Agenda

First Annual General Meeting of China Council for International Cooperation on Environment and Development (CCICED) - Phase III

1. Establishing Ceremony and Opening Ceremony
2. Adoption of agenda
3. Keynote speech by international organizations, relevant provinces and autonomous regions and general debates
4. Work report of the Secretariat
5. Report on the Task Force Co-Chairs' Coordination Meeting
6. Work reports by Task Forces, Issues Paper, followed by discussion
7. Discussion and adoption of the Council's Recommendations to the Chinese Government
8. Meeting with a state leader
9. Closing of the meeting

Program

November 22 (Friday)

10:00 - 16:00	Coordination Meeting of Task Force Co-Chairs (Lang Gan Room)
16:00 - 18:00	Bureau Meeting (Meeting Room of Conference Center)

Day One November 23 (Saturday)

Morning

Chaired by Chairman Wen Jiabao

08:30 - 09:00	Chairman Wen Jiabao meets with new international Vice Chair and keynote speakers, accompanied by members of the Bureau
09:00 - 09:15	Establishing Ceremony of CCICED Phase III Adoption of Terms of Reference and Rules of Procedures of CCICED Phase III Approval of Council Members, Task Forces and Co-Chairs of Task Forces
09:15 - 10:05	Opening Ceremony Opening remarks by Chairman and Vice-Chairs
10:05 - 10:25	Keynote speech by Mr. Maurice Strong
10:25 – 10:45	Keynote speech by Mr. Liu Jiang
10:45 - 11:00	Coffee Break

Chaired by Dr. Len Good

11:00 - 11:15	Issue Paper by Lead Expert Dr. Hanson
11:15 - 11:30	Issue Paper by Lead Expert Professor Sun Honglie
11:30 - 12:30	General debate on "Environment, Development and Governance Response to WSSD"
12:30 - 14:00	Lunch (Four Seasons Restaurant, Ground Floor)

Afternoon

Chaired by Prof. Qu Geping

14:00 - 14:20	Keynote speech by Mr. Klaus Töpfer
14:20 - 14:35	Presentation by Vice Governor of Liaoning Province

14:35 - 14:50	Presentation by Vice Governor of Inner Mongolia Autonomous Region
14:50 - 15:05	Presentation by Vice Governor of Fujian Province
15:05 - 15:20	Presentation by Vice Governor of Guangxi Autonomous Region
15:20 - 16:20	General Debate
16:20 - 16:35	Coffee Break
16:35 - 16:50	Work Report of CCICED Secretariat by Secretary-General
16:50 - 17:05	Report on TFs' Co-Chairs Coordination Meeting
17:05 - 18:00	General debates and discussions on Phase III

Evening

19:00 - 20:30	Banquet hosted by the Council Bureau (Jin Yuan Restaurant, Ground Floor)

Day Two November 24 (Sunday)

Morning

Chaired by Mr. Lonnroth

08:30 - 10:00	Task Force on Forestry and Grasslands (Presentation 30'; Discussion 60')
10:00 - 10:20	Coffee Break
10:20 - 11:50	Task Force on Environmental Economics (Presentation 30'; Discussion 60')
11:50 - 14:00	Lunch (Four Seasons Restaurant)

Afternoon

Chaired by Mr. Xie Zhenhua

14:00 - 15:30	Task Force on Bio-Diversity (Presentation 30'; Discussion 60')
15:30 - 15:50	Coffee Break
15:50 - 17:20	Task Force on WTO and Environment (Presentation 30'; Discussion 60')
17:20 - 18:00	Discussions on the Council's Recommendations to the Government of China
18:00 - 19:00	Dinner (Four Seasons Restaurant)

Evening

19:10	Shuttle Bus departing to Poly Theater
19:30 - 21:30	Classic Concert (Poly Theater)
21:30	Shuttle Bus departing to Kunlun Hotel

Day Three November 25 (Monday)

Morning

Chaired by Dr. Len Good

08:30 - 10:10	Discussions on key issues on environment and development in China in the new century and establishment of Task Forces of CCICED Phase III
10:10 - 10:30	Coffee Break
10:30 - 11:15	Finalization of the Council's Recommendations to the Government of China
11:15 - 12:00	Closing Ceremony
12:00 - 14:00	Lunch (Four Seasons Restaurant)

Afternoon

14:30	Shuttle bus departing to the meeting with a State Leader
16:00 - 18:00	State Leader meets with the Council members

Evening

19:00 – 21:00	Banquet hosted by the Government of China (Multifunctional Hall)

Exit

Speech by Premier Zhu Rongji while Meeting with Chinese and International Representatives at the 1st meeting of the 3rd phase of CCICED
25 November, 2002

I am very glad to meet with representatives from the CCICED (China Council for International Cooperation on Environment and Development). China attaches great importance to the role of the Council. I used to have talks with the Chinese and international representatives attending the 2nd, 3rd and 4th meetings of the 2nd phase of CCICED. I asked Chairman Li Peng to meet with the Chinese and international attendants to the 5th meeting of the 2nd phase of the CCICED when I was on a trip abroad. The Council has provided very good recommendations to the Chinese government, which are of great assistance to China's environmental protection and sustainable development. Now, on behalf of the State Council, I would like to extend my sincere welcome to you and listen to your valuable proposals personally.

(International vice-chair Mr. Good and Mr. Lönnroth, members Mr. Tickell, Ms. Tubiana, Mr. Töpfer, Mr. Willoch and Mr. Lees delivered their speech respectively on the 1st meeting of the 3rd phase of CCICED and put forward recommendations to the Chinese government and issues of their concerns. Premier Zhu commended afterwards.)

I am very pleased to hear your comments personally. All of your presentations have been very good. It takes a historical process and big price for China to get to know environmental protection and sustainable development. China has a large population that is now reaching 1.3 billion. In order to survive, China used to have a problem of developing economy and industrialization at the expense of environment. It was a historical process that is hard to avoid. China has come to realize the importance of environmental protection and sustainable development in its process of industrialization. Particularly after the Rio United Nations Conference on Environment and Development (UNCED) held 10 years ago, China began to pay more attention to environmental protection and sustainable development. The environment could easily be destroyed, say with one year only, but it will be extremely difficult to restore and perhaps ten years are not enough. While at the same time, there are some aspects in environmental protection and sustainable development that command certain conditions. For instance, as food supply fell short of demand before 1995, farmers had to climb up the mountains to plant for a living. While after 1996, instead of importing food we exported a lot since we had food surplus each year. We were then in a position to carry out large-scale project of returning farmlands to forests and we persuaded our farmers not to go up the hills to plant. With the policy of returning farmlands to grasslands, plateaus in the northern part of the country were no longer used as farmlands and the livestock was stopped from eating grass on the

plateaus by encircled feedings. I have made reports on the above-mentioned aspects at the Johannesburg WSSD. In the past few years, we have carried out projects of “returning farmlands to forests, grasslands and lakes” on thousands of millions of hectares of land and we will continue to do so in the next few years. Our policies of “returning farmlands to forests” are: the farmers are provided with food and fees for planting trees as long as they stop farming on hills and slopes. The reason for us doing this is we have more foods now.

We must keep sand storms under permanent control. Some of the sand storms come from Inner Mongolia within our country, while some originate from Mongolia and Siberia of Russia. They have brought about impact not only to South Korea and Japan but also to the United States as reported. We share the international responsibilities on this issue, though this is not a problem only for China. At present, with a view to prevent sand storms from expanding, we are now carrying out some plans to manage sand storms, by conducting large-scale afforestation and resuming grasslands in the northern part of Beijing and in some areas of Inner Mongolia. Such a project could not be fulfilled within one or two years, rather it will take a long time to complete. Though some preliminary achievements have been made, we still need support from the international community. Currently, we are cooperating with Japan and South Korea on this issue. Nevertheless, Mongolia and Russia are still beyond our control.

Just now, Mr. Willoch mentioned that, as more and more cars running in Beijing, the air quality there was not so good. In order to prepare for the 2008 Olympic Games, Beijing has formulated and begun to carry out grand plans on air pollution controls. At present, if buses with green color running at your sight in Beijing, that means they are environmentally sound buses by using natural gas. In the meantime, we have raised the emission standard for automobile’s pollutants and this standard meets the pace of the current standard in Europe. The Chinese government has taken active measures to prevent air pollution and has formally acceded to the “Kyoto Protocol”. Although China does not have any obligation of GHG mitigation, China has reduced pollutants that are equivalent to 1 billion tons of burning gas emissions. China is abundant in its coal resources, the production of which was 1.3 billion tons per year in the past and has been reduced to the current 1 billion tons per year. For this reason, we have to spend US$20 to 25 billion each year on importing natural oil. 160 million tons of oil is cultivated each year while over 100 million tons of oil is imported. At present, the annual import of oil is still increasing. The only purpose of such a great expenditure is to reduce pollution.

