

CCICED at 20: Activities, Impacts and Future Opportunities

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ABSTRACT

The China Council for International Cooperation on Environment and Development (CCICED) was approved by the Chinese Government in 1992. CCICED aims to provide policy advices to the Chinese government on environment and development issues through policy research work. CCICED is comprised of around 50 senior Chinese and international individuals with distinguished leadership careers relevant to development and environment. The Council is chaired by high level officials of China, currently by Mr. Li Keqing, China's vice-premier. The Council meets with a senior leader of China and forwards its policy recommendations to the State Council each year.

CCICED is a unique body that is supported by more than 20 countries and organizations at present. In 2012 CCICED will enter its fifth five-year phase of activity. This timing coincides with China's 12th Five Year Plan (2011-2015), which places major emphasis on environmental improvement, and with the Rio+20 global re-examination of environment and development.

The current report provides an outline of how this unique organization came about; its operational mechanisms; the wide range of its studies and policy recommendations; its evolution over 20 years; impacts on China's policies; and its value to the international community. Over this time CCICED has maintained a position of trust and value to the Government of China, and attracted strong interest from supporting countries. CCICED includes major non-governmental and business enterprises in its activities. Since its start it has sought international members from both highly industrialized and developing countries. Understanding CCICED's rationale and efforts provides insight into China's efforts to build a better relationship between environmental quality and rapid economic growth—nationally and globally.

The way issues are tackled has shifted quite dramatically. From single issue concerns where advice often was delivered as “off the shelf” solutions based on experience of industrialized countries, CCICED's advice is now sought on transformative environmental solutions that relate directly to the mainstream of economic development. This has included advice on Low Carbon Economy Industrialization Strategy, Green Economy, and careful consideration of how China's science and technology innovation efforts can improve environment and development relationships. CCICED has undertaken extensive work on topics such as Pollution Control and Prevention, Energy and Environment, Biodiversity Conservation and Management, Sustainable Industrialization, Agriculture, Forest and Grassland Sustainability, Environmental Economics and Taxation, and International Implications of China's Environment and Development. This broad base of work has prepared CCICED well for the challenges of the future. And it allows the Council to continue efforts where uptake of advice has not been as strong or immediate as desired.

CCICED's Fifth Phase may be the most important since the pressures on environment continue to rise, and since, despite recent progress, the condition of China's environment continues to be “grave”, especially given newer and more difficult restraints posed by resource and environmental issues on China's development in this new century. CCICED will need to stay on the leading edge of policy transformation in China and take into account changing international sustainable development approaches.

CCICED at 20: Activities, Impacts and Future Opportunities

INTRODUCTION

The China Council for International Cooperation on Environment and Development (CCICED) is a unique policy research organization, providing expert and independent environment and development advice to senior decision makers at the level of China's State Council. This report¹ provides a review and insights concerning CCICED's accomplishments and challenges during the 20 years of its existence. The report also examines challenges and opportunities likely facing CCICED during its fifth five-year phase (2012-2016), and beyond to 2020. This coming decade is the time period when China will continue with its high growth rates and investment needed to bring all China's citizens to a reasonable standard of living. Over this time frame China's environment will face unprecedented demands and, in both countryside and cities, citizens will seek improved quality of life, including clean air and water. Globally, China will be expected to contribute very substantively to improvement in global environmental protection, in line with the country's role as a major economic power.

It is an opportune time to provide information about the impact CCICED is having within and outside of China; and to consider why the organization is of on-going significance to the Government of China, the 24 organizations and countries that have funded its activities (Box 1), and to those who support CCICED in its work programs (see CCICED's websites²). The hundreds of individuals from China and other countries who have participated either as members of the CCICED, or on expert working groups, task forces or special policy studies, or engaged in other ways cannot be fully recognized here for their contributions, but the results of their work are documented in many specific reports, all archived and available on the CCICED websites.

The experience and lessons learned from CCICED's approach may be very useful not only for future activities within China, but also for other countries and international bodies. The efforts of China to build a Green Economy, to decouple environmental degradation from economic growth, to act on aspirational goals such as creating an environmentally friendly society and an Ecological Civilization³, and to identify new means for international environmental cooperation are of general significance to a world searching for a sustainable future. As the United Nations prepares for Rio+20, it is hoped that this report may inform many others concerning this successful and enduring model of international cooperation and partnership.

A UNIQUE ORGANIZATION IN FORM AND FUNCTION

CCICED was established as a Chinese organization to provide advice to the highest levels of government on how to build a satisfactory relationship between environment

Box 1. Financial Partners of CCICED during Phases 1 to 4 (1992-2011)
(shaded boxes show support periods)

Support Source	Phase 1	Phase 2	Phase 3	Phase 4
<i>Governments</i>				
China				
Australia				
Canada				
Denmark				
European Union				
France				
Germany				
Italy				
Japan				
Netherlands				
Norway				
Sweden				
Switzerland				
United Kingdom				
<i>UN Organizations</i>				
UNDP				
UNEP				
UNIDO				
Asian Development Bank				
World Bank				
<i>Other Organizations</i>				
Environmental Defense Fund				
Ford Foundation				
Rockefeller Foundation				
Rockefeller Brothers Fund				
Shell Group & Shell (China)				
WWF				

and development in the world's most populous country. The Council was established as "a non-governmental body but with strong governmental involvement and support. This will encourage frank and direct discussions and objective scientific opinions and will make it possible for important non-governmental organizations to participate."⁴ There are four key roles of the Council⁵:

- *A bridge linking China with international communities, the government with society and intergovernmental agencies towards a harmonious development between man and nature.*

- *A think tank to disseminate new ideas and advanced international experience on sustainable development to policy makers at various levels in China.*
- *A high-level international advisory body in which Chinese and international experts exchange views frankly. and*
- *Facilitator to China in introducing its achievements, experience and solutions to international communities.*

The CCICED “Brand”

What makes CCICED unique are three features: (1) its mechanism, a Council with associated expert groups in which very experienced decision-makers, academicians and others with solid environment and development expertise from within China and from around the world jointly prepare policy recommendations on a wide range of topics intended to improve China’s domestic and international efforts on environment and development; (2) the independence of its advice and lack of agendas other than a good environment and development relationship; and (3) its access, since advice is directed to the State Council of China, which serves as the country’s Cabinet apparatus, and to senior leaders including China’s Premier. Meetings with senior governmental leaders are an important element in CCICED’s “branding” (see Box 2).

Box 2. Dialogue with Senior Leaders – An Important Component of the CCICED “Brand”.

Each year since its start, CCICED members have met with a senior leader of the Government to discuss key recommendations before they are submitted to the State Council. These meetings take the form of a dialogue, generally concerning the theme of the CCICED Annual General Meeting. Over the years the CCICED members have met with President Jiang Zemin, CPPCC Chair Li Ruihuan, Premier Li Peng, Premier Zhu Rongji, and Premier Wen Jiabao. Premier Wen has met with the Council for 13 times, including meetings when he was Vice Premier (also CCICED Chairperson) and as Premier. These meetings are highly valued by both the leaders and the international community. They have become an important element of the CCICED “brand.” They provide an opportunity for exchanges that can be insightful about current Chinese concerns, and provide perspectives on emerging issues. The Chinese leaders value the evidence-based expert views worked out on the basis of Chinese and international interaction, and the international side learns first hand about the complexity of Chinese development decisions. These discussions cover both domestic issues and China’s growing involvement in global and regional environmental matters.

CCICED currently is chaired⁶ by the senior Vice-Premier of China, Mr. Li Keqiang. The Minister of Environmental Protection is the Chinese Executive Vice Chairperson, and the President⁷ of CIDA (Canadian International Development Agency) is the International Executive Vice Chairperson. No other country has such a mechanism based on outside consultation, and certainly not one that has persisted and thrived as long as CCICED.

About 25 Chinese and 25 foreign members are appointed⁸ for terms of five years. Over the past two decades much larger numbers have directly engaged in the research and

development of recommendations as participants in task forces or in other ways. A task force has up to 6 members each from China and from abroad, plus other experts. In any given year more than 200 people will be engaged in the preparation of the work on which recommendations are based.

The activities of CCICED have been well documented and archived, and periodically reviews concerning its effectiveness have been carried out. The full record of its recommendations to the Government of China is available online and in print. Especially on the part of international organizations supporting CCICED, there is an emphasis on accountability for results; and, on the part of the Chinese government, for timely, innovative policy advice that is feasible to implement either in the short or longer-term.

From the start until the present the greatest challenge for CCICED continues to be on how to provide good advice on managing complex transformative change—of both the economy and the environment, and of their interaction in development.

CCICED AND CHINA'S ENVIRONMENT AND DEVELOPMENT FRAMEWORK

When CCICED held its formative meeting in April 1992, in Beijing, the Rio Earth Summit was about to happen, and global interest in environmental protection had reached new heights. Within China environment already had been declared a policy priority. However, it was a priority that competed with many others in a nation shifting into industrialization, rapid urbanization and globalization on a scale never before experienced. There are two important matters to highlight concerning the genesis of CCICED in the context of China's environment and development framework.

One is the number of leaders, government administrators, and scientists in New China with a significant interest in global environmental matters, certainly from the time of the first global conference on the environment held in Stockholm in June 1972. China was an active participant. China also participated in the World Commission on Environment and Development. The delegation to the 1992 Rio Earth Summit was headed by Premier Li Peng. Two months after the Summit, the Central Committee of the CPC and the State Council approved a document entitled *Ten Strategic Policies for China's Environment and Development*. And within two years China produced a very comprehensive China Agenda 21.⁹ This interest continued, with representation by Premier Zhu Rongji at the World Summit on Sustainable Development (WSSD) in 2002. China also has been a leader in terms of performance on the Millennium Development Goals (MDGs). Thus the evolution of China's domestic efforts on environment and development in general has paralleled very much the international dialogue on sustainable development. This trend has continued to the present, with the focus on green economy that is linked to the G20 and the preparations for the Rio+20 meeting in 2012. Box 3 provides a list of some environment and development initiatives and processes from the late 1980s to the present with China's participation and follow-up briefly noted.

Box 3. Key International Processes on Environment and Development 1987 – 2011

Year	International Process or Initiative	Chinese Role
1987	Brundtland Commission (WCED) <i>Our Common Future</i> published	Chinese Member
1987	Montreal Protocol (Ozone Depleting Substances)	CFC production shut down eventually
1988	Intergovernmental Panel on Climate Change (IPCC)	Chinese scientists active participants
1990	UNEP Cleaner Production Program	China National Cleaner Production Center (1994)
1992	Rio Earth Summit (UNCED)	Signed main Accords; China Agenda 21; UNCSD member
1992	BCSD (now World Business Council for Sustainable Development WBCSD)	China BCSD formed in 2003
1994	Global Environmental Facility (GEF)	China recipient of GEF projects
1995	World Trade Organization (WTO)	China's WTO accession in 2001
1996	ISO 14001 Standard for corporate environmental management system	China eventually became country with largest number of certified companies
2000	UN Millennium Development Goals (MDGs) for poverty reduction	China accepted goals and showed major progress on achievements
2002	World Summit on Sustainable Development (WSSD)	China accepts WSSD <i>Plan of Implementation</i>
2005	Millennium Ecosystem Assessment (MA)	China participates in MA via case studies with follow-up on ecological services payments
2005	Kyoto Protocol	China participates especially on Clean Development Mechanism (CDM)
2008	Global Financial Crisis	China Economic Stimulus Package with environmental components
2008	Beijing Olympics	Greening of Games and Beijing
2009	Copenhagen UNFCCC COP 15 Climate Change	China participates and indicates greenhouse gas reduction intensity reduction
2009	G20, UNEP and OECD: Green Growth and Green Economy	China embraces Green Economy
2010	Shanghai World Expo	Theme emphasizes sustainable development <i>Better City Better Life</i>
2010	Nagoya Biodiversity Convention COP 10 <i>Strategic Plan for Biodiversity 2011-2020</i>	China issues Biodiversity Protection Strategy and Action Plan (2011–2030)
2011	Preparation for Rio+20 (UN Conference on Sustainable Development – June 2012)	China endorses Rio+20 and hosts preparatory meeting September 2011

The second point is the degree of domestic Chinese preparation on environment that occurred in the decade leading up to CCICED's startup in 1992 (See Box 4 for a short history). And, aligned to this was the substantial thinking and preparations related to CCICED itself. Others have provided detailed accounts of China's environmental management and administration over this period.¹⁰

Box 4. A Short History of Selected Environment and Development Organizational Initiatives in China (1970s to 2010)

Basic State Policy and Strategy

Policies regarding the environment in China have frequently emerged through the *National Environmental Protection Conferences* (NEPC), held periodically between 1973 and the present. The first such Conference took place just 14 months after the June 1972 Stockholm Conference on the Human Environment. It set in place a number of basic points including the “Three Synchronizations.”¹¹ At the 2nd NEPC in 1983 Li Peng declared that environmental protection was one of China’s basic state policies. In 1988 Premier Li Peng made environmental protection one of the 10 major tasks of the government at that time. And in 1989 at the 3rd NEPC ambitious goals were identified for achieving basic environmental control objectives by 2000.

Later, at the 6th NEPC in 2006, Premier Wen Jiabao laid out an important set of guidelines regarding the governance relationship between environment and development, the “three transitions”: (1) from focusing on economic growth but ignoring environmental protection to putting equal emphasis on the both; (2) from environmental protection lagging behind economic growth to the synchronization of environmental protection and economic development; (3) from mainly employing administrative methods to protect the environment to comprehensive application of legal, economic, technical and necessary administrative methods to address environmental problems.

Legal Framework

Environmental protection became part of the Constitution in 1978. An initial law called the Environmental Protection Law (the “trial law”) was passed in 1979. The main piece of legislation, “the Environmental Protection Law of the People’s Republic of China”, came into effect during December 1989 after half a decade of preparation and debate. It is quite comprehensive and sets the stage for promulgation of other more specific laws and regulations. These proliferated during the 1990s.

Coordinating Bodies

Perhaps even more than some other large countries, China has suffered from the “silo” or “stovepipe” effect of multiple governmental agencies with overlapping mandates and limited coordination. The State Council in 1984 established an “Environmental Protection Commission” (EPC) headed by Mr. Li Peng, at that time a Vice Premier, to address integrative environmental management and decision making. Such an approach in more recent times has included establishment of the Leading Group on Energy, Climate Change and Environment, chaired by Premier Wen, and coordinated by the Vice-chair, Minister Xie Zhenhua, a CCICED Vice-Chairperson who provided considerable guidance to CCICED during its first three phases.

National Five Year Plans (FYPs)

CCICED’s startup was soon after the inception of the 8th Five Year Plan (1991-1995). This was not the first FYP to consider environmental protection. There had been specific objectives and budgets in place during the 6th and 7th Plans but the amount of funding available for

environmental matters was modest by comparison to many other investments. By the 8th FYP the situation was gradually changing with environmental investment almost double that of the previous two plans combined. However, the efforts, especially for pollution control, depended on the implementation of a variety of novel (for China) investment sources. The scarcity of funds for environmental investment created serious problems of achieving environment and development goals throughout the 1990s and even into the first years of the new century.

In later FYPs, there was a progressively stronger approach to environmental concerns. However, the 9th and 10th FYPs failed to meet important environmental goals. The 11th FYP (2006-2010) was the first to comprehensively consider environment and sustainable development and to set a number of mandatory targets related to these topics. Throughout the 11th FYP period there was constant monitoring of targets¹² and the realization on the part of local administrators that their performance in meeting environmental mandatory goals would be assessed, with consequences for those who underperformed. The result nationally was that all environmental targets were met and a rigorous energy intensity target was almost met (20% reduction in energy use per unit GDP over the five year period). The 12th FYP has introduced carbon intensity and additional mandatory pollution reduction targets, especially to deal with nitrogen emissions.

Environmental Administration

The National Environmental Administration (NEPA) was established as a small national organization with limited clout at the Cabinet table. NEPA, however, was an important innovation since it was linked to international sources of knowledge and experience, and could tackle practical issues in ways fundamentally different than the larger departments. This administrative body was headed by Mr. Qu Geping, a great pioneer of environment and development matters within the Chinese government, who also played a founding role in CCICED, and who served as a CCICED Vice Chairman during the first three phases. In 1998 NEPA morphed into SEPA, the State Environmental Protection Agency. The first SEPA head and CCICED Vice Chairperson, Mr. Xie Zhenhua, held a junior minister position, which placed him closer to other more senior decision-makers. It was only in 2008 that the Ministry of Environmental Protection (MEP) was established and China's first full Minister of the Environment appointed, Mr. Zhou Shengxian. Mr. Zhou serves as the Executive Vice Chairperson of CCICED.

Mr. Qu Geping, the first Administrator of the National Environmental Protection Agency (NEPA) helped to get CCICED underway. He has noted in his Collected Works that four platforms in the 1980s and 1990s for public education and policy discussion played a significant role in the development of China's environmental protection plan.¹³ CCICED was one of these. Qu Geping said: "Premier Li Peng...fully supported the idea of the forum without hesitation, because, when he was the Vice Premier, mainly in charge [of] the issues of environmental protection [he had] learned about the importance of opinions from international and local experts."

Mr. Martin Lees, a member of CCICED for some 15 years, played an important role in the development of CCICED. As he has recounted (personal communication):

"The model for the Council emerged first when we organized a high-level Council with a similar purpose for the development of the island of Hainan in Harmony

with the Environment. We then convened a conference in 1988 when we met with the three supreme leaders, including Deng Xiaoping. From this unique base, we are able to launch the program to provide international advice to the Chinese leadership, "China and the World in the Nineties."

One of these meetings, "The International Conference on the Integration of Economic Development and Environment in China", held in Beijing in October 1990, introduced the concept to a senior Chinese and international audience. CCICED was approved by the State Council in 1991 and a preparatory meeting was held in January 1992. The initial international funding to develop the Council came from the Rockefeller and Ford Foundations. These grants were quickly followed up with funding from CIDA. The first full CCICED meeting took place in April 1992.

From the start CCICED activities were guided by the need for a more satisfactory relationship between economic growth and the environment. As noted in the objectives for CCICED, "The Council will advise the Government in defining and implementing a long term, integrated strategy and effective policies for sustainable economic development and for the protection, conservation and improvement of China's environment, energy and natural resources."¹⁴

Chinese institutions and processes that have been of special value in providing guidance to development of CCICED priorities cover a spectrum of interests and include political, legislative and administrative guidance (the list provided in Box 5 covers major sources). CCICED must consider environment and development broadly since it covers topics of concern to China's cabinet—the State Council. The topics often reflect concerns of the national government as a whole, such as energy and environment, biodiversity protection, trade and environment or environmental taxation.

