular the Council needs to focus.

Two things have emerged from my reading of the documents and following the discussion. There is this urgent sense of acceleration. There is enormous pressure to deliver on targets because the situation demands quick progress, quick action. This pressure has to be recognized in the measures that are being put in place. At the same time, throughout this Council the term transformation was present all the time. Our forum this morning recognized that you cannot solve problems through cap targets alone. You are talking about transformation. This is another tension that needs to be openly addressed to make it less of a tension and more of an opportunity.

Much of our discussion could be captured under the headline “aligning the governance system.” We have talked about institutions, rule of law, and about the capacity and mandate of these entities that form part of the governance system. And if this green transition, this movement toward an ecological civilization, is to occur, then much of what the task forces and the forums spoke about is this alignment of the governance system. Maybe that is a heading that can help us.

How do you evolve the regulatory framework? The emphasis, the shift I sense in recent years, is one that President Xi has also articulated with a greater focus on the market. But what does this mean? I think neither in China nor anywhere else are we returning to the polarity of 25 years ago where there was in China a strong sense that the state is the solution to all problems in terms of a government regulation system. On the other side of the world we had the Washington Consensus which argued that the more market and the less state and government then the better the development outcome. We live in a different period today. China is adjusting its governance and regulatory framework, giving greater opportunity for market intelligence and innovation to inform development choices. And I can assure you that the Washington Consensus no longer exists.

And the notion that markets can solve our problems has also not remained as the paradigm. We are in a different age of smart regulation, intelligent regulation, enabling effective markets to operate. By effective we don’t just mean making profits. Effective markets mean it delivers for the entrepreneur — and it delivers for society too. This is the search for that smart intelligence in which government is absolutely central as a regulator, but perhaps also recognizing how regulation can be smart or not smart, intelligent or not intelligent, enabling or dis-enabling.

We have spoken in many forums about building new capacities, whether at the level of institutions themselves or at the level of implementation. As someone said recently, the closer you can come to those who actually have responsibility for managing something, the more effective you will be in having regulations enforced. We talked about the relationship between audits and assessments, because if targets

are set but performance is not assessed, it can easily lead to a vacuum of accountability and therefore of performance. So, building this new capacity, at regional and local levels, in the entrepreneurial sector or in civil society, is another area that re-emerges in different parts of the recommendations.

I simply offer this as priority areas for what Minister Zhou called the “priority of priorities”: innovation. We can describe innovations in 150 paths, or we can try to consolidate them around key themes. I want to echo the comment that the recommendations as they now stand capture much of the work. I still think it would be worthwhile to consider an accompanying, overarching document that also does not forget that the Council’s work did not begin with this cycle.

We must reflect on the Council’s accumulated knowledge. We’ve spent a lot of time thinking through issues like ecological taxation and fiscal policy reform and subsidies regimes, and we will continue to work on the issue of finance. The recommendations can capture a little bit — not just of this Council at this point in time, defined by the task forces that are on the table — but also of its accumulated knowledge. That may help us to bring the richness of this Council’s work into a framework that adequately addresses the needs of planning the next FYP, because the accumulated knowledge of this Council, in terms of its analysis and policy advice, and consolidated in a strategic and actionable way, is quite a rare and precious asset. Also China has helped us in our tasks often to take the learning process through the lens of the China Council into other policy arenas.

At this point, on the invitation of Chairperson **Achim Steiner**, the assembly adopted the draft policy recommendations by acclamation. The final version of these recommendations, incorporating changes made following this discussion, subsequently was submitted to China’s State Council.

Item 11. Closing Session

Achim Steiner then invited CCICED International Executive Vice Chairperson **Peter Kent** to make closing remarks. Here are the highlights:

The core issue that we have discussed at this year's AGM — management and institutional innovation in green development — is a vitally important issue as it directs our attention to the fact that, however advanced and complete our environmental policies, their impact depends on the quality of the laws, regulations, and implementation and enforcement mechanisms that govern their application.

Issues related to the environment and sustainable development are becoming more urgent and demanding of imaginative and innovative solutions. We must strive to find opportunities in those solutions, so that they can represent turning points towards a better future.