We are still facing some problems in the process of improving environment and sustainable development. China is a country with vast territory. The phenomenon of environment being destroyed and polluted still exists as law system in China is yet to be perfect. Nevertheless, we will continue with our efforts to improve our environment and fulfill sustainable development.

I would like to thank once again for the comments by representatives present today. And I hope you would continue to pay your attention to environmental protection and

sustainable development in China. The CCICED will have an ever lasting existence. Thanks.

Exit

Speech by Vice Premier Wen Jiabao at the 1st Meeting of the 3rd Phase of CCICED
23 November, 2002

The 1st meeting of the 3rd phase of CCICED has been opened today. On behalf of the Chinese government and in the name of myself, I would like to extend my warm welcome to members and experts of the new phase of the CCICED, and especially to our foreign friends coming from far away.

The just-concluded 16th National Congress of the Communist Party of China has made important arrangements for China's reforms and development in the new century and the new stage, with setting out grand objectives of building a well-off society in an all-round way and putting forward a mission of economic, political, cultural development and restructuring. The congress stressed that the sustainable development should be put to a much more prominent position and persistent efforts should be made to improve the ecological environment, increase significantly the efficiency of using resources, enhance harmony between man and nature, and to push the whole society onto a path to civilized development featuring the growth of production, an affluent life and a sound ecosystem. All this indicates China's determination of steadfastly implementing the sustainable development strategy.

At the World Summit on Sustainable Development (WSSD) held not long ago, governments conducted in-depth elaborations on a great many environment and development issues facing the human beings, signaling a strong wish to work together to realize sustainable development. Premier Zhu Rongji attended the meeting as head of Chinese delegation and gave his five-point propositions on the implementation of sustainable development. The Chinese government highly commends the positive results of this WSSD and will, in accordance with the "Johannesburg Declaration on Sustainable Development" and "Implementation Plan on Sustainable Development", move ahead with the environment and development in China, with a view to promoting the complimentarity and coordination among economic growth, social development and environmental protection.

By sticking to the sustainable development strategy, China has made significant progress in environmental protection and ecological construction for the past five years or so. While maintaining a rapid economic growth, China has been working hard to control the pollutant discharges. The total amount of pollutant discharges around the country has been dropped by 10 percent; pollution prevention in key areas has been enhanced while air pollution in major cities have been reduced; some preliminary achievements have been made in ecological protection and construction, with 5.027million hectares of afforestation achieved within five accumulated years, 2.1636 million hectares of farmlands returned to forests, and inputs to environmental protection and ecological construction increased annually with a total amount of RMB580 billion within five years, which takes up 1.29% of the GDP. During the

period of “Tenth Five-Year” Plan, we will step up with our efforts in environmental protection and reservation with a proposed input of RMB 700 billion, with a view to steadily reducing the total amount of pollutant discharges by 10% and further improving the environment quality in cities and countries.

The Chinese government attaches great importance to international cooperation in the field of environment and development. Ever since its establishment, the CCICED has made significant contributions in promoting China’s sustainable development cause and conducted long-term and remarkable cooperation and exchanges in various aspects, including environment and economy, environment and trade, environment and transportation, sustainable agriculture, forests and grassland, energy, biodiversity, cleaner production and pollution control, etc. The CCICED has also offered many valuable recommendations to the Chinese government, some of which has been adopted by relative departments of the Chinese government. The Chinese government is wholehearted grateful to members and experts of the CCICED for their long term attention and support to China’s environment and development cause. On the occasion of the establishment of the 3rd phase of CCICED, I would like to extend my sincere hope that the members and experts would continue to give more attention and support to China’s environment and development cause.

I wish the 3rd phase of CCICED greater achievements and this meeting a whole success.

Actively Promoting Integrated Decision-Making
on Environment and Development by Government

Opening Remarks at the 1st Meeting of the 3rd Phase of CCICED

Qu Geping

Ladies and Gentlemen,

China Council for International Cooperation on Environment and Development (CCICED) has proceeded for 10 years in two phases. During this period, we have witnessed the changes in the field of ecological environment in China, ranging from UNCED to Johannesburg WSSD. It is fair to say that the changes have been dramatic and the achievements are splendid. The changes and achievements attribute a lot to the positive efforts made by CCICED. And I would like to express my appreciations and pay my tribute to all the old and new friends in this council.

The waves from the heating debate made at the newly concluded Johannesburg WSSD are still moving. Even though this Summit did not achieve substantive breakthrough in facing the global major environmental issues, in reaching an agreement on recognizing the severe global environmental situation, some progress has been made, particularly on implementing the action plan for the Agenda 21. The Plan of Implementation hammered out by the Summit has set out the targets for action for the next 10 to 20 years.

The action targets and timetable identified by the Plan of Implementation in the field of water, biodiversity, health, agriculture, health and energy, gave full expression that embarking upon the path of sustainable development has become a mainstream on the global level and this trend will not be reversed due to the temporary obstacles. Nevertheless, the heating debates made in the process of preparation for the Summit and during the Summit showed that to achieve sustainable development will be a hard and tortuous process. It has to rely on the effective international cooperation, rely on the actual actions by each government for the shift in the economic increasing mode and actions for implementing the sustainable development. These actions will include the promotion of recycling economy, strengthening the integrated decision making on economy and environment, facilitating the application of environmental economics instrument, as well as the progress made in a wider public participation. All in all, it has to rely on the government, market and various kinds of forces within civil society --- whether they will make a concerted effort in all the fields to proactively push forward sustainable development. The practical actions made by the international community and each government since UNCED in 1992 proved that, without the joint cooperation and support by the government, market and civil society, the tower of sustainable development will not be able to built into a steadfast one.

However, in stressing the cooperation of three forces of government, market and civil society, it does not mean that the public role of government in the field of environmental protection and

sustainable development could be weakened. Since the government possesses huge power ranging from the policy development, rules and regulations formulation, to the budget allocation, it is still decisive to determine the orientation and pace of the sustainable development. In the surge of releasing the government regulation in the advanced market economy countries in the 1980s and 1990s, the government's role in protecting the environment was not weakened. In keeping a leading role of the government's command and regulation regime, more attention has been paid to direct the production and consumption behaviors made by the industry and public with the application of market and economic instruments, and more attention has also been paid to the big role of public participation in environmental protection. For each nation, to facilitate the government and its competent departments to take leading actions, is still the key to advancing sustainable development.

China is witnessing a process of rapid economic development, administrative system restructuring and stepping up the efforts for legislation. And in promoting the government's role in carrying out sustainable development, a very important step is to develop a necessary legal and legislative system. In so doing, it will help urge the government and its competent departments to take into full account of the environmental impact and listen widely to public views and suggestion in developing policies and planning as well as adopting other measures, so as to achieve the integrated decision-making on environment and development, promoting the government policies, planning and other actions and measures to be oriented to the direction of sustainable development.

With 4 years of efforts, the Environmental Impact Assessment Law of PRC enacted newly last October, makes itself a landmark in government's integrated decision-making on environment and development. This law has taken the environmental impact system in China to the new level of strategic environmental assessment. It has integrated all the major planning closely associated with ecological environment into the scope for environmental impact assessment, such as land use, urban construction, the development and construction of the region, river-basin and sea areas, as well as the planning of industry, agriculture, husbandry, forestry, water resources, energy, communications, tourism and natural resources. It has also set out the system and procedures for public participation in the environmental impact assessment and for reviewing and supervision. In that, ranging from the large-scale development planning to the given project construction, the procedure for "assessment first and then construction" should be through. This could be taken as a major progress in the field of environmental protection legislation in China.

For governments and their competent departments, this is a challenge of how to effectively reach an integrated decision-making on environment and development. It requests the governments and their competent departments to readjust the contents of the planning and the approaches and procedures for the planning development, and to set up a more open and democratic approaches and procedures for decision-making. It also requests the governments and their competent departments to gradually develop the new techniques and methods for environmental impact assessment for planning, so as to make itself in a position of being able to make a convincing assessment of the particular environmental impact of a planning, i.e. impact normally on a wide spatial extension, long time span, and overlapping of various behaviors and accumulations. It also

requests the governments and their competent departments to make readjustment to the objectives and contents of the planning based on the conclusion and suggestions from the environmental impact assessment so as to make it much more accommodating to the requirement of environmental protection and sustainable development, and therefore effectively facilitate the planning towards sustainable development.

For environmental protection departments, this is an important opportunity to take part in the state and government at various levels' integrated decision-making on environment and development. It requests the environmental protection departments, based on China's actual situation and the potential scope of impact of various planning, to put forward to the government, the scope, procedures and approaches for going through the environmental impact assessment, and also help the government to review the environmental impact document on planning. It requests the environmental protection departments to give technical guidance and service to the relevant departments in carrying out environmental impact assessment, and also to organize the experts to review and approve the environmental impact assessment report on a planning, to help the public to take part in the environmental impact assessment with a view of effective participation in the decision-making on environmental impact assessment of various planning. As such, it will help facilitate that all the planning will be more in line with the objectives and demands of environmental protection and sustainable development, and make a good check of environmental protection, at the source of planning.