Box 5. Guidance in Setting Chinese Priorities for CCICED Policy Topics

National Congress of the Communist Party of China (CPC National Congress) – Overall guiding concepts such as Scientific Development, Ecological Civilization)

National Peoples Congress (NPC) – Laws such as Circular Economy, Environmental Impact Assessment

State Council – Basic State policy and strategy formulation including and various State Council White Papers such as the Climate Change Action Plan of 2007

National Development Reform Commission – Five Year Plans (9th, 10th, 11th, 12th), China Agenda 21, National Leading Group Office for Climate Change, Energy Conservation and Emission Reduction

National Environmental Protection Conferences – Guidance on "Three Transitions"

Ministry of Environmental Protection (MEP), and earlier bodies (Environmental Protection Commission, NEPA, SEPA) – Wide range of environmental protection policies and supporting measures

Various Sectoral Departments – for example, Finance, environmental taxation; Commerce, environment and trade; Health, environmental health

CCICED's mandate demands continuity in both Council membership and regularity in meetings and work program since "It will give advice on policies for the integration of environment and development over extended periods of time. This continuity is essential if China is to achieve sustainable, longer term development in harmony with the environment."¹⁵ These points are still viewed as an essential strength of CCICED, especially by Premier Wen Jiabao.

From the beginning, Chinese membership of CCICED has included Ministers and Vice Ministers as well as major figures from the Chinese scientific community. International members have comprised a mix of business leaders, international environmental experts, heads of conservation organizations such as IUCN and WWF International, environment and development research organizations and international bodies such as UNEP, the World Bank and governmental agencies from both industrial and developing countries. All serve in their personal capacity. This range of talent and experience helps to maintain the attention of the Government of China on CCICED's recommendations.

The fundamentals of CCICED's work model and administration were worked out within the first year or two. They have been strengthened over time, but the basic organizational model remains intact. The components include a Bureau that acts as an executive decision-making body concerning annual work plans and other matters relating to effective operation, a Secretariat led by the CCICED Secretary General¹⁶ and operated by the Ministry of Environmental Protection with Chinese members plus a small International Support Office¹⁷ located in Simon Fraser University in Canada that provides services supporting international aspects of the work and administers much of the international funding. In addition, since the beginning of Phase 3 a small team led by two well-experienced individuals¹⁸ has provided an independent oversight and advisory function concerning substantive aspects of CCICED's work. This Chief Advisor's Group has grown in importance with increasing complexity in the work undertaken by CCICED. The Bureau normally holds only one meeting per year but members consult as necessary on important decisions. The Secretariat, International Support Office and Chief Advisors Group hold at least four joint meetings each year and are in constant communication, with full time staff plus individuals who are committed on a part-time basis.

CCICED is a demanding, labour-intensive organization to manage. Administrative staff members maintain relationships with a wide range of governmental and other organizations, with the various teams undertaking work, with CCICED members, and with diverse partnerships, including a wide range of funders. CCICED must liaise with various senior offices within the State Council and, internationally, with a substantial number of embassies and international environment and development organizations.

Each year CCICED holds an Annual General Meeting (AGM) where findings of current work are presented to Members, issues of concern are discussed, views of senior officials and those of invited guests and speakers are heard, and from this body of information, the recommendations to the State Council are finalized. The AGM is attended by more than 200 people and takes place over a three-day period. The dialogue with the Premier of China takes place during this time frame in a smaller, more private setting. In recent years CCICED also holds a Round Table meeting related directly to the theme of the AGM. The intent is to introduce the Council's recommendations to a range of decision-makers including local officials drawn from various regions, business leaders and civil society organizations. These meetings are held in locations relevant to the theme. The Round Tables are also used sometimes to explore new themes for CCICED attention, for example, on Low Carbon Economy, held in 2007 when this was a topic new to China and before there was any agreed upon national Chinese policy on climate change.

“The reason the China Council has lasted is because of the sincerity and good cooperation from both sides. For so many years, international experts and friends have sacrificed their free time to study China’s problems and put forth recommendations. This has been of great help to China. From a broader perspective, I get the sense this is also your own commitment to Mother Earth, the only home we have. ”

—Premier Wen Jiabao, meeting with CCICED Members, 2010

The main mechanism for undertaking the detailed analytical work from which recommendations are shaped and presented to CCICED AGMs and then to the State Council and relevant government departments is generally a task force or special policy study team¹⁹. In early phases these teams were called working groups, constituted for a long time frame of up to 5 years. Teams are assembled around specific high priority concerns (domestic and/or international) of China. Scope and duration of study, and Chinese and international co-chairs are approved by the CCICED Bureau. Leading experts from within China and from international sources are selected, and work is carried out on a cooperative basis, with considerable oversight from the Secretariat and Chief Advisors Group. There can be as many as six Chinese and six international members, often supplemented by others with specified responsibilities, and with Chinese and international coordinators to ensure smooth operation.

This mechanism has worked remarkably well, drawing in high quality expertise, and forming strong Chinese-international relationships, and with good opportunities to learn from study tours on problem solving abroad, and on specific issues within China. For the most part, the work has been conducted in a very open fashion with considerable mutual learning, and successful conclusion of these time-bounded activities. However, rarely are these easy undertakings. Often there are considerable tensions, difficulties in building

mutual understanding, problems of data quality and access, genuine problems with determining the appropriate level of detail in policy recommendations, and a host of practical and logistical concerns.

Over the years there has been a shift of the writing and analytical work burden to Chinese team members, as greater capacity and range of skills have become available. One of the resulting dangers is that international members could become commentators only, or simply bring forward relevant international experiences. The intent of the CCICED approach, however, is to avoid marginalization of either Chinese or international members. The best work occurs when team members are paired in ways that provide for full interaction to address problems.

Another issue is the tight time frame for the work to be completed. Relationship building on the part of team members occupies a good deal of the time, and requires considerable skill on the part of co-chairs. Often there is a desire on the part of teams to engage in unrealistic levels of original research and data gathering while what actually is needed is synthesis of available information and the use of expert opinion in formulation of recommendations. Various activities require use of economic or other models, scenario development, backcasting or other means of examining the impact of proposed policies. The credibility of such efforts must be assured if recommendations are to be taken seriously at senior levels.

Given all of these and other considerations, the work mechanism of CCICED is always a subject of discussion as to how performance can be improved. The quality and compatibility of the team members is certainly critical. With two decades of experience, and strengthening of oversight functions, many improvements have occurred. Most importantly, the Council members, who scrutinize the results, and the recipient organization, the State Council, place a lot of trust in the conclusions and recommendations emerging from these studies.

As will be seen in the next section, the number and complexity of studies, and the urgency with which work must now be carried out, place ever-greater demands on CCICED study teams, and on those who support the work. This has been recognized; in recent years the Secretariat and the Chief Advisors Group were strengthened in order to more effectively backstop the work.

In summary, the operation of CCICED has been strengthened over the years in an incremental fashion, generally at the beginning of new phases of its existence. There has not been the desire to radically alter its status or operational approach since the original design works. The main shifts have been towards improving quality of work, speeding up the pace of completing initiatives in order to make the output as relevant as possible to policy needs, improving operational efficiencies and cost effectiveness, and developing better foresight of issues that might prove to be important to China's environment and development.

There have been changes to the skills and backgrounds sought in Council members, with a shift from governmental officials to those with well-recognized expertise on various aspects of environment and development policy. Also, efforts have been made to draw Council members into active participation in the work, for example as co-chairs of task forces. The shift from longer-term working groups to task forces that complete their work in 12 to 18 months, and to other studies that are completed in less time than that. There is interest in tackling some issues through careful examination of case studies, for example of marine oil spills. And during the latest phase, there has been greater outreach through annual round tables to those who must implement environment and development policies, especially at provincial levels.

In the earliest years there was almost total reliance on the expertise from working groups, which minimized the opportunity to integrate results around specific themes. Now it is possible to work from a solid base of experience on a substantial number of topics such as industrialization, ecosystem management, environmental fiscal reform, etc. The Chief Advisors Group now provides considerable guidance on all aspects of the substance and planning of CCICED work. On the management and administrative sides, there is an ongoing effort of capacity development to carry out the work efficiently. The efforts to enhance effectiveness in relation to both the substance and operational aspects is done in the context of the annual work plan with very specific targets and improvement objectives. This effort is assisted by various levels of dialogue carried out with funding partners and others.

CCICED's THEMES AND SHIFTING FOCUS 1992-2011

The contributions of CCICED studies have moved from an initial stage of drawing upon external experience based on fundamental matters of environmental law and regulation, basic environmental economic, ecological and other principles. Imperatives such as China's accession to the World Trade Organization (WTO), biodiversity protection and ecological restoration ("*Ecological Construction*"), and the shift from pollution control to pollution prevention were added. Application of market based environmental management, integrated environmental planning and other advanced measures important for regional, industrial, agricultural and urban and transportation environment and development issues received considerable attention after the first CCICED Phase.

During the last decade much more attention began to be focused on topics that directly linked environment to the mainstream economy: recycling economy (*Circular Economy*), Low Carbon Economy, Green Economy; energy and environment topics, green market supply chains, resource pricing, and innovation-driven emerging industrial sectors. These shifts reflect to a considerable extent the changing international perceptions about environment and development. However they also reflect the greater capacity of China to tackle its problems in a more sophisticated way, tailored to its specific circumstances, and with funding to match.

CCICED came to the conclusion in 2006 that China had indeed entered into a stage of transformative change where significant shifts in its relationship between environment and development were both urgent and feasible. Nowadays almost all activities undertaken by CCICED require a dedicated effort to identify new approaches rather than “off the shelf” solutions. Integrated, systemic policies are required and therefore most work must be carried out through multidisciplinary teams, often with considerable use of economic models and scenario development. In addition, the time frame for producing advice has tightened: from teams working together for 3 to 5 years in the early years, to situations where advice now must be delivered in periods from 6 to 18 months in most cases. And, as China’s interests broaden to include many more international concerns, there are new topics such as environment policies related to China’s outward direct investment (ODI). In short, CCICED requires advanced knowledge that now challenges the best experts from both China and other countries.

The evolution of CCICED’s themes and work over the past 20 years is summarized in Box 6. Each year the work is summarized in a published volume that reports the key findings and recommendations of individual task forces (called working groups in phases 1 and 2), and in Phase 4, special policy studies, pilot projects and other CCICED initiatives. In addition the summarized policy recommendations agreed by the Council Members and submitted to the State Council are included. In the past decade the volume also includes an Issues Paper related to the particular theme being discussed and, more recently, an accounting of recent Chinese policy shifts concerning environment and development, whether or not these can be directly related to CCICED studies.

This information base provides a remarkable chronicle of environment and development policy matters in China, and is available in English and Chinese on the CCICED website. It also provides a reasonable base for understanding the impact of CCIED in a later section of this report. Unfortunately, even in summary form it is voluminous, reflecting 20 years of hard work covering many topics.

Box 6. Themes and Approach of CCICED Work – Phases 1 to 4

1992-1996 Phase 1

Exchanging and disseminating international successful experience in the field of environment and development, and understanding implications to China of new international agreements (mainly Rio accords).

1997-2001 Phase 2

Innovative mechanisms for environmental protection, natural resource use and ecological restoration, with special attention to environment and economy relationships including market-based approaches, and trade and environment.

2002-2006 Phase 3

Environment and development governance, integrated management, sectoral sustainable development including urbanization, industrialization, rural and regional development (including western China), and China's role in international cooperation for multilateral environment and development agreements, and for international economic arrangements such as the WTO.

2007-2011 Phase 4

Transformative planning and management for an environmentally friendly society, with emphasis on formulation of better environment and economy relationships. Topics have included ecological goods and services, innovation strategy, environment taxation system, low carbon economy and industrial strategy, implementation of circular economy, green economy, ocean sustainable development, and China's current investment trade and environment relationship, including overseas direct investment.

ACTIVITIES AND RECOMMENDATIONS IN THE FOUR PHASES

CCICED Phase 1 (1992-1996)

There were eight Working Groups (WG) established to undertake research and prepare policy recommendations during this initial phase of CCICED. Six worked throughout, while the seventh was established in 1995 in order to prepare policymakers for environmental implications of China's greater role in global trade and the eighth was established in 1996 to promote the integration of environment protection into economic plans. The 8 WGs were:

- Biodiversity Conservation
- Energy Strategies and Technologies
- Scientific Research, Technology Development and Training
- Resource Accounting and Pricing Policy
- Environmental Monitoring and Data Analysis
- Pollution Control
- Trade and Environment
- Economic Planning and Environmental Conservation

These were intended to be almost like standing committees, capable of longer-term analysis around key themes, with periodic reporting back to Council, generally on an annual basis. Their work became essential for the development of evidence-based recommendations. Each of these groups were provided with sufficient funding to provide for their basic needs, but additional fund-raising was necessary, and often that responsibility fell to these initial working group co-chairs as well as to the CCICED Secretariat and the International Support Office. The working groups had the luxury of time to explore difficult issues in some depth, and a great deal of independence in choice of what they actually brought forward to the Council. The quality of most work was very

good. For the times it was an appropriate way to start CCICED on a track of excellence, with evidence-based recommendations

Overall, these initial activities kept the Council focused on environmental economics, the potential role of environmental technology innovation especially for energy diversification and for pollution control, threats to nature, and the upgrading of environmental information for decision-making. These working groups set out some major tracks of work that continue, in one form or another, to the present time. They made useful recommendations (see Box 7), with some being repeatedly highlighted.

Box 7. Some Major CCICED Recommendations Identified by Working Groups during Phase 1 (1992-1996)

- Make environment central to economic and social policy decisions at their start
 - Allocate adequate funding to implement environmental laws, standards and regulations
 - Introduce environmental impact assessment more widely in project assessment
 - Set priorities as identified in China's Agenda 21

 - China must leapfrog over mistakes made by other countries through technology choices and management approaches, drawing upon technologies and best practices elsewhere
 - Adoption of cleaner production and technologies

 - Seek a balance between command and control regulation and market based instruments
 - Introduce levies, licenses, meaningful pollution charges, and other environmental fees
 - Reform prices for important natural resources, and incorporate environmental factors when establishing prices for coal, water, timber, etc.
 - Remove inappropriate subsidies

 - Keep improved use of coal and other energy at the heart of environment and development
 - Seek out alternative energy technologies

 - Prevent trade in endangered species
 - Extend the network of protected areas and enforce legislation to safeguard these areas
 - Enlist local communities in restoration of degraded habitats to ecological productivity

 - Improve environmental monitoring and develop a sound environmental quality database
-

The topic of greatest concern during each of the Phase 1 CCICED meetings was how to reconcile China's rapid economic growth and needs for social betterment while safeguarding and restoring environmental quality. Perhaps the most significant contribution of CCICED's work during this first phase was to reinforce the key messages of the Rio Earth Summit regarding the interlocked nature of environment and economy. By emphasizing each year that a whole suite of economic measures could be used to achieve better environmental sustainability and natural resource use while still permitting good levels of economic growth and development, CCICED was opening options never

before considered in China. They linked very well to macro-strategies such as better pricing of natural resources that could be implemented by the central government.

In reality environment was being trumped by economic decisions throughout the country, whether in cities suffering from extreme air pollution, or in the countryside where many ecosystems continued to decline ever more rapidly. Alarm bells were being sounded in China's early State of the Environment reporting and in a variety of independent studies. CCICED provided many off-the-shelf solutions based primarily on what had worked in other parts of the world. New environmental laws came into existence in China, but with weak enforcement capacity. International cooperation arising from the Rio Earth Summit was on the rise, including significantly greater involvement of China on matters of global concern but real progress in terms of environmental protection outcomes generally was slipping globally. The juggernaut of economic globalization significantly changed China's economic development but also caused great damage to its environment.

The impact of CCICED's recommendations during the first phase was primarily to introduce approaches to environment and development policies that really were not well understood at that time within China. Examples included how environmental economics might be used to reduce pollutants and other demands on nature. At that time the concept of market-based instruments was not well integrated into any environmental policies in China. Nor was much attention given to advanced pollution control measures or pollution prevention. Township and Village Enterprises (TVEs), including many causing very serious pollution relative to their limited output, were common.

There were many nature reserves scattered throughout the country but no systematic approach to biodiversity conservation. CCICED findings and recommendations from the Biodiversity Working Group made a significant, qualitative difference since it elevated the level at which this topic was being examined—from mainly by scientists to the level of senior policy makers. The early CCICED work on possible applications of environmental technologies, and in the energy sector particularly, demonstrated that China could and should set its sights high on the role S&T innovation might play in the decade ahead. This was not an easy option to consider in this early stage of economic growth, but with CCICED led by the State Councillor for Science and Technology, the door opened.

Similarly, late in the first phase, Mr. Xie Zhenhua in his roles as the Administrator of NEPA and as Executive Vice Chairperson of CCICED was able to introduce the subject of trade and environment broadly into Chinese policy-making circles based largely on CCICED work. This early intervention was timely in preparing China for its growing role in world trade, and introduced policy makers within several departments and central agencies to a theme that up to that time really was hardly considered.

CCICED Phase 2 (1997-2001)

The second phase began during a time that brought both new challenges and opportunities in China's economic development. Within the year the Asia Financial

Meltdown had spread to the economies of most Southeast Asian nations as well as other parts of the continent. And by the summer of 1998, China had experienced a “flood of floods” causing major loss of life and economic damage, especially in the Yangtze River basin. Both events severely tested the Chinese government’s capacity for crisis management. In fact, China demonstrated considerable resilience and ability to engage in reform and strengthening of important systems. In one instance by reforming the banking and financial system. In the other, by stemming the source of damage through a logging ban, and by restoring the badly used forest and grassland ecosystems, especially those in the upper watersheds of major river basins.

All eight of the original CCICED working groups were continued into Phase 2 of CCICED, although generally with adjustments to their titles and mandate. Others were added (up to 11) as noted in Box 8.