We will be addressing highly complex issues again next year. These include: improved environmental legal systems, governance capacity, green finance in support of environmental goals, green transition strategies, risk management, and additional work on total pollution control. We will also focus on China's global environmental relationships. All are issues that reflect both immediate priorities and future challenges.

The keynote speech by Vice Premier Zhang Gaoli was a highlight of our AGM. He very explicitly and forcefully expressed the government of China's determination to address environmental challenges head-on and to meet the commitments it has made to the Chinese people and to the global community. The Vice Premier also highlighted the importance of CCICED as a source of advice and its on-going value to the government of China.

No one doubts the difficulties that will be faced as China pursues its goal of a green transition that is, in the words of Vice Chair Xie Zhenhua, a transition that is also a transformation — at a time when, as Minister Zhou pointed out, China is facing an economic “new normal.”

The magnitude of China's challenges and China's determination to meet them presents CCICED with an important window of opportunity. We must ensure — through on-going review of our methodologies, our practices, and our quality assurance mechanisms — that our work is equal to the trust and expectations placed on us.

We, or the governments and organizations with which we are associated, may take a different approach to environmental issues and propose or implement different solutions. But we all benefit from our work here and our association with CCICED. Indeed, this Council enables us to share our experience and to learn from and build on the experience of others.

It demonstrates that international cooperation, international discourse, searching for solutions together, and recognition of and respect for the challenges faced by others and the aspirations cherished by others, is what will eventually lead us to a better future.

Looking forward, we have set an ambitious but I believe important work plan for 2015. I am confident that we will achieve important results again in the coming year and that we will have much to discuss at the next.

Finally, **Achim Steiner** invited CCICED Executive Vice Chairperson **Zhou Shengxian** to offer a summary of the conference and to make additional closing remarks. Here are the highlights of those remarks:

I have read the conference reports and listened to the presentations. They were very enlightening, and I learned a lot from them. I have already talked with the director general of the MEP, recommending that all MEP officials should read these reports. They will be distributed so that more people can have access to them.

Each year the CCICED AGM submits policy recommendations. There are six policy reports this year, focusing on the difficult and hot issues in the environment and development. They are forward looking, well targeted, and operable. However, what I am more interested in is whether these recommendations will be accepted by the State Council and the Premier. Rest assured we will try our best to send our message to the top levels of the Chinese government.

In China the implementation of ecological civilization falls within the responsibility of many different ministries rather than MEP alone, but MEP plays a role in coordinating these ministries. Each time when we have a CCICED AGM it means a great promotion of environmental protection. It's just like a gas station where a car can get fuel. After this AGM we will start with the following important things in order to implement the consensus we have reached.

First, we are going to forge ahead with the war on pollution. We will mobilize all the possible sources in order that we can be successful in the three battles. We hope that we can develop the action plan on water pollution control and soil pollution control, and further implement the plan on air pollution control.

During the APEC meeting the sky was so blue it came to be known as “APEC blue.” During a top-level meeting I shared with the other participants a short poem:

Everybody is expecting wind to blow away the smog
No matter there is wind or not, we should be determined
As long as we make efforts, we can keep the APEC blue
We can keep the APEC blue

So, even if we get weak and thin we should still make continuous efforts to have the APEC blue continue in Beijing.

This also means we should take a scientific approach. This is just like a large scale experiment — an experiment that is the largest in scale after the Olympic Games and the Youth Olympics Games. This also shows we took effective measures. So we need to step up our efforts. However as was pointed out by the top leaders, it is impossible for us to build Rome overnight. Therefore on the one hand we need to take into consideration the short-term and the long-term solutions. This will be a persistent battle.

Secondly, it's important for us to seize the window of opportunity to accelerate the green transformation. If we can realize the green transformation, we will embrace the spring of environmental protection. As I said before, it's impossible for us to protect the environment without developing the economy. However, it's impossible for us only to focus on the protection of the environment. If that is the case, we will end up with nothing. Certainly it's important for us to improve our capacity in environmental governance. We should continuously improve our environmental protection framework — or the framework with four beams and eight columns, as President Xi has put it.

At present we are caught in three big difficulties, which is now the normal situation. Therefore it is impossible for us to use the old solutions to solve the new problems. We have to be adaptive to achieve the goal. We must take new measures in order that the protection of the environment can keep abreast with the development of the economy.

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