This has constituted a key step in the process of sustainable development. Only if the governments at each level and their competent departments carry out the integrated decision-making on environment and development in an earnest manner, in line with the requirements of the law, urge the development planning of the governments to be oriented towards sustainable development, and eventually set up an integrated strategy and planning body of environment and development, will China be able to rise to all the severe environmental challenges in a forceful manner, and to achieve the promising future of sustainable development.

I wish every success of the First Meeting of the Third Phase of CCICED.

Thank you all.

Opening remarks at the 1st Meeting of the 3rd Phase of

China Council for International Cooperation on Environment and Development

Dr. Leonard Good

Thank you, Minister Xie.

Welcome you all to the 1st Meeting of Phase III of China Council. As Minister Xie said a moment ago, our membership does reflect a good blend of previous members and new ones, and all with a wide range of experiences and knowledge. We are about equally balanced between Chinese members and those from other countries.

As well, I would like to express a special welcome to old friends like Maurice Strong with us here this morning and to our friends from a number of Chinese provinces.

Phases I and II of China Council were clearly successful, so we made only small changes for Phase III, but hopefully they are improvements.

As Minister Xie said, we are moving from more or less permanent Working Groups to Task Forces which have fixed time frames and budgets within which to report and which respond to priorities specified by the Chinese government and institutions.

We now have fewer TFs reports as Minister Xie said and more time for guest speakers and wide ranging discussion.

We did a few other things with bureaucratic. We expanded the Bureau, but we do have an international co-chair Måns Lönnroth on my right and that's an innovation; we've added lead experts as Minister Xie said; small improvements, small changes, but hopefully I think improvements.

More importantly, I would like to say this morning, especially to our new members, and I think others would agree, that the Council is an outstanding group of individuals, enjoyable and productive to work with. I guess I would know the hospitality of our Chinese hosts is a constant. Clearly, China is or in on the brink of being a global super power, and the China Council is a wonderful institution for many of us to learn about China's dramatic evolution over the last two decades, and with its focus on environment and sustainable development; and an opportunity as well to contribute our thinking and experience to that evolution.

China clearly pays considerable attention to sustainable development issues and to the work of the China Council. The Council has always reported directly to most senior Chinese leaders and we are scheduled as Minister Xie said to do so again on Monday; as well though I note that this afternoon we have speeches from a number of provincial Vice Governors who will describe the reality of sustainable development on the ground.

And finally, I guess for me at least and I hope for you the work of the China Council is fascinating in its own right, from trade and markets, to economics, eco-security, forests and grasslands and much more.

So welcome to the Council. Please participate and enjoy.

Thank you.

Opening remarks at the 1st Meeting of the 3rd Phase of
China Council for International Cooperation on Environment and Development

Måns Lönnroth

Thank you, Minister Xie.
I will be very brief. And Let me start by saying that I am very honoured to be appointed and elected as vice chairman of this unique institution - the China Council.

I think it's fair to say China Council has had ten years of very good work and very good experiences, successful work with great importance, with recommendations for the Chinese government. I think the coming five years should be seen in the light of the World Summit on Sustainable Development and above all, for the plans of China for the year 2020. With present growth rate and present plans, there will be yet another China in 2010. Of course the growth rate implies that Chinese gross national product will double in ten years, and with the existing growth rate, for another ten years, there will be yet two more Chinas in 2020. So over these twenty years period from 2000 to 2020, we will see three more Chinas in terms of economic impact. And that is enormous development with enormous unprecedent importance for the whole population of China, but also unprecendent challenge, and an opportunity for sustainable development. And the road China takes and also tracks China will follow will have enormous importance in contribution also for the world sustainable development as a whole.

I think it's fair to say as china goes as the rest of the world will go in terms of sustainable development.

And I would look forward very much to work together with you in the council and also to work with Minister Xie, and of course with Vice Chairman Mr. Good.

Thank you. Mr. Chairman.

Exit

Speech by Vice Chairman Xie Zhenhua at the Opening Ceremony of the 1st Meeting of the 3rd Phase of CCICED
23 November, 2002

Members, experts and friends,

Good morning. First of all, please allow me to extend my warm welcome to you on behalf Chairman Wen Jiabao. I have two news to tell: one is that at the just-concluded 16th CPC National Congress, Mr. Wen Jiabao, Chairman of the CCICED, was honorably elected as member of the Standing Committee of the Politburo of the Central Government and was borne with more important missions; the second is as Chairman Wen Jiabao has been on a business trip outside Beijing and is unable to come back to attend this meeting, I was entrusted by him to host today's meeting in his capacity.

I would like to make a brief introduction on the formulation of the new phase of CCICED. The name list of Chinese and international members of the 3rd phase of CCICED was decided upon request of the rules of procedure of the Council, consultations with all aspects by the bureau of the Council, agreements by members themselves and approval of the State Council. There is no change as for the positions of Chair and Vice Chairs of the bureau. To ensure a better daily operation of the Council, it was decided that Mr. Good and I take up the position as executive Vice Chairs. In order to keep the balance of Chinese and international members, Mr. Lönnroth from Sweden was included as international Vice Chair. With a view to strengthening the relationship and coordination among and between the Task Forces, the bureau also decided after consideration that, Professor Mr. Sun Honglie from China and Professor Hanson from Canada would be invited to work as core experts and take up the above-said responsibilities. All the above-mentioned have been submitted to the State Council for approval. At the initiative of Chairman Wen Jiabao, I would like to submit the name list to members and experts present today. And in addition, upon the initiative of the bureau, some relative amendments and changes have been made to the "Discussion Paper on Terms of Reference", "Discussion Paper on Rules of Procedure", "Explanation on Drafting", the proposed establishment of task forces, and the nominees of co-chairs of the task forces. I would like to submit them also to members and experts. You are welcome to make comments on them.

If there is no more comments, we could now adopt the name list of the Chinese and international members of the 3rd CCICED, "Terms of Reference" , "Rules of Procedure" and the proposed establishment of task forces and the name list of co-chairs of these task forces of the CCICED.

Now, on behalf of the Chinese government, I would like to announce that the 3rd phase of the CCICED has been established.

Given the fact that this meeting is convened just after the closing of the World Summit on Sustainable Development (WSSD), the meeting is thus titled "Environment, Development and Governance – response to WSSD". The agenda and program of this meeting have been printed and circulated to each member and representative. Three Chinese and international representatives are invited to give their keynote speeches, briefing on the WSSD and responses from countries around the globe towards the summit, China's response to the WSSD and its macro planning, general perspectives and important measures with regard to the implementation of its sustainable development strategy. Some key Chinese and international experts are invited to give reports on Issue Paper and leaders from 4 provincial and autonomous regions will also make their presentations. The purpose of such an arrangement is to give everyone present here a better understanding of the background knowledge and some latest information, as well as to keep the content of general debate relatively focused. Compared with previous meetings, this year's annual meeting gives more time for debates. This is because members all agreed to have more opportunities and time to voice their comments when we consulted with them at the end of the 2nd phase of CCICED. Thus as a result, we left more opportunities and time for discussion when we prepared this meeting's program. Please give your comments on the meeting's program and agenda. We will endorse them and pass on to the next item if there are no objections.

Chairman Wen Jiabao has sent a written speech for this meeting. Now, at the entrustment of Chairman Wen Jiabao, I would like to read his speech.

(After reading the written speech by Chairman Wen Jiabao)

Dear members,

The CCICED is an advisory body providing decision-making recommendations to the State Council of our country. Members of CCICED are composed of the best expert scholars and social activists in the related research areas from home and abroad, who have rich experiences and original research works in the field of environment and development. For the past 11 years, the CCICED has made a great many recommendations and suggestions to the Chinese government and conducted remarkable researches. We have to admit that, the CCICED has done its part in the achievements of China's cause of environment and development, particularly in its important contribution to the government's decision-making.

China has entered into a new stage of development during the period of the current CCICED. The 16th CPC National Congress has set out a blueprint for China's development for the future 20 years. During this development process, the key for an effective solution to environmental problems and strengthened capability for sustainable development lies in the government's decision-making and actions of the whole society. This is an important period for the CCICED to play an important role. I believe that, with the joint efforts of all members, the 3rd phase of CCICED is sure to play a bigger role in the process of China's building a well-off society in an all around way.

Premier Zhu Rongji will meet with all members of the CCICED at the end of this meeting and that is on the afternoon of 25 November. Members would take this opportunity to put forth recommendations and suggestions directly to the premier of our government.

Exit

Speech by Vice Chairman Xie Zhenhua at the Closing Ceremony of the 1st Meeting of the 3rd Phase of CCICED

Distinguished members, experts, ladies and gentlemen,

After three days of intensive and highly efficient work of all members and experts, this meeting has come to a successful conclusion. First of all, on behalf of Chairman Wen Jiabao and the bureau of the 3rd phase of CCICED, I would like to extend my congratulations to members and experts of this new phase of the CCICED. At the same time, I would like to express my thanks to all members and experts for their diligent commitment to China's cause of environment and development.