Box 8. CCICED Phase 2 Working Groups

Biodiversity
 Cleaner Industrial Production
 Energy Strategy and Technologies
 Environment and Transportation
 Environmental Economics
 Environmental Protection and Economic Planning
 Forests and Grasslands
 Pollution Control
 Sustainable Agriculture
 Trade and Environment
 Enterprises’ Development and Environment

CCICED placed a major portion of its efforts during Phase 2 towards addressing rural development and ecosystem conservation. In 1997 the Council began working on sustainable use of renewable resources, including grasslands, forests and agriculture. The Working Group on Sustainable Agriculture had an extremely broad mandate that led to studies within many different parts of the country, including remote areas populated by poor people, major grasslands, as well as irrigated agricultural areas. In keeping with CCICED’s emphasis on market economy, considerable attention was paid to incentive systems, mechanisms for sustainable livestock production on grasslands, and incentives to farmers for conserving rural ecosystems.

In its 2001 recommendations CCICED suggested that markets could develop rapidly for production of food free of pesticides, chemical fertilizers and genetically modified organisms. China has taken advantage of this trend, becoming an exporter of many organic foods, certified according to Chinese and international standards. The ability to substitute low cost labour for the cost of farm chemicals has permitted this to happen.

The Working Group on Biodiversity emphasized the need for China to address the impoverishment of its biological wealth in terms of genetic diversity of crops, indigenous grasses, and losses of the country's outstanding diversity of plants and animals in its natural ecosystems. A comprehensive, country-wide biodiversity inventory was needed. Sustainable farmer livelihoods required new management patterns with better transportation services, and urban market access, along with incentives that would ensure better use of grasslands.

In the last year of Phase 2 a special CCICED assessment of the efficiency and effectiveness of China's forest and grassland restoration programs revealed that while some good results had occurred, overall sustainability and effectiveness were in question, especially with respect to grasslands initiatives. The results of this effort were of great interest to the Government of China since investment for land rehabilitation was very large, and the findings were both socially and ecologically significant. A full cost benefit approach was proposed, taking into account ecological and socio-economic benefits.

The 9th Five Year Plan (1997-2001) provided an opportunity to incorporate into China's policy guidance the key sustainable development points arising from the Rio Earth Summit, especially those related to the Rio Declaration and China's Agenda 21. At the first AGM of Phase 2 this point was emphasized along with the more general one of the need for deepening international environment and development cooperation. Also mentioned was the need to place emphasis on the role Chinese business enterprises could play in environmental protection, including serving as vehicles for environmental technology transfer and for the development of an environmental industry sector. At the time such concepts were still quite new and not fully addressed either in general policies or through incentive systems. CCICED made clear the need for greater participation of China's citizens in environmental decision-making, a point of major emphasis in the Earth Summit, and a topic highlighted many times in future years in the work of CCICED. While the 9th Five Year Plan did indeed place greater emphasis on environmental concerns, it was still a time when funding provisions were limited, and there was a significant shortfall for environmental investment.

The year 2000 provided another opportune time for rethinking environment and development relationships and targets. The UN Millennium Development Goals that emerged following the UN Millennium Development Summit of world leaders in September 2000 are particularly important, especially for China, which had more poor people than all of Africa's population at that time. Poverty reduction came to be seen as a factor in environmental sustainability. In 2001, the Millennium Ecosystem Assessment was initiated to provide a better understanding of ecological degradation throughout the planet. In 1999 the Council had recommended that ecological conservation should be combined with poverty alleviation, especially in the ecologically degraded parts of western China. In 2001 it recommended that China actively engage with the Millennium Ecosystem Assessment to understand status and functioning of the country's ecosystems. This did happen, especially through the Chinese Academy of Science.

The CCICED AGMs in 1999 and 2000 were particularly rich in recommendations since the Council wished to provide considerable input into the formulation of the 10th Five Year Plan, which would provide initial guidance for the new decade and new millennium. One of the main themes put forward concerned the need for integrated decision-making and for comprehensive planning mechanisms, for example to address sustainable use of the main river basins, development in western China, and in marine and coastal areas such as Bohai Bay. The desire of Council to provide timely inputs to China's five year plans continued into the other phases of work, and has been successful when done in a timely, strategic and targeted way.

Certainly, however, the biggest story in China's overall development at the millennium was the onset of the extreme rise in China's export economy. At the dawn of the new century, China's position in world trade was 7th largest for merchandise trade (3.9% share) and 12th largest for commercial services (2.1% share).²⁰ China's entry into the WTO in November 2001 accelerated the pace incredibly. By 2009 China was the world's leading export trade country.

The advice provided by CCICED on trade and environment during the years before China's accession to WTO took place through a working relationship that included the Ministry of Commerce and SEPA. This was an unprecedented relationship and very important for a new subject within China. The practical value included building an understanding of how environment might be used as a non-tariff trade barrier regarding Chinese export products and of how environmental considerations could be built into various policies in a fashion that would be WTO compliant.

Environmental assessments of the impacts of increased trade were initiated in a number of Chinese sectors. This work was pioneering and important to policies in a number of fields such as organic agriculture, forest products, steel production, etc. The main effort of CCICED was to build a research base that could assist China in relevant policy formulation and development as the WTO began to seriously examine how to address environment and sustainable development in its trade agreements and dispute resolution mechanism. CCICED also examined the implications to China of rising international interest in ecolabelling.

Concurrent with the rising significance of environment in economic trade agreements was the increasing presence of trade issues within multilateral environment agreements, for example, funding mechanisms in the implementation of the Montreal Protocol, the Clean Development Mechanism (CDM) under the Kyoto Protocol signed in December 1997, the gradual strengthening of measures under the Convention on Trade in Endangered Species (CITES), and the relationship of TRIPs and the CBD (Convention on Biological Diversity)²¹. The complexity of these very important agreements has grown over time. China benefitted financially and in the role it could play globally through many of their provisions. CCICED was able to provide useful advice, quite selectively.

The Council also continued its efforts to provide advice on environmentally responsible fiscal reform and other resource and environmental economic topics, cleaner production,

and pollution control, and on sustainable energy strategy. In addition, the Council set up an eighth working group, on transportation. Some of the most important of their recommendations are described below.

The emphasis within government on market based approaches to regulation had taken hold, but in the case of environment this was still not a well understood topic. Initially the focus of recommendations was on pollution levies, and other fees and other charges, plus general observance of the “polluter pays” principle with respect to clean-up costs and environmental damages. There was an effort also to introduce the idea of developing incentives for public officials to take action. While the ideas were sound and well represented, it was difficult to achieve implementation. Capacity was limited, especially at the provincial level, concerns existed about moving too quickly, and certainly both monitoring and enforcement were still very weak.

Over the course of the second phase the recommendations on environmental economics became ever more refined, and specific. True costs of environmental impacts were examined, for example with respect to air pollution health impacts. Consideration was given to environmentally perverse subsidies, and tax-based incentives and disincentives. Suggestions were made on how the national economic accounting system should be reformed to include resource and environmental considerations along with economic-based environmental indicators. Marginal cost analysis was proposed to better price electricity, water and centralized heating supply in order to limit demand. Taxation was proposed to shape transportation trends towards greater use of public transportation.

By the end of Phase 2 a rather comprehensive range of market instruments for environmental protection and management had been introduced through CCICED. The work had been carried out with leading academics in China and from abroad. But the government was engaged in setting up a workable basic regulatory system, much of which was still based on administrative measures rather than rule of law. Thus operational levels of even moderate implementation strategies for most market instruments were still at least 5 to 7 years away. As a senior administrator remarked, it was not a lack of understanding that had inhibited rapid implementation, it was the lack of power and authority to do it. Certainly the CCICED work on environmental economics was ground-breaking, and was considered to be of the highest priority by Council members.

The CCICED recommendations regarding cleaner production were very timely and well received by both government and various industries. In the late 1990s this was a topic that resonated well with multinational companies, including many that operated in China. And environmental and management certification systems became available, such as ISO 9000 and ISO 14000. These became attractive to many Chinese companies wishing to demonstrate their ability to produce goods for export that would be perceived positively in demanding markets. CCICED suggested clean technology transfer centres so that experience could be available widely around the country including for TVEs and the establishment of pilot demonstration areas in various provinces and municipalities, a recommendation quickly adopted by the government. Less successful, perhaps, was a

1999 recommendation to separate industry from urban populations through “safe zones” in order to reduce the impact of industrial pollution. Even in recent times there have been various problems, sometimes involving large investments, where new industrial complexes have had to be relocated or stopped at the development stage. Finally, in 2001, the recommendation was made to establish a law on Cleaner Production. This was successfully passed in June 2002 and became effective in June 2003.

Urban and inter-urban transportation became an important priority for CCICED from 1998, although a task force on this topic did not begin immediately. By this point in time China had already made a commitment that development of a private automobile industry would become an important future stimulus for the domestic economy, but also that speeding up expansion of public transportation would also be an essential part of urbanization strategy. These competing priorities have played out in subsequent years with significant growth in both, and a range of environmental problems. Transportation requires integrated policies “in which the advantages and disadvantages of different modes can be weighed and judged against each other...Prices should reflect the real social, economic and environmental costs.” This recommendation made in 2000 and 2001 was intended to address the reality that subsidies often distort transportation decisions, plus the need for a more coordinated approach since many departments are involved. In reality what has occurred in China in the last decade has been transportation development on an unprecedented scale for virtually all modern types. It is an experiment that is hard to fully assess and CCICED is not well placed to do so. The Council has consistently recommended that whatever the outcome, there should be attention given to developing compact cities that can have sustainable transportation networks, including use of walkways and bicycles, and low emission vehicles with strict standards. These recommendations have been adopted, albeit selectively.

CCICED Phase 2 covered a growing number of topics. It was possible to do this because most of the working groups were able to shift their interests from time to time. Several had enjoyed a full decade of cooperation. Council members also had additional roles, including having some members take on a liaison function with individual task forces. Several members were prepared to concentrate on specific, quite difficult matters such as preparing the final synthesis of recommendations based on the work of task forces and the discussions among Council members. The ability of the small CCICED Secretariat to provide coordination among the different working groups was limited. This was unfortunate since at times this could be one of the most important advantages of CCICED, bringing a variety of perspectives into policy development.

There was growing concern on the part of Council members on how to maximize the value of recommendations. The most important matter was to provide implementable suggestions, and also to make a clear enough, evidence-based case for them. It became clear that Phase 3 would mark the start of an accelerated pace and other changes to improve the quality, efficiency and overall value of the Council. However, it was also clear that during Phase 2, CCICED members and its working groups had made major contributions to understanding policy needs and that many of the recommendations had helped to shape and reinforce policies for environment and development.

CCICED Phase 3 (2002-2006)

It was only a few months after the Johannesburg World Summit on Sustainable Development (WSSD) that the first Annual General Meeting of CCICED's Phase 3 took place. This was a significant moment for the Council since there was a large turnover of Council Members and several changes designed to improve the quality and relevance of work. These changes were in line with the accelerating pace of policy change, and the need for more specific recommendations to address very immediate problems. As well, an additional international vice-chair was added to the Council. The number of international funding partners increased quite substantively.

By the end of the Phase 2 it had become clear that some of the mechanisms that had proven so useful in earlier times no longer could be relied upon. It was not possible to continue with the Working Group model as originally set up with five-year terms. The need for recommendations tailored to specific problems and delivered in shorter time frames led in Phases 3 and 4 to use of Task Forces that operated within a time frame of 1 to at most 2 years. In addition, Special Policy Studies that provided recommendations based on even shorter time frames for completion were added.

An important innovation introduced by the Chief Advisors was the production of an Issues Paper to help frame the theme of the Annual General Meeting. There have been 10 of these documents produced over the years. In general these papers have been very helpful in sharpening recommendations as they can provide a synthesis related to the work of a number of task forces and other studies.²²

The 2002 Issues Paper, the very first one, provides an overview of how well China was placed internationally on environment and development, especially in relation to the priorities emerging from the WSSD. There were a number of sources consulted, including the national paper China prepared for this Summit, and WSSD speeches such as Premier Zhu Rongji's, who led the Chinese delegation. The baseline situation of China at this time had a number of contradictions. Some international assessments suggested that China ranked quite low on issues related to environment and development. However there were many encouraging signs regarding the groundwork laid for positive changes that might occur in fairly short order. For example, China produced a *Program of Action for Sustainable Development in China in the Early 21st Century*.²³ CCICED recommendations had covered a substantial number of the six priority areas described in this document. Furthermore, China pursued some central matters discussed at WSSD with a deep level of commitment, especially poverty reduction. The aspirations of China for pursuit of sustainable development interlock with those of the global community and the major countries. Unfortunately, however, global cooperation for sustainable development has consistently failed to proceed at the pace needed by China to meet its own objectives.

Much of the effort in CCICED Phase 3 was given over to assessing needs in major sectors with a focus in 2003 on Sustainable Agriculture and Natural Resources, 2004 on

Sustainable Industrialization, and 2005 on Sustainable Urbanization. In 2006, a comprehensive review of China's environment and development governance in relation to matters of both domestic and international concern was undertaken. This was a difficult task and was undertaken in the context of CCICED's own work—past and future. In Box 9 the full range of studies covered under these themes is provided.

Box 9. Themes and Specific Task Forces Conducted during CCICED Phase 3.

Sustainable Agriculture and Natural Resources

- Agriculture and Rural Development Protected Areas
- Forests and Grasslands Assessment (continued from Phase 2)
- Eco-security
- Eco-compensation
- Non-point Pollution Prevention
- Environmental and Natural Resources Pricing and Taxation

Sustainable Industrialization

- Enterprises Development and Environment
- Development of China's Environmental Industry
- Energy Strategy and Technologies
- Circular Economy
- Strategy and Mechanism Study for Promotion of Circular Economy and Cleaner Production

Sustainable Urbanization

- Sustainable Urbanization Strategy
- Financial Mechanisms for Environmental Protection
- Sustainable Transportation

Environmental Governance

- Integrated River Basin Management
- Environmental Economics
- Economic Growth and Environment
- WTO and Environment
- Environmental Governance
- China's Environment and Development Review and Prospects

CCICED Phase 3 coincided with the remarkably rapid economic growth associated with China's entry into the WTO. There was a short period where it appeared that energy demand might increase at a slower rate due to lowering energy use per unit GDP. However as electrical power demand rose rapidly in response to industrial expansion, and as fuel needs for transportation rose, this was not to be the case. Certainly by 2005-2006 it was apparent that the environmental impacts of rising energy use and industrialization were rapidly increasing to the point where the situation was described as very grave.

The environmental goals for the 10th Five Year Plan were not met. Funding allocated in this Plan was insufficient to deal with the environmental consequences of rapid increases in economic growth. Even if more funding had been available it is unlikely that the results would have been satisfactory. Worship of GDP growth was very strong at provincial levels throughout the country. And there was enormous investment in urban development, with many short-term environmental impacts associated with construction. Thus air quality and water quality suffered, although often the longer-term looked rosier since water and sewage issues were being tackled.

The impact of WTO accession on China's environment was noted in CCICED 2002 recommendations that China should undertake strategic environmental assessment of various export-oriented sectors, and that a capacity for environmental negotiation in trade agreements be developed. Such work was undertaken in subsequent years through Task Forces involving both SEPA and the Ministry of Commerce (MOFCOM). This work allowed for direct transfer of international experience and understanding of China's situation in a timely fashion and prepared China for environment and trade problems in steel, cotton and other production sectors, and for environmental non-tariff trade barriers.

In 2001 China won the bid to hold the 2008 Olympic Summer Games, and as part of its submission made environmental improvement a major commitment. CCICED in 2002 made the suggestion that this approach should be broadened to include other major international sports and events hosted by China so they could be on the leading edge for introducing environmentally friendly approaches to urban development. This suggestion certainly was followed in several such events, not only the Olympic Summer Games, but also through direct consultations later during the preparations for the World Expo held in Shanghai in 2010.

The Council in its recommendation on high profile, trend-altering events noted that:

A sustainable national economy is unlikely to come about through an incrementalist approach. It will require innovation, behavioral change, and action that takes China beyond international benchmarks and best practices.

In later years CCICED has kept returning to these points—that China needs to be striking a balance between efforts to adopt what is working elsewhere, and undertaking original efforts to devise smarter solutions appropriate for its circumstances and needs. Starting with the 11th FYP and especially in the 12th FYP, China is applying such an approach.

The 2002 focus on a sustainable national economy laid out many of the aspects important for later transformative change including: considerations of major industrial restructuring and redesign, improved urban design to address energy efficiency and reduced emissions, incorporation of environmental concerns in shaping future economic growth, production and consumption, and greater emphasis on environmental health.

Sustainable industrialization, the theme of the 2003 CCICED AGM, was examined with considerable cooperation on the part of the World Business Council on Sustainable

Development and the China Enterprise Confederation. CCICED suggested that environmental impact per unit of GDP needed to be reduced to a sixth or even a tenth of current levels in order to achieve acceptable levels of environmental quality. This would require urgent choices to be made concerning not only the types of industrial facilities but also major decisions on placement and types of supporting infrastructure. *China can build its future, not simply retrofit the past.* To a remarkable extent this is what has become the mantra of decision-makers who during this period took very difficult decisions to close down inefficient industrial plants, and later, also many of the worst polluting coal power facilities, smelters, and mines.

CCICED introduced corporate social responsibility into its recommendations related to the private sector, and the need for a level playing field with appropriate enabling conditions created by government. This last point was important in order for small and medium sized enterprises (SMEs) to thrive and become environmentally responsible, and also for the large state-owned enterprises (SOEs) to address environmental matters as they became more like private sector enterprises. One of the key recommendations that arose from examination of several sectors such as cement and refineries was that enterprises had to expand in size and production capacity in order to take on the sizeable investments required to become state-of-the-art efficient and cleaner operations. This recommendation was acted upon and today's leading production facilities are far different than their predecessors. CCICED's work on sustainable industrialization was undertaken in cooperation with various leading Chinese industrialists. This proved to be helpful in rapid implementation of key recommendations.

A comprehensive set of 12 recommendations was made regarding improvement of financial mechanisms available to businesses and to cities for environmental improvements to production facilities and for infrastructure development. This list included among others, issuance of municipal bonds, special funds and incentives for SMEs, sustainability criteria for bank loans, use of FDI as a leading edge for environmental improvements, and depreciation policy and other tax measures to stimulate environmental protection industry and environmental investments by industries. In one form or another many of these recommendations have been implemented. However it has been a prolonged process that is still in the mid-stages a decade later, and with various more specific follow-ups, especially during CCICED Phase 4.