Chairman Wen Jiabao delivered a written speech at the opening ceremony of the meeting. He stressed that China would steadfastly implement its sustainable development strategy and gave his expectations and requests for a successful annual meeting of this phase of the CCICED. Four keynote speeches and two reports on "Issue Papers" were arranged by the meeting. The presentations were comprehensive and original in light of their contents and thoughts, playing a significant role in guiding the meeting's discussion direction and helping to finalize recommendations to the Chinese government. Vice Governors from four provinces and autonomous regions, namely Liao Ning, Inner Mongolia, Fu Jian and Guang Xi, briefed the meeting on their preliminary practices of sustainable development. Within a very short period of time after their establishment and under the condition of working mechanism not fully implemented, 4 Task Forces have completed their staged reports and made lots of valuable comments and policy recommendations by doing a great deal of work. Premier Zhu Rongji will meet members and experts present at this meeting this afternoon, hearing your views personally and exchanging views with you on China's environment and development.

During the meeting, centering around the theme "Environment, Development and Governance-Response to the World Summit on Sustainable Development (WSSD)", members and experts expressed their views and held active and enthusiastic discussions and put forward lots of valuable comments on various issues, including development modalities, government's comprehensive decision-makings, establishment of cooperative partnership between government, enterprise and the public, strengthening technical renovation and education on sustainable development, implementing ecological protection and construction and global environmental issues, etc. A very good atmosphere prevailed all along the meeting. We are pleased to notice that the participants had consensus as well as fiery debates on several issues by fully expressing their views. This is greatly conducive to collecting wisdom and is also of great significance to formulating right policies. To sum up, after these few days of intensive work, the meeting has concluded each item of its agenda and reached some achievements as expected. Hereby, on behalf of the bureau, I would like to extend my sincere thanks to all members and experts for their hard work.

With regard to the work of the new phase of the CCICED, the participants put forward many excellent suggestions at and after the meeting. Now, I would like to sum them up as follows:

First, about the position and objectives of the CCICED. The CCICED is a high level advisory body to the Chinese government, whose views and recommendations have brought direct impact on the State Council and related sectors and local governments. Lots of remarkable work has been done by the first two phases of the

CCICED so as to solve the important and imminent problems in China's environment and development, bringing about great impact on China's implementation of sustainable development. This new phase of the CCICED will continue to play a characteristic and significant role in China's environment and development. The third CCICED works in an important period during which China is building up a well off society in an all-around way. In this regard, achievements made by members and experts of the CCICED will sure continue to bring about important impact on government's decision-making during this process.

Second, about the working direction of the CCICED. The 16th CPC National Congress set out grand objective of building a well-off society in an all-around way within the next 20 years, which includes:

--Efforts will be made to quadruple the GDP of the year 2000 by 2020, and China's overall national strength and international competitiveness will increase markedly. (In details, we will in the main achieve industrialization and establish a full-fledged socialist market economy and a more open and viable economic system. The proportion of urban population will go up considerably and the trend of widening differences between industry and agriculture, between urban and rural areas and between regions will be reversed step by step. We will have a fairly sound social security system. There will be a higher rate of employment. People will have more family property and lead a more prosperous life.)

--Socialist democracy and the legal system will be further improved. The basic principle of ruling the country by law will be implemented completely. (The political, economic and cultural rights and interests of the people will be respected and guaranteed in real earnest. Democracy at the grassroots level will be better practiced. People will enjoy a sound public order and live and work in peace and contentment.)

--The ideological and ethical standards, the scientific and cultural qualities, and the health of the whole people will be enhanced notably. (A sound modern national educational system, scientific, technological and cultural innovation systems as well as nationwide fitness and medical and health systems will take shape. People will have access to better education. We will make senior secondary education basically universal in the country and eliminate illiteracy. A learning society in which all the people will learn or even pursue life-long education will emerge to boost their all-round development.)

--The capability of sustainable development will be steadily enhanced. The ecological environment will be improved. The efficiency of using resources will be increased significantly. We will enhance harmony between man and nature to push the whole society onto a path to civilized development featuring the growth of production, an affluent life and a sound ecosystem.

The above-said objective covers indexes like economic growth, social development and environmental protection, etc. In this regard, it is an objective of sustainable development. The World Summit on Sustainable Development, which was held not long ago, identified economic growth, social development and environmental protection as three pillars of sustainable development and principles of mutual support and coordinated development among these three fields. Thus accordingly, the working direction and focus of the 3rd phase of the CCICED are: by closely centering around the objectives set out by the 16th CPC National Congress and carrying out the spirit of the WSSD and in accordance with China's national conditions, to put forward suggestions on issues which we hope could be key research projects of the CCICED,

including How to coordinate the relationship between environment and development; How to persist in using IT to propel industrialization, which will, in turn, stimulate IT application, blazing a new trail to industrialization featuring high scientific and technological content, good economic returns, low resources consumption, little environmental pollution and a full display of advantages in human resources; How to enhance the country's capability of sustainable development; and how to avoid various potential and practical challenges during the development process.

Third, about the task forces. The task force plays an essentially fundamental role in the work of the CCICED. Based on research achievements of task forces, policy recommendations are formulated through discussions during which the members' wisdom and experience are collected so as to improve the original research outcomes. During the process of establishing the task forces, the bureau laid down the following basic principles in line with the "Rules of Procedure": First, the content of research projects must be key issues that calls for immediate solutions by the Chinese government in the field of environment and development; Second, it is our wish that the "Core Fund" mechanism be strengthened with a view to collecting enough research fund; Third, an active participation of Chinese and international high-level experts and scholars must be ensured. In this regard, we will conscientiously hear and study proposals of members and experts on establishing new task forces. New task forces will be established in a timely manner so as to make early preparations for every annual meeting of this phase of the CCICED.

Four task forces briefed the meeting on their staged research achievements. The research outcome of the task force on biodiversity indicates that, as the invasion of foreign species could bring impact on the ecological environment in China, it has become a key issue that needs to be solved immediately. Thus it is of critical importance to establish a risk assessment system and scientifically reasonable supervision system. The task force on forestry and grassland put forward suggestions of minor policy amendments while affirming the national policies of natural forests protection and returning farmlands to forests and grasslands. The working group on environmental economics came up with recommendations like setting resource prices in a reasonable manner, conducting assessments on environmental losses and profits and levying environmental taxes. The task force on WTO and environment summed up its previous work within a very short time and put forth research directions for the next stage. On the whole, all the researches done by the task forces have been excellent and highly effective, providing with us some right views and research concepts. It is our hope that, the task forces would continue to focus their attention on researches in the aspect of implementation and to provide policy recommendations for the government to considerate. During the discussion, some members raised questions like as four task forces have given their reports this year, does it mean that their missions have been over? And how to deal with the future work of task forces? The bureau considered on this and decided that in accordance with the Rules of Procedure, missions are over for those task forces who have submitted their reports this year. While in line with the working procedures of establishing task forces, applications for new task forces are to be made if new research projects and proposals are raised in this field.

Fourth, about the implementation of achievements of the CCICED. The achievements of the CCICED include important reports at the meetings of the CCICED, findings of task forces and policy recommendations to the Chinese government. With a view to bringing the role of the CCICED into full play, a

multi-channeled mechanism of collection, transportation and communications should be established so as to submit the above-said achievements to the relative government sectors in time and to follow and collect responses from government sectors and local governments. The Secretariat needs to play a bigger role in this respect.

Fifth, about strengthening China's role in the field of international environment and development. During China's rapid economic growth process, China has avoided a vast degradation of environment quality and accumulated some experience accordingly. However, we are clearly aware that, China is still a developing country and faced with many environmental problems during its development process. Particularly, new issues will come up with rapid economic growth. The implementation of sustainable development still has a long way to go and requires continuous attention and support from all countries. We will resolutely solve China's environmental and development problems by a down-to-earth and domestically oriented approach, since it will be a contribution to the global sustainable development if China solves its own problems. At the same time, we will actively participate in international cooperation, adhere to the signed and acceded international conventions, and make our due contribution to the global cause of sustainable development.

Sixth, about the date and venue of the next year's meeting. The 3rd phase of the CCICED works in a transition period when the Chinese government gets a reshuffle next year. Next year's meeting is thus been preliminarily scheduled in November 2003. Notice regarding the meeting's date and venue will be released in due time to enable members and experts to make advanced preparations.

On the occasion of the beginning of the new phase of the CCICED, we would like to extend our sincere thanks to members and experts for their remarkable contribution to the last two phases of the CCICED. Some of the members and experts are no longer directly involved in the activities of the CCICED, but we will keep in touch with them through different means. It is also our hope that they could continue to pay attention to China's environment and development. We are pleased to see that, some new members have joined the CCICED and have become an important force for an effective work of the new phase of CCICED, bringing new inputs to the CCICED with their original concepts and thoughts. We are confident that this new phase of the CCICED will do a better job. In addition, there are some members making suggestions on the formation of the new phase of the CCICED as they hope that the number of members could be increased in some fields and aspects. We will take these suggestions into serious consideration.