In 2003 CCICED introduced in some detail considerations related to modernization of coal utilization, advanced technologies for sustainable production, pollution prevention, green design, green procurement by government as a stimulus for green consumption and green technology adoption, the development of an indicator system for sustainable development, enhanced public participation in environmental matters, and improved environmental governance. These ideas found their way into the 11th FYP and into subsequent action that continues until the present, with follow-up on specific matters by later CCICED task forces.

At the 2004 CCICED AGM several task forces reported on Sustainable Agriculture and Rural Development. Their work was based in part on CCICED's activities related to

Biodiversity Conservation and to examination of China's efforts during the late 1990s to restore grassland and forest areas. In the Council's Recommendations it was noted that:

The relationship of environment and development in rural areas is in need of a new comprehensive approach, taking into account ecological services, environmental impacts, resource scarcity, and biodiversity conservation needs throughout China. Such an approach is embodied in the idea of integrated planning and management—for rural development, river basin management, protected areas and for the very serious problem of controlling agricultural pollution.

CCICED also considered how: sustainable agriculture could contribute to a broader vision for China's food security, ecological-economic national strategies based on integrated water management could improve development decisions, management of China's protected areas could be managed to provide better ecological and social benefits, and a green trade action plan could benefit rural dwellers. This sweeping set of ideas and recommendations provide the broad base for what CCICED suggested should be *a new rural development framework for a new era*.

This framework would require reform of the rural fiscal system to increase the flow of funds to poorer rural areas, for needs that are locally relevant. A broader range of rural financial institutions would foster farmers and entrepreneurs in starting new economic activities. Greater investment was needed in education and health services for rural families. More investment was required in agricultural research and technology innovation. Better monitoring and environmental impact assessment of agricultural development was required in order to improve environmental management. Major attention to agricultural non-point source pollution was highlighted as a major environmental issue affecting downstream lakes, rivers and coastal areas.

The general directions of the agricultural and rural development reform suggested by CCICED were consistent with the sustainable development focus of the *New Socialist Countryside* policies introduced by China in early 2006 as the basis for rural initiatives in the 11th FYP. In addition, some of the specific rural environmental management concerns have been addressed since then. An example is the gradual introduction of eco-compensation initiatives that pay for maintenance of ecological services, often through the labour of poorer people living in upland areas of water basins. The infusion of funds into rural areas has come from many sources, including rising demand for green trade. China has developed organic farming for many fruits and vegetables, and has increased its exports of these products as well as sales to domestic consumers.

Some recommendations proved difficult to implement. The problem of non-point source agricultural pollution likely has become worse over the past half decade due to the growth in intensive animal husbandry such as pig-raising and also the continuing rise in fertilizer use. The consequence has been continued presence of algal blooms and worsening of water quality in some major coastal and lake areas. The issue of importing a larger portion of China's grain supply has never been fully addressed in response to CCICED's recommendation, or by similar recommendations made by various economists.

It is understandable that China may wish to make the choice of feeling more secure with a high level of grain self-reliance, especially in light of the high price of grains that occurred several years after the CCICED recommendation was made. However, there is a cost to the environment since achieving self-reliance requires heavy fertilizer consumption. It would appear that the solution is more complex than CCICED originally envisioned, perhaps requiring a combination of Chinese direct purchase or long-term securing of rights to crops grown abroad such as soy and other crops in Latin America, a somewhat greater reliance on world markets, and a concerted effort through agricultural research and extension services to reduce use of agricultural chemicals on Chinese farmers' fields, while continuing to increase productivity. China also has taken the wise step of avoiding diversion of food crops into biofuel use.

Protecting China's ecological environment has been one of the main themes since the beginning of CCICED's work. Extensive recommendations concerning biodiversity conservation, expansion of the nature reserve system, improvement in policies for ecological construction of wetlands, grasslands and forests, concerns expressed about invasive species, eco-compensation, and integrated river basin management certainly made an impact with decision makers, often within a year or two of recommendations being put forward. However, a careful analysis of nature reserve management tabled at the 2004 CCICED AGM revealed many shortcomings. The recommendations were directed at improving ecological services, better cooperation among the government departments responsible for their management, improved benefits for nearby rural inhabitants, and at providing stricter protection of the most important areas.

Given that more than 15% of China's lands are now designated as nature reserves it is not an easy task. The recommendations have provided guidance and there has been a great deal of additional work done, often involving significant expenditure of funds, for example in the headwater regions of the major rivers. Yet the threats of development, climate change, poor use of grasslands and other problems remain and are likely on the increase. In 2010 CCICED commissioned a policy-oriented report based on the work of the China-EU Biodiversity Conservation Project noting improvements still needed.

In 2005 CCICED focused its recommendations on Sustainable Urbanization, a sprawling topic that proved to be very difficult since there are more than 600 Chinese cities with many different needs, and with varying environmental settings and conditions. Furthermore, the topic is strongly linked to industrial development, transportation, building energy efficiency and pollution reduction, delivery of social services and quality of life issues. The massive migration to cities has placed huge strain on the delivery of basic environmental services such as drinking water and sanitation. It has been probably the largest single factor creating the need for integrated planning strategies since urbanization requires the formation of new networks linking the various types and sizes of human settlements, the capacity to manage risks such as natural disasters, and many issues attached to rapid growth.

Recommendations focused on four main points: (1) scientific and regional planning that would make full use of modern tools that would assess and support living within environmental limits, would avoid negative impacts, especially on poorer people, and would foster cultural and ecological diversity; (2) transform urban areas into resource saving cities and towns starting with specific initiatives in the 11th FYP, including better building standards, deployment of circular economy plans and cooperation with the business community for implementation of cleaner production and phase-out of older polluting enterprises, and high priority to public transportation; (3) control the impacts of cities and continuously improve urban environments through specific targets and use of performance indicators, and through strictly enforceable air and water pollution regulations; and (4) public information and participation in sustainable urbanization decisions. Many of the recommendations were based on greater use of environmental fiscal instruments including taxes, resource and environmental pricing policies, and fiscal transfers. Detailed recommendations were provided on policies for urban circular economy, and on integrated urban transportation for “mobility management”.

Many of these recommendations are parallel to what is actually happening in a large number of cities in China today. CCICED certainly cannot take full or even a large amount of the credit for the efforts of cities to become sustainable. However it has offered to senior decision-makers a coherent picture of key sustainable development needs. The Council has provided consistent advice on automobile fuel consumption and emissions that are similar to what is now actually occurring. And its early advice concerning building codes, promotion of circular economy and mandatory targets for reduction of pollution in the 11th FYP, and its long-standing promotion of environmental fiscal measures are examples where CCICED advice has been helpful to improvement of urban environments.

Throughout CCICED Phase 3 there was a concern that the Council ensure the incoming administration was well acquainted with high priority environment and development policy needs, especially during the lead-up to the 11th Five Year Plan. It was helpful that the Premier-to-be, Mr. Wen Jiabao, had a direct hand in this process in his role as Chair of CCICED during this period.

“The CCICED task force on Forests and Grasslands provided an early assessment of performance that was an outstanding example of analysis. The work of this task force was listened to and acted on by the Government of China.”

—Huguette Labelle, Co-chair CCICED Review and Prospects 2006

In 2006 CCICED took a reflective look at its role during the first 15 years and what China might face in the future. The idea was to provide a basis for future activities, and also to better understand the growing international attention being given to China’s environment and development domestically and in relation to global sustainable

development topics. The results of this special task force on Review and Prospects were considered by CCICED and also published as a book for wider distribution. The realization that China was now facing a historic transformation of its environment and development relationship meant that it would have to greatly strengthen its capacity for governance at all levels—within China and in its global relationships. CCICED made the suggestion that SEPA be upgraded to full ministry status as one very important step.

The Task Force identified seven key challenges facing China in the years to 2020 (see Box 10). These challenges became important reference points for design of recommendations during subsequent years.

Box 10. Key Environment and Development Challenges facing China to 2020.

- Challenge 1.* China will be faced with serious energy security, severe air pollution and increasingly heavier pressure on reduction of emission of greenhouse gases.
 - Challenge 2.* Increasingly severe water crisis.
 - Challenge 3.* A continuous and rapid increase of municipal waste, industrial waste and hazardous waste.
 - Challenge 4.* Degraded ecosystems and loss of biodiversity.
 - Challenge 5.* Emerging environmental issues such as indoor pollution, ground-level ozone, mercury pollution, environmental health problems, soil pollution, and environmental problems associated with information technology, biotechnology and nanotechnology.
 - Challenge 6.* Continuously worsening global environment.
 - Challenge 7.* China's increasing external environmental impacts from a rapid growth economy.
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These challenges can all be characterized as complex system issues where no single intervention is likely to be fully effective as a solution. They are interactive with each other, and all have major economic implications. As such, documenting these issues and the immediate and longer-term steps required to address them was considered to be part of CCICED's effort to provide early warning to the government. Where possible specific recommendations were made for each.

A number of themes examined over the previous several years were given further emphasis in this final year of CCICED's Phase 3. One was the desirability of stronger environmental fiscal reform that would likely be not only more effective but also cheaper to implement. Mechanisms such as expanded use of the Clean Development Mechanism (CDM) were available. Lifting of some subsidies, a workable eco-compensation mechanism, sustainable procurement are examples of other measures that the Council felt deserved further emphasis. During the five years that followed there were a number of advances, in some cases making China an important leader (e.g., in eco-compensation, and in use of CDM funding). However, environmental fiscal reform still falls short of the need.

In the period between 2003 and 2006 CCICED had undertaken a considerable body of work on environment and development information needs, public disclosure, performance monitoring of public officials, and environmental early warning systems so that policies could be strengthened before problems became too large. This work suggested that China needed to improve the quality, reliability, comparability and usefulness of environmental indicators and other information. Progress has not kept up with the needs at this time of transformative change. However it is clear that much more information is becoming publicly available, and that the quality of information is increasing somewhat. There is a broadened set of sustainability indicators in the 12th FYP. The work of CCICED has been helpful in highlighting the problems, but more effort is still required to build a well-functioning reporting system that is transparent and consistent with international data bases.

Phase 3 covered many different topics and built an understanding of the environment and development priorities with many incorporated into the 11th Five Year Plan. For the first time, a very sizeable budget accompanied bold priorities intended to set a new pathway for environmental protection and environmentally friendly development. CCICED believed that its work had been influential in this process but worried that the pace of economic growth might exceed government targets, making achievement of the environmental goals a very difficult task. The Council decided to focus on the theme *Towards an Environmentally Friendly Society* for the Fourth Phase of its work (2007 to 2011.)

CCICED Phase 4 (2007-2011)

Phase 4 of CCICED (2007-2011) has been the most active and demanding phase since environment and development problems continue to grow more complex, deadlines for action become tighter, and the need for coordinated effort greater. Box 11 indicates the annual themes and studies reported at each of the five years of Phase 4.

Box 11. Task Forces (TFs) and Special Policy Studies (SPSs) Conducted During CCICED Phase 4 (2007-2011).

2007 Strategy for an Environmentally Friendly Society

- Strategic Transformation of Environment and Development in China: Global Experience and China's Solution (TF)
- Policy Mechanisms towards Successful Achievement of the 11th Five Year Plan Environmental Objectives (TF)
- Major Issues and Policy Framework for Environmentally Sound and Strategic Management of Chemicals in China (SPS)

2008 Innovation for Environment and Development

- Innovation for an Environmentally Friendly Society (TF)
- Environment and Health Management System and Policy Framework (TF)
- China Ecological Footprint Report 2008

2009 Energy and Environment

- China's Pathway towards a Low Carbon Economy (TF)
- Sustainable Use of Coal and Pollution Control Policy in China (TF)
- Energy Efficiency and Urban Development (Building Sector and Transport Sector) (TF)
- Rural Development and Its Energy, Environment and Climate Change Adaptation (TF)
- Economic Instruments for Energy Efficiency and the Environment (TF)

2010 *Ecosystem Management*

- Ecosystem Services and Management Strategy in China (TF)
- Ecosystem Issues and Policy Options Addressing Sustainable Development of China's Ocean and Coast (TF)
- China Ecological Footprint Report 2010 Policy
- Framework on Improving Ecological Service Functions of Aquatic Ecosystems (SPS)
- Developing Policies for Soil Environmental Protection in China (SPS)

2011 *Green Development*

- Research on Development Mechanism and Policy Innovation of China's Green Economy (TF)
- Low Carbon Industrialization Strategy in China (TF)
- Trade, Investment and Environment (TF)
- Greening China's Market Supply Chains (SPS)
- Mercury Management in China (SPS)
- Feasibility of a China Environment and Development Outlook

The 11th Five Year Plan signalled the start of major transformative change in environment and development, complete with several mandatory targets on environmental pollution and on energy efficiency. Mandatory targets mean that the responsible officials will have their performance assessed based on meeting the targets. This innovation had been called for by various groups including CCICED, and therefore CCICED was concerned about identifying policy shifts that would help to achieve the objectives of 10% reduction in major pollutants (sulphur dioxide emissions, chemical oxygen demand (COD) in rivers) and a 20% reduction in energy intensity (energy per unit of production) compared to 2005 baselines. CCICED identified a number of barriers and proposed a new approach to meeting the objectives.

The pollution control approach suggested was to undertake *Five Shifts*: (1) focus on total emissions control for both volume and concentration of pollutants, (2) reduce pollution from all industries, not just selected sectors, (3) shift to coordinated control of all pollutants rather than single pollutants, (4) increase quality of pollution reduction projects rather than simply increasing their number, and (5) use a broader variety of regulatory instruments, including more market-based approaches. In addition, it was suggested that China should begin early to plot directions for the 12th FYP since the 11th FYP would by no means fully address problems. Over the next several years action was taken along the lines suggested, the pollution targets were met, and the energy efficiency target was almost reached. Significantly, there was considerable public attention given to performance by the various provinces, sectors and cities in meeting objectives at various points during the five years of implementation. And, when the 12th FYP was formulated,

additional pollutants were added, and recognition was given to co-benefits and total pollution control. Adequate funding, monitoring and close supervision of performance made the difference between success and failure. However, as CCICED indicated in its recommendations, as long as economic growth continued to overshoot its targets, it would be difficult for environmental improvements to catch up.

CCICED seized upon the pollution and energy targets as an example of transformative change—where development would have to be “sound and rapid”, not simply “rapid”. Three problems should be solved: the need for greater involvement of stakeholders and full participation from all levels of government; detailed and implementable policies and plans regarding environmental action; and searching for better value from environmental investments. A stronger institutional framework for environmental protection would include changes to existing laws, market-based instruments, greater attention to enforcement, more use of the judicial system, a greater share of GDP invested in environmental protection, and considerable strengthening of the overall environmental governance system. At the time (2007) these recommendations were made, the creation of MEP was still half a year away, and there was no fully-fledged cabinet post for the Minister.

Globalization impacts was another of the big topics examined in 2007, Embodied energy and resource content for exported goods contribute significantly to China’s pollution and energy load. It was recommended that China set in place measures that would reduce the export of goods (especially commodities) that take a great deal of energy or involve a lot of pollution in their production. China has set in place a system where taxes were not returned to manufacturers upon export of these products. Another aspect of considerable concern to China was the rising amount of recyclable materials. Some types such as waste paper and some scrap metal were encouraged, and in the first decade of this century China changed the geography of global recycling through its high demand. On the other hand illegal shipments of electronic wastes and other less desirable wastes became a problem. In addition, there were other illegally produced imports such as logs from Indonesia and other countries. These issues were examined at various times from 2007 to the present. They speak to the question of how China might best help to strengthen global and regional environmental regimes, and how further bilateral cooperation can help to address the issues.²⁴ Indeed, they raise the question of how China can build a reputation as an “environmental responsible global citizen”.

“I believe that China is now in the forefront of helping the world to interpret the environment in the context of development—more as a driver for development.”

***—Achim Steiner, Executive Director of UNEP and CCICED Member,
CCICED 2007 AGM***

In 2008 CCICED focused on the role of S&T, management, and institutional innovation to meet environmental and sustainable development objectives. This was one of the most fascinating tasks undertaken by CCICED. By this time China was well engaged in its Medium and Long-term National Plan for Science and Technology Development 2006-2020. This Plan calls for an unprecedented expenditure to elevate China's status to a leading science nation, and with many of the undertakings directly related to environmental and development improvements. CCICED's concern is to seek ways for accelerating the actual implementation of sustainable development and therefore it has examined how innovation can help.

The recommendations were directed to development of a national plan for environmental innovation that might be implemented in the decade starting in 2010. Such a plan should define strategic goals, targets and measures that would be supported via projects and appropriate investments. There should be research platforms on clean technology innovation, national research centres for environmental innovation, sustainable innovation laboratories, and cooperative government-industry initiatives. This recommendation has not been implemented in this unified fashion. But it is clear that the elements are moving forward with great speed. Whether the topic is wind power technology, electric car technologies, crop water efficiency, or any number of advanced topics such as carbon sequestration, the list of sustainable technologies requiring attention has more than 60 priorities. Thus, while not exactly as envisioned by CCICED, the substance of the recommendations is being implemented on a massive scale.

The government has fostered markets for products through a combination of vigorous commercialization abroad, subsidized applications within China (e.g., solar power in desert regions) and through the large economic stimulus package after the global financial meltdown in late 2008. Considerable attention has been given to investment strategies that would lead to introduction of new technologies.

In the 12th FYP attention is focused on seven emerging industries that are intended to become part of China's new economy (15% of GDP by 2015). They include: environmentally friendly and energy-efficient industries, next-generation information technology, biotechnology and bioengineering, high-end equipment manufacturing, alternative energy including renewables, alternative material and alternative-energy vehicle industries. This list is well aligned with the concept of a national environmental innovation plan or strategy.

China has major problems related to environmental health arising from air, water and soil pollution, and the presence of toxic substances, sometimes in food or consumer products. In addition, as demonstrated by SARS in 2003 and Avian Flu at several times since then, the linkages between China's biological diversity and public health risks cannot be ignored. The first National Action Plan for Environmental Health was established in 2007. CCICED recognized that Plan required a national environment and health management system for full implementation. Also, there was clear recognition of the need for strong central government leadership, including improved public disclosure and participation opportunities.