Finally, I would like to thank all old and new friends for their contribution to China's sustainable development. We appreciate the work and efforts by the Secretariat, Canadian Office and lead experts and working teams to the 3rd phase of the CCICED. We are also grateful for all the working staff for preparing and organizing this meeting.

Thank you.

Environment and Development in China in the New Century

——Keynote Speech

Maurice F. Strong

Chairman Wen Jiabao, Executive Vice Chairman Xie Zhenhua, Vice Chairman Qu GePing, Liu Jiang and Other Distinguished Council Members and Participants,

Let me say how very honored and privileged I am to be invited to address this opening session of Phase III of the China Council for International Cooperation on Environment and Development which I have fo1lowed with special interest and admiration since participating in its launching in October 1990. I congratulate the government of the Peoples Republic of China for its decision to continue this unique and innovative cooperative relationship with its international partners. As a Canadian, I am especially pleased at the key role that Canada has played in the establishment and evolution of this partnership. I am also greatly impressed with the extent and quality of the international participation in the CCICED

I join with people throughout the world in app1auding the remarkable transition in leadership which has just taken place, combining renewal with continuity of the policies that have produced an unprecedented era of peace and prosperity for China. The important decisions of the 16th National Congress of the Communist Party of China and the endorsement of the theme of the "Three Represents" provide a promising road map for the next phase of China's long march to the front ranks of the world's most influential nations.

The launching of this Phase III of the CCICED partnership comes at a particularly important point in this 1ong march. As the pace of this long march has accelerated the environmental challenge to which it gives rise has become a central issue for China and the manner in which it manages the environmental dimensions of its rapid deve1opment wi11 have a critica1, perhaps decisive, effect on China's future. How China deals with this challenge will also be of immense, indeed decisive, importance to the entire world community and to its prospects of making the transition to a sustainable development pathway.

This unique partnership is therefore of special importance, providing China's foreign partners with an opportunity to understand and respond to China's initiatives and priorities while sharing their experience and knowledge with China and providing it with financial and other forms of support. This support should not be seen as foreign aid in the traditional sense, but as an indispensable investment in our common future.

Since the Stockholm conference first put the environment issue on the global agenda and affirmed its inextricable link with development, we have made a great deal of progress both in our understanding of the relationship between environment and

development and our capacity to manage this relationship effectively. The essential link between environment and development which was articu1ated at Stockholm and elaborated in the agreements reached at the Earth Summit in Rio de Janiero in 1972 has evolved into the broader concept of sustainable development in which the economic, social, population, gender and human settlements dimensions of the development process can be seen in their systemic re1ationships with each other.

Unfortunately, despite progress on many fronts, as reported at the recent World Summit on Sustainable Development held in Johannesburg, South Africa, we have still not made that change of course called for at Rio and continue on a pathway that is unsustainable with ominous implications for the human future.

The preoccupation today with the war against terrorism, the prospect of war with Iraq, the continuing conflicts in the Middle East and elsewhere, coupled with the retreat of United States from multilateral cooperation on environment and sustainable development is sues, are undermining the prospect of the transition to sustainability despite ever more compel1ing evidence of its urgency. Of course, we must deal with these more immediate threats, but in doing so, must not allow them to side-track the transition to sustainability.

There is a growing body of evidence as to the relationship between sustainable development and sustainable peace and security. The obvious, of course, is the impact of conflict on development and on the environment. Conflicts, most of them internal, that have afflicted so many countries in the developing world, particularly in Africa, have crippled their own economic and social development and exacted a heavy cost in human and economic as well as in environmental terms. Scarcities of critical resources arising from environmental degradation - especially of available land, fresh water, food and energy - contribute to the potential for conflict both within countries and with neighboring countries.

At the global level, many emerging challenges to peace and security are rooted in and directly related to environmental and natural resources. The global commons, some seventy percent of the earth surface beyond the national jurisdictions, is likely to give rise to an increasing number of competing interests over exploitation and management of marine resources pollution and use of the oceans as the repository for toxic and radioactive wastes and exploitation of the petroleum and mineral resources underlying them. Of course the largest commons of all is the atmosphere and outer space, the value of which has been immensely enhanced by the multiplicity of uses to which it is now being put - particularly in accommodating the rapidly growing numbers of satellites that orbit the earth. However, US plans for the militarization of space are highlighting the potential for differences on this issue, even with its traditional allies. It seems evident that the militarization of space, however well intentioned, as a means to achieve security against missile attacks could well lead to a new and highly dangerous generation of space - related conflicts and insecurity.

As the world community becomes more and more aware of the importance of environmental security, it is predictable that people wil1 become more sensitive to the damage inflicted on them by the actions of others, as for example through trans-boundary impacts of actions by one country which inflict important environmental and economic costs on others.

From Stockholm through Rio to Johannesburg, the shared concern of developing countries has been the inadequate availability of funds for the financing of sustainable development, market access for their products and equitable access to technology. These remain the greatest impediments to alleviating the hunger, poverty and environmental degradation, which continue to plague less developed countries. Unfortunately, the agreements reached at international conferences to address these issues have not been followed by sufficient actions.

In all of these issues, China is a key player. Internationally, beginning with the Stockholm Conference in 1972, it has consistently and vigorously championed the interests of developing countries. It was the first country to adopt its own Nationa1 Agenda'21 based on the Earth Summit's Globa1 Agenda '21. And domestically, it has created its own unique development model in which foreign assistance and support has made a significant but subsidiary role, China's remarkable development success has been the product of Chinese leadership, and predominantly Chinese resources. The same wil1 be true of China’s commitment to protecting and improving its environment.

China is now well positioned to toke a major leadership role in international environmental cooperation. Its membership of the World Trade Organization adds a major new dimension to this capacity. The experience it is developing in managing its own environment problems, the skills it has demonstrated in environmental diplomacy and the critical importance of China in achieving global environmental security and sustainability fit China for this role. China's leadership will be welcomed by the international community, which very much needs that leadership today.

As one who has been privileged to be closely associated with China during the remarkable period of development of its environmental commitment and capacities over the last 30 years, it is my deep conviction as to the critical importance of China in the global context that has motivated me to decide to devote most of my time and energies at this stage of my life to doing what I can to help and support it.

The 2008 Olympics have become a primary focal point of China's commitment to the environment. This promises to make the Beijing Olympics the greenest ever while providing strong impetus to the achievement of China's national environmental goals and validation of its international leadership.

One cannot help but be impressed by the degree to which China has recognized the economic costs of environmental impacts. The recent study by the CCICED Environmental Economics Working Group estimates the costs to China's economy at nearly l0 per cent of GDP annually. The cost of natural disasters in 1998 alone was some 300 billion RMB (36 billion dollars). Some of China's cities are amongst the most polluted in the world. An estimated 37% of China's total land area suffers from soil erosion and degradation, much of it caused by over-grazing, inappropriate planting and deforestation by poor communities which have no other options to meet their livelihoods needs. The sustainability of agriculture is also threatened by salination, over use of pesticides and chemical fertilizers, the vulnerability of monocultures, droughts and floods.

Rising standards of living and increased consumption which improve the lives of people also produce escalating environmental problems. China's rapidly expanding energy needs continue to be met mainly by fossil fuels, notably coal, and it has become increasingly dependent on imports of oil. In no country is the need for transition to a new energy economy less dependent on fossil fuels more important-indeed imperative. These are but a few examples illustrating the vast scale and complexity of the environmental challenge that China faces.

The response of China's government through this challenge has been impressive and promising. During the Ninth Five year plan period, l996 - 200l, 84,000 highly polluting small enterprises were shut down and over 90% of 238,000 polluting industrial enterprises lowered their emissions of pollutants to national standards. Protected wilderness areas were expanded to 88 million hectares, 8.8% of the national territory. The Tenth Five year plan, 2001-2005 provides for even more extensive environmental protection efforts reflecting the major priority accorded to the environment by the central government.

Minister Xie Zhenhua, of SEPA said in an article in the Peoples Daily in January 2002, "Never has the Chinese government put the environment in such an important position. It is vital to the civility and prosperity of our country and people." China has produced seven environment protection laws and over 120 regulations. Its legal system is increasingly being used to enforce these. President Jiang Zemin at the 2nd Global Environment Facility Assembly in Beijing in October of this year stated "development at the expense of squandering resources and undermining the environment cannot last long. Natural resources are not inexhaustible, yet the demand of human development is ever growing. If the relationship between the two is not addressed properly, it will inevitably be to a deterioration of the ecosystem and pose serious threats to the survival and development of mankind". He cited the high priority China is now according to environmental protection and sustainable development and the substantially increased budgetary resources allocated for this purpose in the Tenth Five Year Plan.