There has been gradual strengthening and targeted interventions on these problems in line with the recommendations of the CCICED Environment and Health Task Force. However, much more work is required. The rapid rise of China's chemical manufacturing capacity, the large scale accidental release of toxic materials from industrial plants, the legacy of contaminated mining and old industry sites, and other sources of environmental health hazards have been identified by CCICED as major concerns for which improved management is required along with substantial remediation measures. Above all, CCICED has recommended that all new facilities be operated in ways that will minimize pollution and toxic releases. The transformations in environmental protection to meet these needs will have to be accelerated during this decade.

In 2008, the year when international investment and finance came close to collapsing, stimulus spending was introduced (with China having one of the largest initiatives), and the early start of thinking about recovery based on “green growth” took place. CCICED indicated its concern that “China must work with unwavering determination to reduce emissions, improve energy efficiency and fight climate change”, and turn the threat to new opportunities for “sound and rapid sustainable development”.

Four principles were suggested by CCICED regarding China's stimulus package: (1) do no harm to the environment during implementation, (2) take a systems perspective to identify positive relationships between environment and the recovering economy, (3) undertake labour intensive environmental activities of value to poorer people in the countryside, and (4) seek co-benefits such as those related to health, and to environment quality and restoration through stimulus spending.

The government was urged to provide adequate supervision to avoid bad projects, to step up spending on environmental technology applications, and to move into new approaches such as Low Carbon Economy that could give a clear vision of a new economy emerging in the wake of the global financial crisis. These ideas were to a considerable extent implemented very quickly especially through the massive commitment to infrastructure spending. China did invest more in its stimulus package on environmental spending than most countries, and as a consequence there were benefits such as greater water and sewage installations. Furthermore there was some screening of major projects concerning environmental impacts. Most importantly, there was rapid follow-up on introduction of low carbon economy and other energy and environment initiatives in 2009-2010.

At the 2009 AGM, reports on CCICED energy and environment studies provided a very comprehensive examination of policy needs on this subject. The umbrella concept for this meeting was Low Carbon Economy (LCE). CCICED initiated work on this idea in early 2007, when it was still quite a controversial topic within China. CCICED delivered its recommendations in time to be useful for planning for the 12th FYP and for providing inputs regarding levels of carbon emission reduction that might be undertaken without endangering economic growth rates. Five pillars were proposed as a roadmap to LCE in China: sustainable industrialization, urbanization and transport, low carbon energy, consumption patterns, and rural land use. All were underpinned by three foundations:

technology and innovation, markets and pricing reform, and institutional change. Detailed scenarios based on economic and energy modeling revealed that significant downward shifts in energy consumption could be achieved by 2030. The work was undertaken in cooperation with the Development Research Centre of the State Council using standard economic models, and with an excellent, senior research team on both Chinese and international sides. This initiative, and the preparatory work in the year before, placed CCICED in the forefront of policy development in China on this particular topic. It succeeded in part also because of CCICED's strong network of supporting international partners.

The other elements of CCICED's 2009 energy and environment initiatives included a detailed examination of how coal use could be made more environmentally sustainable. Given that coal is still the dominant fossil fuel source in China, this topic is difficult. Even the most basic shifts such as washing coal before shipment has not been fully implemented. A green mining strategy for coal was articulated, with consideration of the limited water resources, need for improved mining techniques and land restoration, and disposal and utilization of coal gangue. CCICED recommended a more integrated institutional base be developed to supervise sectoral activities related to coal, including electrical power generation, use of coal in chemicals manufacturing, mining and transportation of coal, and related aspects such as water conservation. The study also examined new policies to accelerate clean coal use in power generation, and the implementation of national coal consumption targets based on air emissions targets. There is a need to look at coal along its entire value chain in order to fully understand and act on environmental matters. CCICED also recommended a much greater commitment to advanced clean coal technologies, some of which might need to be developed within China. More attention to experimental work on carbon capture and storage was recommended.

Some of the CCICED ideas related to sustainable coal use are finding their way into national policies, including the idea of a cap on the long-term production of coal. The menu of options discussed in the report was certainly comprehensive, and it is likely that not all ideas will be considered as a single package within government. The study team included senior members of the Chinese coal industry. They are very aware of the imperative to make coal a cleaner, more environmentally acceptable energy source. The best mines and power plants now match or exceed most operations in other countries. And, through actions such as installation of desulphurization equipment on most power plants during the 11th FYP, the 10% sulphur dioxide reduction target was achieved. The real struggle for coal use to become sustainable, if it ever can be, still lies ahead.

Other task forces examined urban energy use, especially for building and transportation, and rural energy use. These topics related more directly to choices available to individuals and households, plus energy and environment planning at sub-regional levels.

The range of issues for rural energy and environment is very broad, including environmental health concerns such as indoor air pollution in rural homes; use of biomass for fuel and electrical generation; more widespread deployment of rural renewable energy

including geothermal, hydro, solar, wind and biogas; energy-saving low tillage, low fertilization and other on-farm advanced techniques; forest, farmland and grassland carbon sequestration for future carbon credits; and a variety of means for rural inhabitants to engage in climate change adaptation. There are two main organizational matters arising from this Task Force. The recommendations should be carried forward in the context of China's commitment to reforms for a modern socialist countryside. The second is that implementation should be carried out in a fashion that benefits the rural poor economically and in terms of risk reduction.

CCICED's 2009 analysis of urban energy and environment examined in some detail the changing energy demands of a number of cities and building types. The study team noted that energy use balance in China eventually will shift from the current dominance of industrial use to meet the rising demands of households. Energy and environmental capacity are likely to be bottlenecks to urban migration and expansion unless per capita demand is kept to relatively modest levels. Yet the trend is going in the opposite direction. At least 10% of Chinese households in surveyed cities are at an energy use level of several benchmarked European and North American urban averages.

There are numerous policies that might help to keep energy use lower, including reducing the scale and rate of urban construction, initiating property taxes to manage demand, setting guidelines and designating low carbon cities with "low energy-low carbon buildings", and building cities that are more compact in order to reduce energy associated with road and other infrastructure, reform district heating to seek up to 50% less energy consumption in heating. Many of these ideas are being implemented in various locations within China and low carbon cities are being self-designated. CCICED held discussions with Shanghai officials prior to the 2010 Expo to bring a clearer focus to energy and environment in the theme of this World Fair. CCICED also held a Round Table meeting in early 2010 in Shanghai to introduce local officials from various provinces to the recommendations produced on energy and environment.

In 2009 CCICED also carried out a detailed look at further reform and improvement of economic instrument policies in the context of environment and energy. This analysis was extended to also examine the role of the financial sector including banks and insurance. Several very important recommendations emerged including the need for an environmental tax system rather than the existing rather *ad hoc* and limited approach. A carbon tax should be a priority component of the tax system, implemented gradually starting from a time deemed suitable by government decision makers. The basis of a green credit system was outlined. The start of this was already underway within the financial sector. The CCICED recommendation demonstrated how this could be fully developed and the purposes it could serve. An "environmental pollution responsibility" insurance system was proposed. This is intended to provide for environmental accidents, and would require extensive policy development, standards, etc.

Finally, recommendations for the 12th Five Year Plan were made including incorporation of a green economy theme and with measures to implement Low Carbon Economy, Circular Economy expansion, an environmental taxation system, new emphasis on

sustainable industrialization, improved energy and environment standards for buildings, continuation and further expansion of mandatory pollution control to include nitrogen compounds, energy efficiency and greenhouse gas emissions targets, and improved control of heavy metals. All of these recommendations found their way into the actual plan adopted in 2011.

The concerted effort to address environment and energy relationships certainly was one of the most difficult but also most fruitful undertakings of CCICED. The timing was right—just before the December 2009 Copenhagen meeting on climate change, and as the G20 embraced the concept of Green Growth as a means of starting new economic opportunities. Within China the extensive list of key recommendations dovetailed with planning for the 12th FYP.

In 2010 CCICED drew attention to ecosystem protection and management; biodiversity status and needs; ecological services protection especially for river basins; the sustainable use of China's oceans (a new topic for CCICED); and to the urgent need to address soil pollution. As well, CCICED, in cooperation with WWF, issued its second report on China's Ecological Footprint. This AGM took place during the International Year of Biodiversity. There are many daunting challenges ahead in protecting and recovering ecosystems and their services.

Findings included that, in 2007, China's ecological footprint per capita was lower than the world average, but it is still twice the biological carrying capacity of the country's ecosystems. Meanwhile, the ecological deficit is annually becoming larger. In spite of increasing forest coverage, most of China's forests remain inadequate in total volume, and poor in ecological services; the overall grassland and wetland quality continues to deteriorate despite improvement in certain areas; and soil problems, including soil erosion, desertification, salinization, nutrient impoverishment, and soil pollution, have become increasingly serious. In some areas, soil has been so badly polluted that it becomes a threat to ecological safety, food safety and human health. Furthermore, water ecosystems provide much poorer eco-services than before and their biodiversity has decreased. The status of endangered species is deteriorating.

China's ocean is currently facing challenges at an unprecedented scale including serious marine ecological degradation, drastic depletion of marine resources and continued decrease of marine ecological capacity. China's ocean ecological and environmental status has been worsening. Offshore environmental pollution in many ocean areas is heavy. In 2009, polluted offshore ocean areas exceeded 50% of the total offshore ocean area. Compared with the 1950's, China has cumulatively lost 50% of coastal wetlands, 57% of the mangrove areas, 80% of its coral reefs, with more than two thirds of the coast eroded. Ocean ecology and environment disasters have frequently happened, for instance, red tides occurred 79 times annually on average from 2001-2009.

CCICED recommended that China should set healthy ecosystems and highly functional eco-services as a key goal, taking a holistic ecosystem management approach. To enhance the overall economic and social value of its natural capital, China should update

its national strategy on ecological conservation and development with guidelines on ecological protection and development. There should be improvement in legislation for ecosystem protection and management, with umbrella legislation on biodiversity legislation and for eco-compensation. China should set up and continuously improve a measurable, verifiable and reportable monitoring and evaluation system on China's ecosystems to cover the whole country and in particular the key ecological regions. Wider participation of the general public, enterprises, communities and NGOs is needed for improved ecosystem management.

Concerning the oceans, there is a need to draft a national Coastal Zone Management Law, and for one of the most threatened areas, a Bohai Sea Environmental Management Law. Supporting regulations, and standards of the Marine Environmental Protection Law are needed. A new China Strategy on Marine and Coastal Sustainable Development should be formulated with a much more integrated approach. China should develop mechanisms to reduce land-based sources of environmental and ecological problems in its ocean areas. It is necessary to introduce an ecosystem-based approach to marine management. The ecosystem shall be viewed as a whole and comprehensive measures need to be taken in marine management including ecosystem-based sea zoning plans, identification of areas that would be off-limits for sea reclamation and designation of ecologically sensitive areas.

This strengthened and integrated approach to land, freshwater and the sea and their biological resources would help to create ecological resilience that could reduce damage from natural disasters and enhance overall human security as well as improved quality of life. However it will be necessary to invest more in the protection of natural capital. China should set up and continuously improve a measurable, verifiable and reportable monitoring and evaluation system on China's ecosystems to cover the whole country and in particular the key ecological regions.

Given China's interest in shifting industry and other activities to various regions such as Western China, it is essential to strike a balance between regional development and green transformation. Regional strategies and plans should conform to the National Plan on Ecological Zoning with the development direction of a region determined by its resource and environmental capacity so that pollution and ecological damage can be avoided.

In fulfilling 12th FYP environment and development objectives it is important to give more attention to weak links that require immediate actions, including ecosystem management, rural environmental protection, soil pollution prevention, and inclusion of climate change mitigation and adaptation targets into ecosystem management initiatives. These actions will enhance the role of ecological protection in promoting green transformation of economic development.

These recommendations are demanding and require coordinated effort across many units of government. They would move China closer to its aspirational goal of becoming an Ecological Civilization.

The 20th Annual General Meeting of CCICED takes place in November 2011. This meeting will examine “Green Transformation of Economic Development Mode”, representing the next stage of moving towards an Environmentally Friendly Society in China.²⁵ The intent of the meeting is to review the latest iteration of the environment and economy relationship in the form of a blueprint for China’s Green Economy. Also, it will examine Low Carbon Industrialization Strategy for China, and provide recommendations on how China’s “going out” strategy of Overseas Direct Investment (ODI) can be carried out with improved consideration of environmental matters, with a similar look at improvement in China’s incoming Foreign Direct Investment (FDI), plus some other matters related to trade and environment policies. In addition, on a very specific topic of current international interest, recommendations for a Chinese mercury management strategy will be examined.

The Shift to Transformative Change and Operational Issues

Shift from Single Issues to Transformative Change

The work of CCICED parallels to a considerable extent the ideas and agreements of the global community from the 1992 Rio Earth Summit and the many follow-up global meetings including the 2002 Johannesburg Earth Summit, and the Copenhagen Climate Change meeting held in December 2009. Over this two-decade time frame, environment and development topics have grown ever more complex and more central to social, economic and political decision-making at global, national and more local levels.

Within China, environment and development has now emerged as a central theme in planning and therefore commands considerably more attention on the part of leaders. There is concern that unless environmental problems are adequately managed, the country’s development plans may be jeopardized. Furthermore, China fully understands the gravity of declining global and regional environment and development conditions. Therefore it has engaged in many international initiatives addressing these issues.

China also recognizes that addressing environment and development issues opens new paths of economic opportunity, domestically and internationally. CCICED has concluded that China is at a transformative stage in its environment and development, just as other countries including Japan, South Korea, Germany and the USA have experienced. However, the scale and compressed timing of China’s environment and development path sets it apart from the others.²⁶

“Similar to energy saving and emission reduction, the enhancement of ecological development and environmental protection is an important tool for economic restructuring and transformation of growth mode”

– Vice Premier Li Keqiang at CCICED 2009 AGM

Given the evolution of thinking about environment and development, it is not surprising that CCICED's work also has evolved considerably. Moving from a concentration in earlier years on basic consideration of regulatory frameworks, incentives and institutional development, CCICED now examines highly integrative topics: low carbon economy, environment, trade and investment, and ecosystem services. Policy recommendations now cover both needs within China and China's growing international involvement.

CCICED operates in a complex policy milieu where various influences shape policies, where many of today's decisions on environment and development have considerable sensitivity and are formulated through complex political processes, and where there are structural and institutional barriers that delay policy shifts. This statement could be made for any major country at the moment, but the points are especially important for the world's largest and most rapidly changing nation. In addition, China faces many environmental pressures arising from local governments seeking economic growth, from the inadequacies of monitoring and enforcement, and from a host of other factors that bedevil policy formulation and implementation. As well, sluggish progress on international environment and development arrangements influence national decisions.

The important point is that the operational mode of CCICED has shifted over its life. No longer does CCICED have the luxury of long periods of time to consider problems, nor can it take off-the-shelf solutions from the earlier years of environmentalism abroad and expect them to be useful to China. Nowadays, CCICED must fully comprehend the issues of the day that are of the highest priority to China, and then be prepared to develop recommendations over a much shorter frame, often only a year or even months after work begins. A greater investment is needed in original thinking since many of the problems are on a scale never before experienced anywhere (e.g., urbanization) or have complexities for which there are no easy answers (e.g., eco-compensation). Also, there is a need to find the right blend of policies that can be implemented quickly plus those that can be implemented gradually and in an integrated way. Policies must address technological, institutional, management, innovation and investment matters, and focus on the right balance of market-based reforms, laws and regulations.

Operational Issues for CCICED's Work

There was considerable concern expressed within the Council even after the first few years of operation about several matters. First and foremost, what barriers affected the actual uptake of CCICED's recommendations by the Government of China? Second, the dominant role of Working Groups in the development of reports, and the limited opportunities for inputs by Council Members, who met only once a year and generally did not actively engage in the research activities. Third, is the ability of the Council to address important issues in a timely fashion, and also to be ahead of the policy curve in defining significant new topics. These matters have continued to be of concern although there has been considerable refinement in approach to address them. At times, especially during the first three phases, there were serious problems of management capacity, especially to address problems in an integrated fashion, taking into account their multi-sectoral and multi-institutional nature, and as time frames for delivering advice tightened.

Also, in the early years of CCICED, because existing analyses were carried out over long periods, other important themes could not be added. Urbanization, transportation, agriculture, and environmental health were not examined at a desired level of detail. Environmental governance, integrated regional environmental planning, and industrial strategy were given detailed scrutiny mainly after the first and second phases of CCICED. Some other topics including environmental education and disaster response were never the main theme of working groups in subsequent phases.

Funding for CCICED was relatively scarce in early years for at least some of the activities undertaken. During Phase 3 and 4 this has been less of a problem. In Phase 4 a total budget of about \$20 million, including China's contribution, has been available, spread over the five-year period. This funding does not include quite substantial contributions in kind including the time of members and some of the individuals on research teams. At an annual expenditure of about \$4 million, the result is cost effective since there is a substantial number of activities that includes field research, analytical work, travel, meetings, and coordination and oversight needs.

The focus of CCICED work has always been on identification of better policies, with a concern that policy advice be implementable within a reasonable time frame, and that the advice address high priority problems. Some topics, such as those related to pollution control are highly technical and, on occasion, working groups have veered away from policy definition in their recommendations and towards technical solutions. CCICED members and the Government of China representatives have consistently discouraged such deviation from the core approach.

Early on, there was a realization of the gap that often existed between national aspirations and provincial/local capacity and interest in implementation follow-up. Since CCICED was established to provide advice primarily to institutions operating at a national level, it was quite obvious where most of the effort should be placed. However, to ignore disconnects between concept at national level and quality of performance at local levels would be to overlook perhaps the most important difficulty facing environmental implementation. Thus CCICED has experimented with various ways to link policy development with field experience, including pilot projects, surveys, consultative field visits with local officials—and sometimes with their inclusion in study teams.

These efforts were very helpful in the identification of local expertise and interests in piloting new concepts. As experience was gained, some recommendations were refined to specific regions in China. Obviously this was of particular significance for biodiversity and other ecological work, but also for some aspects of economic studies on resource pricing, regional environment and development strategies, and for environmental monitoring including some of China's earliest serious monitoring work on greenhouse gas emissions from cities.

OBSERVATIONS ON THE POLICY IMPACTS OF CCICED²⁷

The continuing desire of the Government of China to maintain the Council and its receptivity to the Council's recommendations; the variety of countries and organizations willing to provide the necessary financial support; and the outstanding people attracted to work with the Council are factors that have both reflected and contributed to its success.