The National 10th Five Year Plan for Environmental Protection approved by the State Council in December 2001 provided for a doubling of spending on pollution control projects in the next 5-year period and set out key goals and targets for reducing air and water pollution and establishing "green" areas and urban centres and increasing nature reserves to account for some 13% of the country's territory. Overall, it is an ambitious plan with impressive specific goals which gives practical effect to China's commitment to the environment and sustainable development. It deserves significantly expanded international support and I am confident that this meeting will produce a strong commitment to mobilizing that support.

Internationally, Premier Zhu Rongji announced at the World Summit on Sustainable Development in Johannesburg in September, China's ratification of the Kyoto Protocol, affirmed China's commitment to the common task of realizing global sustainable development and to greater international cooperation in this task.

Let me suggest some of the areas in which I believe special efforts should be made:
i) Technology - is a critical factor in virtually all aspects of the environment and development process and in the essential task of integrating the environment fully into it. China has a long history of scientific development and technological innovation which enables it not only to continue to develop its own technologies but to absorb and adapt the technologies developed elsewhere. All countries have a deep interest in ensuring that China has access to the best technologies available and the capacity to employ them in its own development. It is important that all barriers to China's access to such technologies, including cost barriers, be removed and that China be accorded full access to the means to obtain and utilize such technologies. This could start with bilateral action on the part of individual countries while working to obtain international agreement on providing for financing, cooperative research and development, access to intellectual property and to the incremental financial resources required for the utilization of the best state of the art technologies.
The most effective means of strengthening China's technological capacities is through private -sector partnerships. With the encouragement now being given by the Chinese government to such partnerships, this is one of the most promising areas of opportunity for foreign firms.

ii) Energy - In no field is technology more important than energy. China's continued reliance on fossil fuels for more than 90% of its energy needs is simply not sustainable. In addition to the high cost and vulnerabilities that will impose on China itself, it could make it in time the principal contributor to CO2 emissions. This would clearly be bad for China and for the world community which has a strong incentive to help China achieve sustainability in the energy field. This means improving energy efficiency, reducing the environmental impacts of fossil fuels while giving high priority to the development of alternatives. The Clean Development Mechanism provided for in the Kyoto Protocol will hopefully provide significant international support for this transition. In addition, I believe that it is important to establish,

perhaps within the CDM framework, a Consultative Group on Clean Energy, modeled on the Consultative Group for International Agriculture Research, which would be especially charged with mobilizing support for the development of new environmentally sound energies and technologies and for the financial resources required to enable their utilization.

iii) Agriculture - Environmental degradation closely related to energy and water constraints is threatening the future of Chinese agriculture. It faces growing risks in the transition from its traditional agriculture to modern industrialized agriculture. While modernization of agriculture is important to increase productivity, it nevertheless imposes potentially severe environmental and health risks, particularly as it leads to overuse of chemical fertilizers and pesticides. It is important that China revisit its own long experience with less energy and chemical intensive agriculture and consult the experience of other countries which are finding new ways to achieve a much more sustainable balance between modern and traditional agriculture.

iv) Water - Both water quality and water supply are at the very core of China's sustainable development challenge. Already, some of China's main rivers are highly pol1uted and many rapidly growing cities are faced with the need to improve water quality and tap new sources of supply. The substantial commitment of resources that China has made to impressive increases in waste water treatment will certainly help. But much more will be necessary, and external resources and expertise must also be brought to bear if a serious water crisis is to be averted. Simple privatization of water development and delivery systems will not be feasible in most cases. What is needed is a system of private-public partnerships which will provide foreign companies and investors with an incentive to participate in China's water development while leaving basic control with the Chinese.

v) Environmental Services - China has already made an important start in development in its own environmental services industry. The rapid and qualitative development of environmental services is, I submit, essential if China's own environmental goals are to be met. And it is essential true that these be supplemented and supported by foreign investment and expertise. There is no doubt that will be forthcoming if the fiscal and legal conditions in China are conducive to it. It is important that China's external friends lend their full support and cooperation to changes in these regimes which it is now undertaking.

vi) Managementis the key, and usually decisive, factors in successfully integrating the environmental and social dimensions into the development process through sustainable development. The historic transition which China is now in the process of making from a centralized, planned economy to a socialist market economy with de-centralized decision-making requires a major shift in the culture of management as well as in the skills of managers. The high priority that China is now according to management education and training will do much to meet this need but it is an area

where external skills and experience can be especially relevant. One of the most effective means of making the necessary experience of skills available to China is through partnerships between Chinese and foreign companies and organizations. These partnerships can take a variety of forms but in the end must lead to control by the Chinese while producing appropriate returns for the foreign partner or investor.

vii) Financing the immense costs of meeting China's ambitious environmental plans will require new dimensions of commitment and cooperation by both China and its foreign partners. Most of this funding will, of course, come from China itself and the provision of substantially increased funds in the 10th Five Year Plan demonstrates the high priority it is according to its own commitment. This must now be accompanied by an order of magnitude increase in international funding-both official and private. But with prospects for major increases in official Development Assistance not promising, despite the new commitments made in Monterey, new and innovative efforts must be made to mobilize private funds, both from external sources and from China itself. There are many areas m which China's environmental priorities can be met in ways which also produce attractive returns to investors, as they must. I know of a number of leading companies and investors, including some with which I am associated, that are prepared to invest when these conditions are met.

The funds are available. But they will only be forthcoming at the much higher level necessary if the legal, fiscal, policy and regulatory conditions are conducive. The changes now underway in China promise to produce these conditions. And I cannot underscore too strongly how essential these are in providing the incentives to which private investors will respond.

The initiatives already taken by the International Finance Corporation, the Asian Development Bank and some others have helped pave the way. And the United Nations Development Program under the Administrator, Mark Mallock Brown, is developing some innovative new approaches that are highly promising. The time is now propitious, I summit, for a bold new initiative by the private sector, with official encouragement and support. Some of us have been working on the launching of a "China Eco-Opportunity Fund" as an instrument for enlisting private funds for environment-related investments, particularly those based on incorporation of the latest technologies. An endorsement in principle of initiatives of this kind would provide strong encouragement and impetus to this process, which I will do everything I can to help more forward.

I am well aware that there is little in what I have said that will be new or surprising to this sophisticated audience. The focus of my remarks is therefore to reinforce your commitment to developing a whole new generation of partnerships between Chinese organizations and enterprises which, in meeting the interests of each of the partners, will contribute to meeting China's environment and development priorities and helping to affect the global transition to sustainable development. The unique

partnership you have forged through the China Counci1 for International Cooperation on Environment and Development is the best vehicle I know for promoting and facilitating these partnerships, working with the Chinese to develop the policy, legal, fiscal and regulatory regimes which facilitate them and mobilizing the essential increases in foreign resources - financial, technological, professional and institutional which China needs and deserves. If I may end on a personal note it is my deep conviction that this is a time of historic opportunity in China that has led me to commit most of my time and energies now to helping to develop and form such partnerships, in the private sector and the public sector.

I can think of no more exciting or promising challenge for this Phase III of the CCICED and look forward to the further insights and views which I know will emerge in the remainder of your program me.

Exit

Keynote Speech at the 1st Meeting of the 3rd Phase of China Council for International Cooperation on Environment and Development

Liu Jiang, Vice Chairman
State Development Planning Commission (SDPC)

Respectable Council Members, Ladies and Gentlemen,

Carrying on the past heritage and opening up the future, the current meeting is an important one of the Chinea Council for International Cooperation on Environment and Development (CCIED). Since its establishment ten years ago, the CCIED has attained remarkable achievements in its work, and particularly since the Second Session of the CCIED, under the guidance and sponsorship of Vice Premier Wen Jiabao and with common efforts of all council members, the Council has played an important consulting role.

The 16th National Congress of the Communist Party of China, which just closed, concludes that sticking to the implementation of the sustainable development strategy has been a fundamental principle of economic construction in the past dozen years and will continue to be one of the aspirations in the all-round building of a well-off society in the next twenty years. The strategies for revitalizing the nation through science and education and sustainable development have been written into the Party Constitution and become administrative policies of the party in power.

On the international front, the WSSD was held in South Africa this year, and it passed the Political Declaration and the Plan of Implementation, advocating of the spirit of ??Make It Happen??. Premier Zhu Rongji led the Chinese delegation to the WSSD and contributed to the success of the Summit. During the preparatory period prior to the Summit, we started drafting the Outline of China??s Sustainable Development Actions, which is now under final examination and approval. China was the first country to formulate its national Agenda 21 after the Rio Summit held in 1992, and in the same fashion, China is now formulating the Outline of China??s Sustainable Development Actions after the WSSD, making great contribution to the global cause of sustainable development and meeting the inherent needs of its own development.

In the past years, China has attained remarkable achievements in economic and social development, the protection of environment and resources and capacity building, but China is confronted with some challenges, such as the need to reconcile rapid economic growth with enormous resource and environmental consumption, to reconcile the improvement of economic development level with relatively backward social development, and also the challenge of regional disparities.