There is a growing interest on the part of financial contributors, Council members, and the Government of China to understand the impact of the Council's recommendations and, therefore, ways to continue improving the effectiveness of its efforts. This is not an easy task since rarely is there a one-to-one link between specific policy recommendations and specific policy changes, especially when measured in the short term (e.g., over the course of six months or a year). CCICED has undertaken reviews of its past impacts, notably the special task force that examined the first 15 years of the Council's work.²⁸ Since 2008, a summary of new and revised Chinese policies related to environment and development is prepared each year by the Chinese members of the Chief Advisors Group for the information of Council members.

Value of CCICED

A starting point for understanding how to assess impacts is to consider the likely value of CCICED to three different groups. The first is the most important—the Government of China and a number of Chinese organizations, and particularly the senior leaders and the State Council, which is responsible for the continued existence of CCICED and receives its products.

The second group is the international community that supports and participates in the activities of the CCICED. This group is more diverse than governments and funding agencies. It includes some international organizations (e.g., UN bodies), and international NGOs active in China, and some multinational enterprises.

The third group comprises the people directly associated with the Council and its operations. This includes a substantial number of people within China and abroad. Its numbers include present and past members of Council, the people who have participated on CCICED task forces and in other ways, and the members of the Secretariat, Chief Advisors Group and the International Support Office. Those in the third group are influential in other capacities, and generally have learned from the experience with CCICED in addition to making contributions to it. In some instances, they are able to bring new perspectives on environment and development policies from their work with the Council to their own work elsewhere.

The observations below concerning how each group values CCICED are based on conversations with many people on this topic over the past decades, including Chinese and international CCICED members, funding partners, participants in CCICED studies, the CCICED Secretariat and Chief Advisors Group, independent observers including

those who have carried out assessments, and those within the Government of China and others receiving CCICED advice.

Chinese Government and Organizations

CCICED provides several types of input useful to this group:

- New policy concepts
- Observations on performance and gaps in existing policies
- Commentary and/or reinforcement of policy directions already contemplated by decision-makers, but possibly still controversial
- Early warning of domestic or international problems that may require policy development
- Policy experience from other countries and international experience on particular problems, sometimes with specific suggestions on how this policy experience can be adapted to Chinese circumstances.

There are numerous examples of CCICED recommendations for each of these categories.

Introduction of new policy concepts. While it might seem difficult to be introducing new policy concepts after almost 20 years of making recommendations, these are still very important. Two examples are: in 2009, policy needs for Low Carbon Economy, and, in 2008, a policy recommendation for an Environment and Health Management System.

Performance recommendations are very common. For example, in the 2007 examination of policy mechanisms to support attainment of the 11th Five Year Plan environmental goals, recommendations focused on “five shifts” based on total emissions control.

Commentary on policy directions already contemplated by government. This includes the conversations in two successive years with Premier Wen Jiabao on the desirability of upgrading of the Minister of the Environment to a full cabinet post—a successful recommendation.

Early warnings of environment and development concerns and opportunities have included the valuable groundwork laid by a CCICED Working Group on Energy a number of years ago concerning the great potential of renewable energy to China, especially wind power.²⁹

Use of international policy experience adapted to Chinese circumstances includes extensive efforts to introduce various environmental economic instruments to form part of Chinese environment policies, including recommendations from the recent Task Force on Economic Instruments for Energy Efficiency and the Environment³⁰, which also addressed how China’s banking system can introduce improved policies for environment and development.

These Chinese policy needs are becoming more focused as China's environmental management system matures. It is therefore becoming necessary to tailor recommendations to specific levels or parts of the decision-making system. A prime example is the sustainable use of coal, which requires attention to mining, transportation, electricity production and transmission, and chemical sectors in addition to the major climate change and environmental issues handled within various agencies of government.³¹ This example, and others such as analysis of sustainable use of China's oceans, highlights the important point that impacts of recommendations will depend on having clear resonance with specific sectors or audiences, as well as on attention to overview recommendations that will be of value to the highest level of decision-making.

International Organizations and Governments Supporting CCICED

This audience is vital to CCICED since it is a source of financial support and facilitates access to the important intellectual and expertise required by the Council. The interests and needs are complementary to those of the first group but with some additions. There is, for example, increasing demand within this group for improved knowledge of the impact of CCICED recommendations and activities on China's policies.

In addition, there is an interest in how the policy recommendations can be of value for understanding the underlying reasons for China's approach to its international environment and development affairs. The range of interests is considerable: participation in regional and global environmental agreements and environmental components within other multilateral agreements (e.g., trade); attention to problems that have trans-boundary impacts or impacts on natural resources in the global commons; China's environment and development activities abroad (e.g., in Africa) and activities of Chinese enterprises operating abroad; and the potential for cooperation with China on a variety of partnerships for environment and sustainable development within China or elsewhere. CCICED has covered these types of activities in a number of task forces and studies, for example, various Task Forces on Trade, Investment and Environment topics, the Task Force on Innovation, and in the 2007 Task Force Report entitled *Strategic Transformation on Environment and Development: Global Experience and China's Solution*.

The policy work of the Council can influence the international community in a number of ways, most notably by providing insight into what China is prepared to do, or cannot do, for example on low carbon. The CCICED work on this topic was well informed in terms of modeling potential economic impacts of carbon reduction levels. The Council addresses topics from a policy perspective that is complementary to more technical matters where governments may have work underway, for example in the case of the 2010 work on ecosystem management and ecological services supported by the EU Biodiversity Management Project, which stood to gain a valuable entry point for its otherwise somewhat technical work.

Above all, the attraction for international supporters is the opportunity for access to senior decision-makers provided by CCICED. Thus their most important need is to be

assured that the recommendations being made to this level of Chinese government are being taken up. In the future, this interest is likely to spread to include key provincial decision-makers as well.

Individuals and Organizations Associated with CCICED

Council and task force members serve in their individual capacity, but a number of Chinese and international organizations have cooperated extensively with CCICED over many years. They have a strong commitment to ensuring that their efforts contribute to desirable changes. On the part of task force members, there is a professional interest in seeing policy outcomes that are based on “good science” and improved practices, and therefore quality of outcomes and various technical characteristics may be of greatest interest. In fact, there is often a tension between developing recommendations that are detailed, quite technical and prescriptive and the demand from the policy-makers for clear, implementable and policy-oriented advice.

Council members have many interests and these are reflected in the wide range of commentary typically offered on any set of recommendations. The involvement of Council members as co-chairs or members of task forces is an important innovation that may improve the alignment of task force recommendations to high priority needs of China since these members have the experience of how the CCICED operates.

The people associated directly with CCICED are important contributors to making China’s efforts better understood within and outside of the country. They are influential within their own circles and can bring about a better understanding of specific problems, policies and performance of Chinese environment and development actions. This is an important part of the policy impact process from a Chinese governmental perspective, and therefore a benefit of the Council’s existence.

Considerations in Outcome Assessment

In this section CCICED’s approach to seeking policy influence is described along with some items that should be kept in mind when assessing influence on policy outcomes.

CCICED’s Dialogue Process

CCICED operates through a dialogue process of a regular and long-term nature. It is respectful in every way since where progress is being made it is acknowledged, and its recommendations are seriously considered, including directly with China’s State Leaders.

CCICED tackles subjects viewed to be of high importance by China’s Government and the recommendations are made in a timely and relevant way, thus anticipating that they will be of immediate value, whether or not they are immediately possible to implement.

Considerable effort goes on at the Secretariat level to safeguard the quality of this dialogue process and to ensure that opportunities exist to follow up on recommendations.

Some, but not all of this effort can be documented, since some of the effort relies on informally developed and well-nurtured relationships within bureaucracies.

Attribution and Influence

Generally policy formulation is a complex business, often opaque, and with many people and organizations claiming credit. Furthermore, it is often wise to be modest in terms of seeking credit, since it is essential for others to feel ownership of a concept that becomes a policy. And it is not always possible for people to reveal how a policy decision was reached, for reasons of cabinet secrecy or other constraints. This is particularly important to recognize in the case of CCICED, which operates at high levels.

Policy Formulation and Implementation over Time

There is also the matter of the long time taken for some policies to be successfully applied. While some of the most significant policy suggestions put forward are well understood within government, they cannot be quickly implemented, or implemented at the most effective level, for reasons such as social considerations, lack of consensus within the political system, or the time required to establish implementation and enforcement infrastructure. However, if a reasonably long time frame is applied, considerable progress can be seen. An example is the adoption of Euro II to IV emissions standards in China's auto industry. A recommendation on this subject was made by the CCICED Trade and Environment Task Force in the early part of this century, suggesting that China could introduce the standards when becoming a WTO member. It has taken longer, but now China has very strict standards, with the strictest being in areas such as Beijing. Natural resource pricing and an environmental taxation system are other major topics where action has been very gradual despite a high level of interest and need.

Measuring Movement towards Desired Policy Outcomes

The most important point is not whether China has followed the CCICED recommendations to the letter, or whether the CCICED input was the most important to the outcome. Rather, it is whether the general direction of policies and successful action for environment and development and CCICED suggestions are consistent. This can be assessed in a number of ways including simple identification of the policy shifts during any given year as is currently done.³² Of course this does little to assign attribution. To some extent it becomes an article of faith that CCICED has had some influence.

Other dilemmas exist. Almost always it is possible to discover inconsistency in the application of the best policies. It is also quite possible that environmental conditions may continue to decline even when a good policy is being applied reasonably, since there may be other factors at play. This is especially true in China during times of run-away growth such as those experienced during the first seven years of this century. Thus quantitative measures of progress may not give an adequate picture since they cannot describe how bad the situation might have been in the absence of the new policy. Furthermore there are often good reasons to be cautious about accepting statistics

demonstrating rapid turnaround of bad conditions. These considerations suggest that very simple measures of policy effectiveness are needed.

Case Studies of CCICED Influence on Policy Outcomes

Perhaps the most valuable means for understanding whether and how CCICED recommendations are influencing policy outcomes is to look at specific cases in sufficient detail and through a variety of methods where reasonable validation of findings is possible.

Ideally, the analysis should be a combination of tracing policy development over time with linkages made to CCICED influence, directly or indirectly at various times during the process; assessment of the role of other key players where possible; significance of the policy shift domestically and internationally; and strategic approach of CCICED including longer-term importance of the recommendation and policy development. Where possible, the case studies can use a combination of literature review and interviews. They do not need to be detailed but should provide a clear sense of CCICED's role, the policy suggestions, and their uptake and influence.

A number of examples of Council influence over the past several years are provided below. The information builds on the observations provided by the Chinese Chief Advisors Group including an annually-produced document, *Progress on Environment and Development Policies in China*³³, and various other information sources, including informal discussions with senior officials, task force and Council members, monitoring of publications and news, and inputs from people familiar with CCICED and its work. The observations are highly summarized and are subject to all the normal reservations concerning direct attribution of impact of any single source on policy formulation. It should be emphasized that these case studies are by no means the only ones that could have been selected. There are numerous examples related to clean production, transportation, urbanization, and industrial restructuring and science and technology innovation that might have been selected.

The example case studies do suggest strongly that CCICED has significant value in Chinese policy development. They provide evidence that the Council continues to play the substantive role expected of it by the Government of China and by the organizations and individuals inside and outside the country that support the Council's work financially or through their own expertise and efforts.

Development of a Low Carbon Economy (LCE) in China

As early as 2001 CCICED advised the State Council that it might be advisable to consider Low Carbon Economy as an emerging strategy. In 2007 CCICED convened its first-ever Roundtable—on Low Carbon Economy. At the time it was highly controversial. The concept was new to China, and there was no supportive policy. The 2008-2009 CCICED's task force on Low Carbon Economy carried out extensive

modeling concerning potential impacts on economic growth, and potential benefits to energy and environment relationships.

The intent was to provide a roadmap for making Low Carbon Economy a central element in China's future development, starting with the 12th Five Year Plan (2011-2015). The Development Research Centre (DRC) of the State Council was heavily involved, opening channels for timely communication of recommendations even before the studies were completed. As a result, the materials presented by Premier Wen Jiabao during various meetings in late spring and summer, and at a special one-day session in August 2009 of the National People's Congress, were in accord with suggestions put forward by the Task Force.

The speech by President Hu Jintao at the United Nations General Assembly in September 2009 committed China to development of a Low Carbon Economy, and subsequent statements have indicated specific targets to 2020, starting in the 12th Five Year Plan. The DRC representatives have indicated the strong influence of the work on the policy establishment, especially during 2009. Others have noted the broad base of support for Low Carbon Economy that has rapidly emerged, including adoption of this theme at the Shanghai Expo, and note the pioneering role of the Council in bringing forward a new idea that opened a door for senior leaders.

Creation of an Eco-compensation System for China

Eco-compensation mechanisms are an important policy area for the Chinese Government. A CCICED review of eco-compensation mechanisms and policies in 2005-2006 resulted in policy recommendations to the Chinese Government concerning a national strategy on eco-compensation and compensation, including recommendations on the gradual development and improvement of legislation on eco-compensation; enhancing transfer payments for eco-compensation; improvement of eco-compensation management systems; and enhancement of scientific research and trial work on eco-compensation. The establishment of eco-compensation mechanisms has been mainstreamed into national decision-making, with an increasing number of pilot projects being implemented. With further attention to eco-compensation in watershed restoration, wetlands, and protection of ecological services in Western China especially, there is now the framework of a system, which will be further developed during the 12th Five Year Plan.

National Management System for Environmental Health

A recommendation to expedite the establishment of a national management system for environmental health by the 2008 Task Force on Environment and Health was the culmination of a dialogue that started well before the task force began its work. From the early part of this past decade it had become evident that environmental health should become an important element of CCICED's work. It took considerable pressure over a period of three or four years to start a task force. A key reason was the development of accords between officials in the health and the environment agencies.

The pressure from CCICED likely helped to move this process and indeed led to the creation of a national action plan for environment and health (2007-2010) just as the Task Force began its work. The task force recommended a much stronger governmental leadership approach, with more emphasis on prevention, public disclosure, and targeted efforts to address prominent problems. These recommendations have been acted upon to a much greater extent than in earlier years. Further evidence of trust and desire to have advice from CCICED is the 2010 request for the Council to engage in emerging environmental ecosystem and health issues such as soil pollution and mercury pollution.

Total Pollution Control Emissions Reduction System

A shift to a total emissions reduction system was recommended in 2007 by a task force on 11th Five Year Plan performance. It suggested moving away from consideration of selected pollutants on their own and towards a comprehensive approach that considered total pollution loads, and placed greater emphasis on pollution prevention rather than on pollution control. Chinese team members involved with this Task Force were well placed to press for implementation of the recommendations.

Over the years since 2007, there has been a shift towards this Total Emissions Reduction approach, with additional pollutants being proposed in the 12th Five Year Plan, and new techniques of pollution prevention being highlighted via technology innovation and closing of older industrial facilities. The line of communications into the decision system is via organizations such as the PRCEE (Policy Research Centre on Environment and Economy) and the Academy of Environmental Planning, both organizations affiliated with the Ministry of Environmental Protection (MEP). MEP has carried this total emissions approach forward to other ministries.

The CCICED recommendation borrowed heavily from European and other international experience. Validation of the CCICED influence comes from individual members of the Chief Advisors Group and others with ties to the Ministry of Environmental Protection (MEP) and the organizations noted. Work continues with a new CCICED Task Force on 12th Five Year Plan performance, which aims to make recommendations also on the potential role of total pollution control for the time period of the 13th Five Year Plan.

Creation of a Full Cabinet-Status Ministry of Environmental Protection

A recommendation to transform the State Environmental Protection Agency (SEP) into a full ministry with the Minister of Environmental Protection becoming a full member of cabinet was made by the Task Force on Environmental Governance in the last year of CCICED Phase 3. It was raised directly with Premier Wen Jiabao in 2006 and again in 2007. In 2008 this became one of major decisions in government structural reform and, on March 27, 2008, the newly established Ministry of Environmental Protection was formally inaugurated. This higher visibility and place at the senior table of government has been essential for progress on a wide range of issues, especially those related to the 11th Five Year Plan, and on access to funding, and for a strengthening a two-way channel for CCICED communication at high levels of government.

Legal Status and Promotion of Circular Economy

CCICED conducted policy studies on cleaner production in China (1997-2001) and on promoting circular economy (2003-2005), and put forward a series of policy recommendations on incorporating these elements into a strategy of balanced development of economy and environment in China. The recommendations included: incorporating cleaner production into social and economic development plans and national policy systems; encouraging financial departments to support cleaner production; and extending cleaner production to primary and tertiary industries and to the western part of China. It was also recommended that China take prompt action in adopting circular economy as a means of achieving scientific development and the building a harmonious society; that China should develop industrial, fiscal, taxation and financial policies to promote circular economy; and that China adjust industrial structures and encourage the society as a whole to participate in circular economy.

The policy studies and relevant recommendations of the Council played an important role in facilitating the development and enactment of two laws, enhancing awareness of decision-makers, and enabling them to review, introduce, and adopt relevant international experience. The National People's Congress adopted the Law of the People's Republic of China on Promotion of Cleaner Production on June 29, 2002 and Law of the People's Republic of China on Promotion of Circular Economy on August 29, 2008.

Environmental Assessment, Information Disclosure, and Public Participation

In 2002, the National People's Congress adopted the Law of Environmental Impact Assessment, enacted in 2003, congruent with recommendations put forward by the Council's Working Group on Cleaner Industrial Production (2001) and the Working Group on Environmental Economics (2002). This law has formed the main basis for citizen input in addressing environmental problems associated with projects, and has also been the basis for halting or revising a substantial number of initiatives that failed to address environmental issues adequately, or were poorly designed.

Since then, CCICED has made numerous recommendations for strengthening public involvement in environmental decisions, including the 2007 policy recommendation for China to undertake a major transformation in its environment and development relationship. It was pointed out that without strengthened public participation, the transformation would likely not be successful. The Ministry of Environmental Protection (MEP) has set out new guidelines in 2009 for greater transparency and public input into environmental assessments, has opened a public complaints hotline that is heavily used, and is engaged in a number of high profile campaigns for environmental protection. As well, a 2008 revised rule for Administrative Review intended to help access of the public to a variety of review processes was put into place.

This gradual move towards public participation has been brought about by the attention paid by CCICED to the issue, often at the task force level, as well as the efforts of others. CCICED influence is corroborated by the Minister and other officials within MEP.