In accordance with the reality of China, we have put forward the following sustainable development objectives for 2010:
The pattern of economic growth should be gradually transformed into a ??low consumption and low pollution?? pattern to alleviate the pressure on resources and environment.

Measures should be taken to limit the national population to less than 1.4 billion, restrict the annual average natural growth rate of population to less than 9??, improve the gross enrolment ratio for junior high school under the Nine-Year Compulsory Education policy to over 95%, increase the gross enrolment ratio for tertiary education to around 20% and to maintain a non-illiteracy ratio for young adults at more than 95%.

Efforts should be made to rationally develop and efficiently utilize resources, keep improving the carrying capacity of resources and improve forest acreage to 20.3% and urban sewage treatment ratio to more than 60%.

To realize China??s sustainable development objectives, efforts should be made on all the fronts while with focus on the priorities. Actions should be taken in the following six priority areas:

To build a national economic system in harmony with resources and environment. On the basis of industrial restructuring and the adjustment of regional and urban-rural structures, we should participate in global economic integration actively, put forward the strategic restructuring of the national economy in an all-round manner and preliminarily accomplish an environmentally-friendly, resource-saving sustainable national economy.

Social development. We should build a comprehensive population management framework and prenatal and postnatal care system, maintain a low birth rate, control the total population and improve population quality. Efforts should be made to build social security frameworks such as health care, employment and social insurance in accordance with the level of economic development, improve the quality of public services substantially, establish disaster monitoring and forecasting and emergency response mechanisms, and improve the capacity of disaster prevention and reduction in an all-round way.

To optimize resource mix and promote rational utilization and protection. Efforts should be made to rationally utilize, save and protect resources and improve the level of resource utilization; to put in place strict administrative frameworks for water and land resources and implement strict policies; to improve energy mix and energy efficiency, and strengthen the protection, management, supervision and law enforcement over resources such as forestry, pasture and minerals.

Ecological protection and improvement. Efforts should be made to build a scientific and comprehensive ecological monitoring and administrative system and improve the quality and efficiency of managing natural reserves; to set up ecological reserves and desertification prevention systems and strengthen the harnessing of soil erosion in key areas; to promote ecological agriculture and improve the agricultural eco-system; to strengthen the construction of urban greenbelt and improve ecological quality gradually.

Environmental protection and pollution prevention and control. Efforts should be made to prevent and control water pollution, implement projects of air pollution prevention and control in key cities, strengthen the work of environmental improvement in key sea areas and greatly promote clean production and the development of the environmental protection industry.

Capacity building. Efforts should be made to establish a sound legal framework concerning population, resource and environmental protection, intensify law enforcement, take full advantage of various means of publicity and media to strengthen the entire people??s awareness of sustainable development in an all-round fashion, set up systems of sustainable development indices,

monitoring and assessment, and establish information sharing systems for governmental decision makers, the public and researchers.

To reach the above objectives and accomplish tasks, we must adopt effective measures, including:
Administrative measures. We should set up systems of indices that can facilitate the assessment of regions and enterprises for their sustainable development level, and accelerate the tryout of incorporating resource and environmental costs into national economic accounting and the trial system of assessing key projects and major decisions for their impact on sustainable development. Governments at all levels should incorporate the work of sustainable development into their strategies and plans and enforce sustainable development throughout the implementation of plans.
Economic leverages. Governments at various levels should increase investment in sustainable development, direct private and foreign investment to areas of sustainable development, improve financial commitment and the management of funds, and in the meantime take full advantage of the role of pricing in resource saving and environmental protection.
Scientific and educational means. Efforts should be made to disseminate and promote the use of advanced practical technologies that are environmentally friendly, develop education at all levels actively, strengthen the development of human resources and improve the scientific and cultural qualities of the public for their participation in sustainable development.
Legal measures. Efforts should be made to continue strengthening legislation on sustainable development, build institutional capacity and set up standards in connection with the legislation and greatly improve public monitoring and the rule of law.
Demonstration zones. Demonstration zones of sustainable development should be established to showcase various models of sustainable development and spread these models to other parts of the country.
International cooperation. China is a major developing country, and its sustainable development will certainly promote the global sustainable development. We welcome continued attention and support to China from the international community. China will seriously implement all the international conventions and agreements on environment it has participated, actively promote bilateral and multilateral cooperation, including various partnership initiatives, and ensure the successful implementation of its sustainable development strategies.

The theme of the current meeting is sustainable development and governance. The meeting is significant in that it will open up our thoughts and promote the guiding role of the government in implementing the sustainable development strategy.

As we all know, longstanding negotiations occurred over the issue of sustainable development governance during the preparatory process leading to the WSSD, and the controversy concentrated on good governance. On the one side, some developed countries desired to emphasis the role of good governance in sustainable development; on the other side, developing countries, i.e., Group 77, stuck to the Rio principles, particularly the principle of common but differentiated responsibilities and stressed that priority should be given to tackling the international level of good

governance and establishing a just and reasonable international order of politics and economy. The WSSD concluded with a compromised result which embodies the interests and concerns of all stakeholders.

The Chinese Government has held on to a clear stance on this issue. International cooperation should be conducted under the precondition that the independence and sovereignty of countries involved should be respected, taking into consideration the differences among countries in national conditions, level of economic development and social and historical differences and preventing the intervention of internal affairs of other countries in the name of environmental protection. Under this precondition, we can discuss the governance of sustainable development frankly and sincerely so as to enhance and improve the work of sustainable development at all levels of our government.

In the course of time China has formed an effective framework of governance, which has played a positive role in promoting sustainable development. We have formulated a comprehensive sustainable development strategy in a relatively short period of time, promoted it to the high latitude of a national strategy and integrated it into the national plan of economic and social development. And in this connection the Chinese Government has increased investment, effectively implemented key projects like the project of converting cultivated land back into forestry and projects of harnessing river valley pollution.

However, there is much room for improvement in our administrative system. For instance, on the one hand, China??s capacity of monitoring the environment is rather weak; on the other hand, repeated construction of monitoring facilities often occur and barriers to information flow still exist, which illustrates that much coordinating work remains to be done among various sectors and administrative regions.

Governments around the world are confronted with similar challenges to public administration, and either successful experiences or lessons of failure are valuable reference. It is my sincere hope that all council members and experts can fully present their views and make recommendations on improving our work of sustainable development, boosting China??s cause of sustainable development.

Thank you all.

Exit

Keynote Speech at the 1st Meeting of CCICED Phase III

Töpfer

Executive Director, UNEP

Thank you very much indeed. Thank you for your introductory remarks.

Mr. Chairman, and Mr. Minister, good friends. I am extremely happy to add some arguments, some considerations to the discussions this morning concerning the outcome of the World Summit on Sustainable Development (WSSD). All of us were convinced that the main difference between the Rio Summit, which I had the opportunity to attend as the head of my national delegation, and the Summit in Johannesburg was that the latter was concentrated on implementation. There was no need to reinforce will. Each and everybody was and is convinced that Agenda 21, the Rio Conventions, the Rio Principles, and the Rio Declaration are valid, but what was and is missing is implementation.

I asked myself whether there is a Chinese proverb to express this and I found one saying: it is not the knowing that is difficult, but the doing. In learning from this wisdom, it cannot be very surprising that the Summit in Johannesburg was more difficult than the Rio Summit, because it was concentrating on "doing". And we have to ask ourselves: what is the situation that we are facing today and how can we change it, where are the instruments, where are the means of implementation?

It was mentioned this morning by our friend Arthur Hanson that UNEP delivered it's Third Global Environment Outlook (GEO 3) as a preparation for WSSD. For the first time ever, we added four future scenarios of the state of the environment. I believe it's very important to underline that market forces alone are not able to solve the problems, that they must be linked with the dedication of political decisions. There are some other interesting findings in this report. There are huge differences between the social and economical aspects . And therefore, we have to ask what are the main findings from Johannesburg . And the first one which was not underlined this morning is that

Johannesburg gave emphasis to the regional dimension of sustainable development. This, no doubt, is a result of the liberalization of political blocks which we have seen emerging on the global level since the fall of the Iron Curtain.

To illustrate the importance of the economical aspects of sustainable development and their connection to the regional dimension, I would like to show you some figures that were produced by our partner GRID Geneva. What you can see on the screen now is how the world is shaped according to the gross domestic product (GDP). Africa is almost disappearing. You can see the different sizes of South America, of China and India. The next graph shows the globe according to the world population under 15 years of age and you can see how the situation reverses. I hope this gives you a feeling of what was the starting point at Johannesburg. The discripancy between GDP and world population indicates the enormous security and development problems that we are facing in our world today.