Integrated River Basin Management in China

Water shortage and flooding and pollution in rivers and lakes have created problems that constrain China's environment and development. To address these problems, CCICED invited Chinese and international experts to study the need to establish an integrated river basin management system, absorbing good practice from other countries (2003-2004). The research team submitted recommendations to the Council focusing on the concept of China's integrated river basin management, legislation, institutional strengthening and reform, and integrated planning.

The recommendations facilitated the formulation and adjustment of relevant policies. In addition, the publication of the team's findings in "Introduction of Integrated River Basin Management and Guidance for Integrated Management of River Basins" has provided guidance for researchers and practitioners in this area. The Task Force supported the implementation of the Yangtze Forum, which deals with Integrated Basin Management, and is now promoted by the Water Commissions established for the Yangtze Basin.

Ensuring that Economic Stimulus does not Trump Environmental Protection

Decisions taken and statements made at the Sixth National Environmental Meeting in 2006 and the Party Congress in Oct. 2007, and policy directions reflected in the 11th Five Year Plan embraced concepts put forward repeatedly by CCICED and its Task Forces during Phase III to help put environment on a more equal footing with economic development. This was based on recognition that economic growth had been realized at an excessively high cost to the environment and in terms of use of non-renewable resources, and of the need for balanced growth. Also, there was a recognition of the need for promoting concepts of a conservation culture and an energy and resource efficient and environment-friendly pattern of growth; for a re-structuring of industries and of modes of consumption; for increasing the budget for renewable and alternative energy; for environment promotion; and for extension programs and regulatory enforcement.

The 2008 CCICED Annual General Meeting coincided with the grave situation of the world economy and the need for stimulus packages. That environmental protection might be sacrificed was a concern, and this was discussed with Premier Wen at the CCICED meeting with him in November, just days after China's stimulus package was announced. He specifically asked for advice on this subject. A substantial portion of the stimulus package was devoted either directly to environmental improvement, to expenditures for conventional environmental infrastructure, or to stimulus of renewable energy initiatives such as solar energy expansion, and for investment in environment and sustainable development science and technology innovation.

In addition, the Ministry of Environmental Protection (MEP) Minister provided oversight on environmental impacts of a number of major public works proposed under the stimulus, a recommendation of the Council. A number of projects were cancelled on environmental grounds. It has been noted by a number of officials that China has pursued a recovery pattern that highlights environmental innovation, circular economy and green procurement—along lines proposed by CCICED over the last several years.

Market and Economic Instruments in Environmental Protection

A range of laws and regulations, influenced by the China Council, designed to promote environmental protection and sustainable development via market instruments and voluntary measures were enacted and implemented from 2003, including: Cleaner Production Promotion Law of the People's Republic of China (PRC) (2003), Regulation for Returning Cropland to Forestry (2003) which sets out support for participating farmers; and Regulation Concerning Levying, Use and Management of Pollution Discharge Fees (2003). All of these had their basis in recommendations of CCICED. Strengthening law and market-based instruments features in the Three Transitions proposed by Premier Wen Jiabao for improving environment and development. The third of these is to broaden the range of instruments used, including fiscal and taxation systems conducive to balanced development, enforcing sound resource usage and environmental regulations through legal and financial means, and improving pricing mechanisms for water, energy and other resources.

The Task Force on Economic Instruments (2008-2009) focused on such areas as green investment, banking, and taxation. Plans by the Ministry of Finance, the State Administration of Taxation, and the Ministry of Environmental Protection to submit jointly plans for an environmental tax to the State Council were linked in official Chinese media to the work of CCICED. Four pilot regions have been identified for enactment of the proposed tax. In July 2011 Premier Wen Jiabao announced a State Council decision to proceed with a comprehensive tax reform including an environmental taxation system.

Improved Ecosystem Management: Forests, Grasslands and Nature Reserves

A number of CCICED task forces and working groups addressed ecology and ecosystems: the Biodiversity Working Group; the Working Group on Forest and Grassland; the Eco-Security Task Force; the Task Force on Integrated River Basin Management; the Protected Areas Task Force; the Task Force on Environmental and Natural Resources Pricing and Taxation; and the Task Force on Eco-compensation Mechanisms and Policies. Research by the Task Force on Ecosystem Services and Management (2009-2010) determined that, among the recommendations of these task forces and working groups, 10 recommendations have been fully adopted and are reflected in national policies and regulations and that other long-term recommendations were under review by the relevant agencies.³⁴ These included expansion of the number and types of nature reserves and improving the funding for their management, and mechanisms for eco-compensation of local people who maintain and improve ecological benefits for the broader society.

Sustainable Agriculture and Rural Development

Recommendations from the Task Force on Agriculture and Rural Development were reviewed by two vice-premiers of the State Council in charge of environment and agriculture, who referred them to the Policy Research Office of the Central Committee of the Party for further study in 2005. As a result, more funds were allocated for development of agricultural science and technology in the 10th Five-Year Plan, a trend that continued in the 11th Five Year Plan. Another outcome of the Working Group on Agriculture was the Ministry of Finance's provision of funding to the Ministry of Agriculture to support its efforts to revise some laws, such as the Law of Agriculture, Law of Grasslands and the Regulations Concerning Fertilizer Management (2002). The Ministry of Agriculture also initiated the Action Plan for Green Food (2002) and initiated small energy projects in rural regions promoting the use of high-efficiency stoves, biogas and solar energy (2001) based in part on CCICED recommendations from Task Forces on Trade and on Energy.

Reflections on Impacts and Difficulties

It is not an easy task to summarize the impacts of two decades of vigorous activity involving so many topics, and all conducted during the most active period of economic growth and development in China's modern history. And, as noted throughout the text, some recommendations of CCICED are not acted upon in as timely way as might be desired. The virtue of its style of operation is that it is possible to continuously press for progress on those matters that task forces and CCICED members feel are essential. Indeed, some of the same topics come forward each year from various task forces, for example, the need for better and more consistent environmental data.

This section reflects opinions based on long experience with CCICED and includes some very specific recommendations but also the progress made on some themes considered over long time periods. It is not intended to be an exhaustive analysis or summary of either achievements or difficulties arising on the complex topic of environment and development. And, it is rarely possible to fully ascribe changes in policy to any single intervention by any single organization. CCICED functions as a senior advisory body and its voice speaks clearly. But its voice is one input on issues that require consideration of various points of view. CCICED helps to clarify pathways for decision makers since it draws on a combination of a wide range of international and Chinese experience—and follows protocols that ensure consistent delivery of advice.

Impacts

The outcomes noted in Box 12 can be linked to CCICED recommendations and detailed work of its working groups and task forces. Further details related to specific analysis and recommendations are available in the reports archived on CCICED's websites.

Box 12. Some Major Impacts of CCICED between 1992 and 2011

Introducing and updating new concepts on environment and development

- Introduction into China of advanced concepts on environment and development, and improved environment awareness among both decision makers and the public

Strengthening environment and development governance

- Upgrading SEPA to a full-fledged Ministry of Environmental Protection headed by a minister with full cabinet member status
- Introducing best environmental practices for sectoral industrial reform, rural development, agriculture and transportation
- Application of comprehensive and integrated management strategies for river basins, marine and coastal development
- Total pollution control strategy
- Accountability system for meeting mandatory environmental targets in five year plans
- Strategies for reducing impacts of toxic substances: environmental health, chemicals management, soil pollution, and mercury management

Mainstreaming environment and development in the Chinese economy

- Cleaner Production
- Circular Economy
- Low Carbon Economy
- Green Economy

Introduction of environmental economics into Chinese environment and development decision-making

- Use of economic instruments in China's environmental regulations and management system, including fees and incentives, beginnings of emissions trading
- Gradual improvement of natural resource pricing to more appropriate, market-based levels
- Groundwork for an environmental tax system
- Eco-compensation as a means for guaranteeing ecological services and nature conservation and to bolster rural livelihoods

Linking trade, investment and environment

- Preparing China to include environmental considerations in its WTO accession plans and follow-up regarding environmental assessment
- Opportunity to adopt advanced European automobile emission standards, organic food production strategy
- Introduction of eco-labelling approaches and other voluntary measures for greening market supply chains
- Value of Chinese participation in Clean Development Mechanisms of the Kyoto Protocol (China became the largest recipient of investment in CDM)
- Environmental guidelines for Chinese overseas direct investment

Energy and Environment

- Potential of alternative energy technology in China, including early identification of wind energy potential, solar, and advanced coal technologies
- Sustainable coal use roadmap
- Integrated electricity system to support energy transition
- Greenhouse gas emission intensity goal
- Low carbon industrialization strategy
- Utilization of rural biomass sources for energy
- Energy efficiency improvements in urbanization, especially for buildings and transportation networks

Sustainable Industrialization

- Consolidation of industrial operations such as refineries, cement and other sectors into large-scale operations with modern pollution controls and eco-efficiency
- Innovation centres for environmental technology and clean technology
- Promotion of environmental certification (e.g. ISO 14001)
- Environmental innovation as a driver for industrial restructuring
- Shift to pollution prevention strategy
- Improved consideration of environment for FDI in China and in financial sector loans

Ecosystem Protection, Restoration, and Biodiversity Conservation

- Expansion of nature reserves into a more complete system
 - Improved enforcement of CITES in China
 - Promotion of biodiversity conservation within national plans and strategies, and understanding of consequences of biodiversity loss
 - Improvement in forest and grasslands restoration programs
 - Eco-compensation system for protecting ecological services and providing benefits to rural people
 - Ecological footprint of China reports (with WWF China) as public information service
 - Recognition of ecological protection needs related to soil pollution, marine management, aquatic ecosystems and agricultural land management
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Difficulties

Several topics have emerged almost every year in one form or another in CCICED's recommendations to China's State Council. That these continue to be significant is a sign that CCICED believes them to be essential for sustainable development, and that further action is required for their full implementation. The three examples provided below are topics where there is evidence of interest and some uptake of the ideas, but not at the level or scale needed. These are among the most important and difficult cases.

CCICED fully recognizes that China cannot expect to fully meet all of its environmental challenges at once. However, what has been disturbing over the past decade in particular is how rapid economic development has eclipsed what might be considered a rather heroic national effort to improve the relationship of environment and development.

Improvement in Pricing of Natural Resources, Pollution Charges, and Environmental Goods and Services

Undervaluing the environment and resources has led to overconsumption (irrigation water, overuse of agricultural chemicals), unsustainable land use, high pollution levels (mining, industrial emissions), hazards to human health (urban air pollution, poisoning of surface and groundwater, soil contamination), high energy and carbon intensities per unit GDP, and loss of essential ecological habitat (wetlands, coastal ecosystems, forests and grasslands) providing a range of ecological services. While the polluter pays principle is enshrined within Chinese environmental regulations, charges and fines have been too low to change behavior.

During the past two decades CCICED has examined pricing policies in great detail for many resource and environmental situations. In the earliest years, there were many conceptual and structural problems that needed to be addressed. As market economy approaches strengthened, CCICED recommendations on this subject have become more comprehensive, aiming at the development of an environmental taxation system and a national eco-compensation system, for example, in addition to elimination of environmentally-perverse subsidies, increases in pollution charges, higher prices for a range of resources, and individual household metered charges for heat. CCICED also has made recommendations about some of the underlying needs for market-based reforms such as proper resource and environmental accounting. And, as China moves towards a domestic consumer-driven economy, the needs for an appropriate environmental economics approach to regulation and incentives will become even more important. The current interest in Low Carbon Economy is a significant example.

Although some progress over the past five years on improved environmental and resource pricing has occurred, and certainly the issues are now well understood by the Government of China, progress is still far below what is needed, and is far from systematic. Indeed, some signals are still very inconsistent, such as the stimulus during 2009 for purchase of private automobiles, and the failure to use market-based instruments to control non-point source pollution from agricultural sources and from urban air pollutants (nitrogen from auto pollution).

A key reason for limited progress is concern for economic impacts on jobs, nationally and especially locally in regions trying to maximize economic growth. In addition, China's concern for maintaining export-driven economic competitiveness appears to be an important factor. The climate of economic uncertainty in recent times undoubtedly is significant. The timing for transformational change based on environmental taxation always seems to be just on the horizon. Carbon tax is a recent example.

CCICED at age 20 continues to make significant recommendations towards comprehensive reform of environment and development relationships in the context of economic reform. Progress towards a green economy in China will depend upon the pace of such reform being accelerated.

Improvement in Coordination of Environment and Development Implementation and Integrated Planning and Management of Natural Resources and Regional Development

China now possesses a massive planning capacity, especially through its central agencies (State Council with its Leading Groups, the NDRC, Minister of Finance), and within sectoral departments and other bodies such as the Ministry of Environmental Protection. Yet there is considerable fragmentation in water management, energy management, and generally on the complex range of issues related to environment and development. While most countries face similar coordinating problems, China's are particularly difficult due to scale factors, overall institutional complexity, pace of change, and the decentralization of authority. The coordination needs between national level, provinces and lower levels of administration are very difficult to fully implement. Often this factor is singled out for greater attention. Integrated management strategies—whether for river basin environmental management, coastal zone development, or regional development in China's western areas—are challenges for meeting sustainable development ideals.

CCICED has provided detailed advice on environmental governance, integrated river basin management, management of specific marine and coastal areas (e.g., the Bohai Sea which is nearing a state of ecological crisis), on improvements to ecological services through reforestation and grassland restoration, management of nature reserves, and other themes requiring a level of coordination. In addition, the need for coordinated, intersectoral approaches has been highlighted on solving energy and environment problems, complex pollution control problems such as mercury pollution management, environmental health improvement, and emerging issues such as those related to emerging technologies (biotechnology, information technology, carbon sequestration).

The factors limiting success in uptake and follow-up on recommendations include the defensive attitude of those wedded to existing arrangements, institutional inertia, difficulty of demonstrating a solid enough level of benefits from alternative arrangements, and concern over creating new bureaucracies that may add to the governance burden and transactional costs.

It is clear that the system of governance for environment and development in China must still evolve quite a bit further. In past years CCICED has focused attention on the need to strengthen the role of the MEP, and this will continue to be a matter of concern. Some of the most significant transformations will depend on the combined efforts of many departments. Policies for implementation effectiveness should receive greater attention. CCICED also has placed considerable emphasis on sustainable urbanization policies—one of the most promising ways for addressing environmental governance.

Enhancement of Public Participation in Environmental Decisions, and Development of Greater Public Understanding of Sustainable Development

Public involvement in environmental protection and sustainable development planning and management is certainly occurring more regularly now in China, and within more

formal frameworks, including environmental assessments, complaint mechanisms, public release of information about incidents, and through various non-governmental organizations and community organizations. Environmental education is also taking place, various local projects for environmental protection, pilot projects and awards for successful effort on environmental improvement are contributing to awareness-raising. By comparison with some other major countries, both industrial and developing, the level of public participation and education on environment and development still is low.

China is at a stage of takeoff towards becoming an extremely significant consumer society. Will it also become an environmentally friendly one, as the government hopes? Social unrest related to some decisions affecting the environment is a matter of concern. And as income levels rise in both rural and urban areas, public demand for environmental amenities also will rise. These and other reasons suggest that the need for greater emphasis on public participation is greater now than ever.

In fact CCICED has suggested that successful transformative change towards an improved environment and development is contingent on this input. There are various important recommendations that have not been fully acted upon, for example, development of a publicly-available national toxic inventory, a strengthened and more consistent role for public input into environmental assessments, and integrated environmental management plans such as for coastal zone management.

CHALLENGES AND OPPORTUNITIES AHEAD

Challenges and Opportunities for China

China will accelerate its efforts to build a “moderately prosperous society in an all-round way” by 2020. That is only eight years away, and there are many problems to be overcome, with integration of environment, social and economic development being an essential challenge that has yet to be fully met. The 12th Five Year Plan period is critical to set the stage for sustainable development innovation that can be followed over the coming years, certainly to 2030. Over that longer time frame it should be possible not only to address the problems of today, including the legacy issues such as toxic waste sites and badly damaged ecosystems, but move towards a society that is not only “environmentally friendly and resource-efficient” but also on a desired pathway towards an “Ecological Civilization”.

Despite the achievements of the 11th Five Year Plan in meeting environmental targets, these have not translated into corresponding levels of environmental improvement and sustainability. This reflects a number of dilemmas: the onset of new problems even as existing major ones are tackled (e.g., rising air pollution such as ground level ozone and other smog from automobiles even as sulphur dioxide levels are being reduced); the ongoing problems of serious pollution incidents with significant effects on ecosystems and on the health and safety of people; the cumulative impacts of unsustainable development including algal blooms in lakes and China’s seas; and the increasing competition among

land and water uses with important implications for food supply and ecological services. Addressing these dilemmas will require new and strengthened approaches to environment and development, with greater attention to systemic and integrated policies and management rather than dealing with problems in crisis mode, or treating just the symptoms without tackling more basic problems.

However it is difficult to move away from a crisis-driven mode of thinking. For example, in the release of the 2010 China State of the Environment, the Vice Minister of MEP noted that “the overall environmental situation is still very grave and is facing many difficulties and challenges”.³⁵ And in another very detailed report prepared as background for the 12th FYP by the Chinese Academy of Engineering and the MEP involving many senior Chinese researchers³⁶, it has been noted that “the overall deterioration trend is still not stopped; the situation is still challenging; and pressures on the environment are still increasing.” The report goes on to note the following:

- Environmental pollution is characterized by expanding areas and extent of deterioration, increased risk and hazard, and increasing difficulties in handling the problems.
- Environmental pollution has become one of the dangerous factors threatening human health, for children (asthma, lead levels) and for populations in both the cities and countryside (1/3 of the urban population exposed to air not up to standards; 130 million with water containing hazardous chemicals and 300 million rural dwellers with unsafe drinking water).
- Serious environmental issues will constrain the economic and social development of China, threaten public health, endanger public security and social harmony, affect China’s peaceful development, and if not properly handled, will fundamentally harm the long-term interest of China.

These observations show, of course, that there are no easy solutions and that the challenges will remain for at least two decades. But the saying—so often heard in China—that with crisis or challenges comes opportunities, is certainly applicable to the future of environment and development.

The rapid embrace of green development as a concept within China in the past few years, coupled with specific attention to Green Economy, Low Carbon Economy, Circular Economy, Eco-compensation, and other efforts to mainstream environment into economic decision making, is a healthy emerging trend to tackle underlying systemic concerns. As noted by Vice Premier Li Keqiang in December 2010, “the green economy would become a general trend and be widely accepted as China accelerates its economic transformation and as economic growth is increasingly restricted by resource and environmental factors.”³⁷ He also has noted in the Davos World Economic Forum and at CCICED’s AGM that China’s industrial restructuring will be spurred by attention to environment and to efficiency in energy use and technology innovation for emissions reduction.

MEP Minister Zhou Shengxian noted at a 2011 meeting in UNEP³⁸ that “China perhaps more than any country needs to develop a Green Economy...Environmental Protection is the way to development. Given the impact that it will have on the population, we would

rather slow down the growth rate to protect the environment. At a strategic level we need to develop our country in a healthy environment.”

“We shall completely adjust the relationship between environment and economy and persevere in placing environmental protection in a more prominent strategic position. Starting from the macro national strategy level, we shall take consideration of environmental protection and economic development as a whole and deploy integrated work in these two areas at the same time.”

– Minister Zhou Shengxian, CCICED 2010 AGM

These high level statements are a demonstration of commitment to themes already explored by CCICED in its recommendations to the State Council. They also suggest a key path for the future work of CCICED—policies that will accelerate the pace of change towards green development. The shorthand might be “green transformation”.

Green transformation needs to be fully realized in various sectors, in trade and export, and certainly in China’s focus on stimulating domestic consumption. It needs to be a long-term task, certainly well into the 13th Five Year Plan period.

Certainly the influence of China on the global environment and on specific national or regional locations will expand as the “going out” strategy of the Government of China and Chinese enterprises becomes fully implemented. The Investment, Trade and Environment Task Force of CCICED examined some aspects in its 2011 report. This is still a topic in its early stage. The role China may play with the international community on environment and development will likely become more complex in the years ahead.

Expectations on the part of other countries that China will play a constructive and supportive role have been in place for a long time now, and there is ample evidence of China’s commitment. However, with China’s rising need for a greater share of global resources and “environmental space” and concern over a number of problems such as transboundary pollution, there will be a growing call for proactive measures related to trade and investment environmental impacts as well as for further action on climate change and other initiatives such as introduction of sustainability certification for various products such as imported palm oil. The cooperative work of CCICED and the Worldwide Fund for Nature (WWF) on China’s Ecological Footprint³⁹ suggests that China already exceeds its own ecological carrying capacity and will be increasingly dependent on other countries.

“China has demonstrated that it is an innovator on economic development and it will be an innovator on environment and development. The path taken by 1.3 billion people cannot fail to have an impact on the world.”

***— Børge Brende, CCICED International Vice Chairperson,
CCICED 2008 AGM***

In summary, China cannot afford to be content to “chip away at the problems” through an incremental approach. It must seek mechanisms that truly bring about transformative change, with great attention to efficiency and effectiveness, and to be well prepared for emerging issues. Indeed, in a recent careful review by CCICED of whether China should publish a regular Environment and Development Outlook, perhaps patterned after those of international organizations such as UNEP and OECD, it became apparent that there is not a consistent set of models or scenarios for China specifically constructed to address environment and development relationships. In general there is an urgent need to create a better knowledge base of this type in order to guide decisions about what is feasible to implement and when, for example, an environmental taxation system or certain improvements to ecosystem management in order to protect ecological services.

The construction of a resource-saving and environmentally friendly society is a very important part of China’s implementation of scientific development, and it is also the guiding ideology behind green development and future environmental protection and management. It is still a far reach to vision what might be required in order to meet the ambitious goal of constructing an Ecological Civilization or, in the near term, of fully implementing low carbon transformation of industrialization and urbanization within China. Yet these goals must be further explored and many policies re-formulated or developed so that all relevant key policies are aligned with these goals.

Opportunities and Tasks for CCICED

The immediate challenge for CCICED is to implement its Fifth Phase (2012-2016) with a clear sense of how immediate actions in the coming years can bring about further transformative changes to the environment and development relationship. Some of these transformative changes will express themselves fully in the period after 2020.

Very likely CCICED Phase 5 will be the most crucial one. China has the wealth to create desirable change, a large investment in innovation focused on sustainable technologies, a growing number of knowledgeable and motivated specialists and managers in environmental fields, a good understanding of fundamental priorities for environmental protection and green development, plus a plan of action at all levels (12th FYP with its sectoral and provincial goals). But the policies for environment and development implementation in China still are not strong enough. Governance therefore will continue to be a central concern during Phase 5.

Since the beginning of CCICED, an element has been to ensure that environment and development governance is strengthened across government and with consideration of participation in appropriate ways by business enterprises and the public. With on-going emphasis on market reform, voluntary measures and other instruments commonly found outside of China, there is the opportunity to create more effective environmental governance systems nationally and locally within China. Such governance will rely upon a high level of transparency and information sharing, plus opportunities for direct participation in activities. These are prerequisites for transformative change.

There will be a need to continue with the process of strengthening the capacity of the government as a whole to arrive at integrated approaches to environmental problem solving. This has become a greater challenge with each passing Five Year Plan. It is not only that environmental responsibilities are spread diffusely across government and between levels of government, but also the question arises of how national-level leadership on environment and development can be most effectively carried out.

CCICED will need to shift a lot of its attention from conceptual frameworks to implementation policies; from exhortation to hard-nosed commentary on efficiency and effectiveness; and from start-up options to policies for scale-up and regional considerations within China. It also will be important for CCICED to place greater attention on the relationship between environment and social aspects of development including topics such as sustainable consumption, achieving improved quality of life, and on the relationship of poverty reduction, ecosystem health and environmental improvement. Governance of the relationship between biodiversity conservation and poverty eradication is another difficult but very important topic.

Examples of future needs include the following: adequate environmental statistics in the national accounts, and performance indicators for green economy and green development; improved governance of non-point source problems such as agricultural pollution, ground level ozone pollution and of complex integrated river basin and coastal zone management issues such as Bohai Bay and its 40+ large and small river inputs; policies to support a more robust national eco-compensation system; and improved mechanisms for governing heavy metal pollution by small and medium-sized enterprises. A major area of Chinese investment in the past decade has been on early warning and emergency response system for disasters, whether the incidents are caused by nature or by human action, or a combination of both. Yet there is much to be done regarding policies that will foster disaster recovery and risk reduction based on sustainable development. These topics are just some of the problem-based governance concerns that likely will find their way onto future CCICED agendas.

Scientific development is broadly interpreted within China. Certainly taking the products of research and development innovation into the market place as quickly as possible is important for sustainable development. The emerging fields of biotechnology, nanotechnology, advanced energy sources (including nuclear energy), and information technology will contribute to environmental improvements. However these new technologies will have environmental implications that require strong policy guidance.

With the increased global concern for environment, the challenges related to governance and problem solving capacity will increasingly be a concern, not only within China but also in its relationships with other countries. These concerns will be expressed, for example, in matters of trade and investment, climate change, environmental and public health, and concerns such as invasive species and many others related to biodiversity.

There will be greater interest expressed by other developing countries and, on some topics, industrialized countries, to learn from China's environment and development experiences. One of the great opportunities China could explore in business terms (with CCICED support) is to help develop green market tools (renewable energy, nuclear, recycling, natural resources efficiencies, payment for environmental services, sustainable biodiversity markets, are good examples) and lead in these sectors like it does already in wind, solar and batteries.

Also, in the eyes of some, CCICED would be a useful model invented and tested in China but that might be—in some form—of value to other emerging nations (Brazil, Russia, India, South Africa, Indonesia). Certainly there are aspects of the work that could be of value, even if not the whole model.

“On the question of how long this Council will exist, I can tell you that we will continue until the international community is satisfied with China’s efforts towards environmental protection. This is not an easy task: it will require the efforts of many generations, perhaps dozens. I will not be around by then, but the Council itself may be.”

– Premier Wen Jiabao, Meeting with CCICED members, 2006

With such a range of tasks it is perhaps not surprising that Premier Wen Jiabao in his meeting with CCICED members in 2006 indicated that he felt CCICED should have a very long life span, since international cooperation on environment and development would be needed for a very long time by China.

CONCLUSIONS

Evidence is strong that CCICED has been of considerable benefit to policy development in China over the past two decades. The factors influencing CCICED's success in maintaining its senior advisory role on environment and development include: on-going support and interest from the top level of decision-makers; recognition at this level of the growing centrality of environment and natural resource factors to China's development success; ability of CCICED to address high priority needs in a timely way, and to provide foresight about some issues; ability to provide advice considered reliable, based on solid

evidence gathered within China and internationally, and with inputs from leading international and Chinese experts; good levels of partner interest with financial support guaranteed over five-year phases, allowing for good staging of initiatives in synchrony with China's Five Year Plans. These factors have permitted a relatively lean approach to management and administration of CCICED, and a strategy of continuous improvement in quality and relevance of recommendations. Above all, there is a strong sense on the part of the various participants in CCICED that the considerable effort expended is worthwhile because it is leading to outcomes relevant within and outside China.

Some important lessons have been learned over these past two decades. First, that it is necessary to keep emphasizing key themes, building the case, for example of using economic instruments in regulatory processes, by showing various possibilities, and building on limited initial experience. Second, it is not necessary to seek credit on the part of CCICED for all the policy shifts on topics where this Council has been involved. It is much more important to know that desired shifts actually are taking place, and to examine how they may be improved. Third, the twin hurdles of communication and trust-building always have to be considered, especially in task forces or other research. Not all renowned researchers are well-suited for the activities of these team efforts. Fourth, CCICED cannot serve as a negotiating forum to second guess or try to influence outcomes that properly should occur via international negotiations. Fifth, with the import of ideas, technologies, etc., from outside of China, careful attention will be given on how they might be adopted with consideration of Chinese characteristics and situation. Sixth, once decisions are firmly taken, action and change can occur at times with breath-taking speed. Knowledge about environment and development conditions can become out-of-date very quickly.

CCICED advice should be extremely valuable during the coming 5 to 10 years when China will be accelerating the pace of its transformation towards becoming an environmentally friendly society. The dilemma is that the issues are growing more complex, with many having global or regional ramifications. CCICED should consider whether it is able tackle some challenges more intensely, such as poverty-environment linkages. Or whether, in the years ahead, CCICED should actually narrow its range of studies to focus on those where it already has a lot of experience, such as energy-environment and economy-environment relationships.

Through its many studies and the resulting wide range of recommendations, CCICED has assembled a unique body of knowledge concerning environment and development in China, and also has built an understanding of international linkages, especially in relation to trade, climate change and other matters of concern globally. However this knowledge has not been consolidated in ways that would be helpful for building the scenarios, early warning systems, and models required to improve understanding of possible future outcomes for environment and development in a consistent and fully comprehensive way. This is a matter that deserves careful consideration in the early stages of CCICED Phase 5 in order to provide the best possible advice in the coming years.

By late 2011 globally and within China there has been a shift towards concern for integration of environment, economics and social considerations in development. Broadly, there is interest in new topics such as green economy, including expanded expectations from emerging technologies now entering the marketplace. These concerns will demand new indicators of performance, new strategies for implementation, and further shifts towards market mechanisms in regulation, plus innovations in management and institutions. CCICED has laid considerable groundwork for good policies. Yet many are still at an early stage of being adopted. Much of CCICED's future work therefore must focus on policy implementation and innovation in environmental governance.

CCICED will have to accelerate its pace of work, and continue to enhance quality of its work. It will need to stay on the cutting edge of current policy transformation, which means giving full consideration of matters related to the period 2012 to 2020. This will include operational policy advice, early warning, improved efforts at development of economic and social implications of environmental problems. More attention is needed on how to link international, national, regional and local environment and development policy. There is also an on-going need to understand China's potential role in addressing challenges and opportunities related to international environment and sustainable development, especially involving developing countries, and improvements in dealing with global issues.

CCICED will need the continued support of not only Chinese sources of funding and expertise but also the inputs from the international community so that its unique cooperation elements can be maintained and strengthened. Whether the CCICED model as it has evolved in China could, or should, be applied elsewhere in the world is for others to determine—based on specific interests and needs elsewhere. Certainly the notion of international cooperation in helping to meet complex environment and development challenges is well established, therefore the experience of CCICED as a working model for such cooperation may be helpful to others in both developing and industrial countries.

ENDNOTES

¹ This report has been prepared by the CCICED Chief Advisors, Dr. Arthur J. Hanson and Prof. Shen Guofang, with inputs from the Chief Advisors Group, the CCICED Secretariat and International Support Office.

² www.cciced.net and www.sfu.ca/international-development/cciced

³ See the 2008 CCICED Issues Paper for perspectives on these and other guiding terms that have established a general framework for environment and development in China.

⁴ CCICED Draft Terms of Reference. 1992. Proceedings. The First and Second Meetings of CCICED.

⁵ CCICED. 2006. Policy Recommendations to the Government of China on Environment and Development (1992-2005).

⁶ The Council has been chaired by several senior leaders, initially Minister Song Jian, State Counsellor for Science and Technology, then a series of Vice-Premiers including Mr. Wen Jiabao, Mr. Zeng Peiyan, and now Mr. Li Keqiang.

⁷ A succession of six presidents of CIDA has served in this capacity between 1992 and the present. CIDA has taken a lead in funding and some organizational matters since the beginning of CCICED, but other countries and organizations have contributed very substantially.

⁸ Before the beginning of each Phase, China's State Council approves the membership and operational terms of CCICED. There is planned turnover, but no absolute limit to the number of terms a member may be re-appointed.

⁹ State Development Planning Commission (SDPC). 1994. *China Agenda 21*. China Environmental Science Press.

¹⁰ For more detailed information on the recent history of China's environment and development there are a number of sources including: Zhang Kunmin, 2000. *Policies and Actions on Sustainable Development in China*. China Environmental Science Press. 417 pp.; Lijun Wang. 2010. *The Changes of China's Environmental Policies in the Latest 30 Years*. *Procedia Environmental Sciences* 2(2010): 1206-1212.

¹¹ Three Synchronizations are "that environmental protection and treatment facilities should be *designed, installed and put into operation* synchronously with the main projects."

¹² Environmental targets included a 10% reduction by 2010 in comparison to 2005 levels, for both sulphur dioxide emissions and chemical oxygen demand (COD) water pollution. The actual levels achieved were 14.29% and 12.45%, respectively. These goals were achieved primarily by installing desulphurizing equipment on most coal-burning power generating plants and through increasing urban sewage plants. CCICED provided several recommendations concerning these needs and implementation strategy, starting years before the 11th FYP.

¹³ The other three platforms were: the China Environmental News started in 1982, the State Environmental Protection Commission, 1984, and the China Environmental Protection Campaign initiated in 1993.

¹⁴ Draft CCICED Terms of Reference, February 1992.

¹⁵ CCICED original terms of reference.

¹⁶ The current Secretary General of CCICED is Mr. Li Ganjie, the Vice Minister of the Ministry of Environmental Protection. There are two Chinese Assistant Secretary Generals, and a Director of the Secretariat.

¹⁷ For 15 years this office was headed by Prof. Earl Drake, a former Canadian Ambassador to China, and during Phase 4 by Dr. Chris Dagg.

¹⁸ The current Chinese Chief Advisor is Professor Shen Guofang, former Vice President of the Chinese Academy of Engineering, and the International Chief Advisor is Dr. Arthur Hanson, former President of the International Institute for Sustainable Development (IISD). These individuals also are long-serving members of CCICED.

¹⁹ The TFs examine major topics generally of broad scope for periods of 12 to 18 months, and the SPSs examine very focused topics, often for 6 to 12 months. Both are given terms of reference, strict reporting deadlines, and quite generous budgets to accomplish their work.

²⁰ http://www.wto.org/english/news_e/pres01_e/pr243_e.htm

²¹ According to UNCTAD, three primary issues should be considered in the CBD – TRIPs relationship: promotion of environmentally sound technology, access to and transfer of such technology; provision of incentives for conservation and sustainable use of biological resources; and handling of technology that may adversely affect the environment.

http://www.unctad.org/trade_env/docs/cbd-trip.pdf

²² The Issues Papers are available on the CCICED website.

²³ This Program of Action for Sustainable Development was produced by the Office of National Leading Group for Promoting Sustainable Development Strategy, led by NDRC and the Ministry of Science and Technology.

²⁴ See Arthur Hanson and Claude Martin. 2006. *One Lifeboat: China and The World's Environment and Development*. CCIED and IISD. 61 pp.

²⁵ At the time the current report was being prepared the work of the various Task Forces and Special Policy Studies was nearing completion, but will not be included here since recommendations are still being prepared and must be reviewed by CCICED members.

²⁶ Task Force Report on *Strategic Transformation of Environment and Development: Global Experience and China's Solution*. CCICED 2007 Annual General Meeting Proceedings.

²⁷ Parts of this section are based on CCICED, 2010. *Policy Impacts of CCICED*. 27 pp.

²⁸ Song Jian and Huguette Labelle. 2006. *China's Environment and Development Review and Prospective*. High Level Task Force Report. Proceedings. The 5th Meeting of the 3rd Phase of the CCICED.

²⁹ This work on a *Sustainable Energy Approach for China* ran from the mid-1990s until 2003, and included recommendations concerning the significance wind power could have in various regions of China, and mechanisms for wind power concessions and for the utilization of such power in the electrical grid system.

³⁰ pp. 268-307 in the Proceedings of CCICED Annual General Meeting 2009.

³¹ *Sustainable Use of Coal and Pollution Control Policy in China*. pp. 381-430 in CCICED Annual General 2009 Meeting Proceedings.

³² Each year the Chinese members of the Chief Advisors Group track environment and development decisions, producing "*Progress Report on Environment and Development Policies in China*."

³³ This document identifies major policy initiatives in China related to environment and development during the past year. The first such report covered the period from November 2007 to October 2008, and reports for each subsequent period to October 2011 are available.

³⁴ Interim Report of the Task Force on Eco-system Service and Management, November 2009.

³⁵ June 2011, http://news.xinhuanet.com/english2010/china/2011-06/04/c_13910705.htm; <http://www.chinafaqs.org/blog-posts/china-issues-annual-state-environment-report-ministry-calls-situation-very-grave>

³⁶ *China Environment Macro Strategy Research. Key Points of Output*. 25 pp.

³⁷ Beijing Review, 9 December 2010. *A Green Economy Begins to Bloom*. www.bjreview.com.cn/quotes/txt/2010-12/08/content_317625.htm

³⁸ Notes from a talk by Mr. Zhou Shengxian on July 11 2011 during an official visit to UNEP Headquarters in Nairobi.

³⁹ CCICED and WWF China. 2008 and 2010. *China's Ecological Footprint Report*.