Another compelling example for the current problems of sustainable development is the one of Lake Chad which you can see in the next slide. In 1963 Lake Chad was a very broad lake, and only 40 years later, there is only a fraction of it left. Around Lake Chad, there are important countries such as Nigeria, Niger, Chad, and Cameroon. We have seen exactly the same situation in the Aral Sea. The question of what is happening there has something to do with sustainable development, and I gave this only as one example to concretize the question of water.

There are other examples. These were the Mesopotamian Marshlands in 1976. The Marshlands are home to the Marsh Arabs and very important for biodiversity. Today, there is only a little bit left on the border between the Republic of Iran and Iraq. The rest of the Marshlands have nearly disappeared with all the consequences for living conditions of humans and animals. And you will also see the implications of environment and security quite clearly. I only want to show you these slides from our GEO process to demonstrate that assessments are not an end in itself, but directly linked with policy-making.

Coming back to the policy-making, I underline the regional dimension. The question is how to

implement the New Partnership for Africa's Development (NEPAD) process in connection with sustainable development. You may know that UNEP is very actively involved in the environmental component of NEPAD and we want to concentrate our next Governing Council on the regional dimension. However, we are working not only in Africa, but in Latin America and the Caribbean, the Arabic countries, Central Asia, Eastern Europe, and in countries with economies in transition which will gather quite soon in Kiev for the "Environment for Europe" meeting. I believe that the regional dimension is a very important outcome for implementation at this stage.

The second Johannesburg outcome that I wish to underline is the Plan of Implementarion and the new timetables and targets therein. Altogether 35 of these have been agreed upon. I will highlight some of those that are of high importance to China and for the development here. It was of course criticised that we did not succeed in attaching a concrete target to renewable energy. But we should see the language use there. And I quote that, with regard to energy "*With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets as well as initiatives, where they exist, and ensuring that energy policies are supportive to developing countries' efforts to eradicate poverty, and regularly evaluate available data to review progress to this end"* So we have a very clear signal that there must be something done with regard to renewables.

And therefore, I echo to the CGIAR proposal of Maurice Strong and can inform you that in the meantime UNEP has developed a similar system and network for renewable energy. We secured the backing for this from donor countries. I am happy that for example the World Bank, our friend Ian Johnson is with us here, is very closely linked with this initiative as well. And I believe we should do our utmost to integrate especially China. But what does renewables mean? You know that there was a major discussion with regard to the perspective of hydro-power in China.

I will give you the relevant Johannesburg targets with regard to the Chemical Agenda. You know that we have finalized the Convention on the Prior Informed Consent on the specific chemical substances to be exported to the developing countries, the so-called Rotterdam Convention. We

sincerely hope that this convention can be ratified in 2003. We finalized the Stockholm Convention – the POPS. It was also decided in Johannesburg to ratify this Convention until the year 2004. It was decided to develop a strategic approach to the international chemical management by 2005. I learned this morning that we are going more and more out of the persistent organic pollutants to the persistent unorganic pollutants, especially heavy metals. Heavy metals such as mercury, lead and others have a lot of repercussions especially for China. And we have to harmonize our system of labeling and classification of chemicals and make it operational by 2008. I underline this especially because labeling has a lot to do with trade. And there is a corresponding paragraph in the WTO Doha Declaration which mentions eco-labeling. If you can handle this in a way that the global trade system is integrated, we will achieve a lot.

I would like to mention three additional topics: One has been discussed very intensively this morning, consumption and production patterns. I would add that the main challenge will be linked to consumption patterns and the transfer of technologies. In market economies, technological progress is made when bottlenecks have to be overcome, and these bottlenecks are generally linked with prices. There are at least three dimensions to this issue. First, quite a lot of people believe that to change consumption patterns means to consume less. Especially the NGO family has drawn attention to the fact that there is of over-consumption, and have raised the question of existing consumer values. I would dare to say let's ask for environmentally friendly consumption rather than to ask for a change of over-consumption. It's a very tricky topic. Second, rather than fighting for less consumption, we should promote eco-labeling to have more informed consumers. The third is very important for developing countries: what are the consequences of change of consumption patterns in the developed countries for the supply chain of products coming from the developing countries? I believe that this is very important, and this was one of the main discussion points in Johannesburg.

The second new emerging topic that was not mentioned this morning, but that in my point of view is extremely important for China and other developing countries, is the question of access and benefit sharing of genetic resources and indigenous knowledge. You know that it is integrated in the Convention on Biological Diversity Article 8(j) and Article 15 and the following. This is about how

it is possible for developing countries to make their biodiversity instrumental for their development agenda.

Until now, as you know, genetic resources, and biodiversity are a global public good. They have no price, they are not covered by the trade related intellectual property rights. The question will be: will we need something like trade related genetically property rights, and property rights on indigenous knowledge? China is one of the founding members of the new Group of Like-minded Megabiodiverse Countries. Right now, Mexico is the chair and next year India will be chairing the group. China is one of the main partners, and I believe that you must be aware of this topic. It is integrated in the Plan of Implementation. Now we have what we call the Bonn Guidelines on the Access and Benefit Sharing on Genetic Resources, but quite a lot of people are convinced that this is not strong enough, that we need more legally binding instruments.

I want to add the more and more important topic of cultural diversity and ethics. You may know that UNEP and UNESCO held a Roundtable in Johannesburg, promoted by the French President Chirac who gave the introductory speech. The Roundtable focused on the interrelation between globalization and diversity, especially cultural diversity, indigenous knowledge, and the knowledge of traditional medicine as an asset for developing countries. This is again very closely related to trade. And there are a lot of additional consequences for jobs and for development chances in developing countries. In the first instance, this may give the impression of a soft topic. But I would dare to say that it is far from marginal, quite in the contrary.

I would also like to mention new findings on air pollution that were also mentioned this morning. We have the change from the point-linked air pollution to diffuse pollution. You know that UNEP together with outstanding scientists, Nobel Prize Laureates such as Prof. Crutzen, Prof. Ramanathan, Prof. Molina and others were discussing the effects of particulates, aerosols, and the question of soot. These topics were also studied very carefully with Chinese scientists and NASA. We have to ask ourselves what is going on in this field, what do we have to do especially in the urbanization process in developing countries?

Altogether, this brings me to the conclusion, Mr. Chairman, that the Johannesburg Plan of Implementation is quite a good working basis. There are a lot of very concrete requests, and we should stimulate the governments to implenent these. My main concern is that we have lots of partnerships. I like the partnerships integrating private business, non-governmental organizations, knowing that to join in partnerships has also something to do with accountability. It was one of the main requests from non-governmental organizations to the private business to increase accountability. But we need a monitoring system for these partnerships, we need a reporting of this monitoring system so as to evaluate the compliance of the commitments made. Can we do the same with these targets we have here? This is indeed a huge request also to the UN system.

Some people have proposed the creation of a World Environment Organisation as an answer. We must be aware of how we have reacted institutionally to different environment problems in the past. We decided to have specific instruments as an answer. We call them the conventions and protocols. They are legally binding, they are ratified by parliaments, and they are independent. Is it in our interest to integrate those multilateral environmental agreements in a World Environment Organization? Or can we come to something like a holding? Maurice Strong mentioned this morning that this is not a topic of coordination but of integration. How can we integrate to implement the outcomes of the World Summit of Sustainable Development? Can we implement this through a World Environment Organization? UNEP is turning 30 years this year. This organization was the result of an environmental summit which took place in 1972 in Stockholm - the United Nations Conference on the Human Environment. In fighting for the environmental part of sustainable development we have to develop UNEP as the institution responsible for the environment, but we have to develop it in the new century. Sustainable development must be an integrated policy. As each and everybody knows this is a very demanding task. Otherwise, we cannot achieve monitoring and assessment of emerging issues.

We cannot only be happy with the results of Johannesburg. We have not tackled all needs, but we are on an honest path and as I mentioned in the very beginning, now, it is most important to act. And therefore, let's try in this Council, where I am honoured to serve the second term, to do what is necessary for this big country, and to tackle very concrete topics such as the yellow sand storms and

all those other new challenges we have been discussing here today**.** We have a lot to do!

Thank you very much**.**

Exit

Develop Recycling Economy, Realize Sustainable Social and Economic Development in Liaoning

Zhao Xinliang
Vice Governor of Liaoning Province

Excellencies
Ladies and Gentlemen, Dear Friends,

Liaoning is China's important base for raw material and manufacturing industry, and has made great contribution for China's industrialization and modernization in the past decades. At the same time, due to the traditional extensive economic development pattern, intensive exploitation and consumption of natural resources, the ecological environment in Liaoning has been seriously polluted and damaged, which has already affected the sustainable social and economic development. After the reform and opening-up policy was adopted, we have been earnestly implementing the strategy of sustainable development and principle national policy of environmental protection, with environmental protection and ecological construction combined with the renovation of old industrial bases in Liaoning. At an annual GDP growth rate of about 9%, pollution and ecological damage have been effectively alleviated; environmental quality in some areas have witnessed obvious improvement, As an industrial base, Shenyang is no longer listed among the 10 most polluted cities in the world, even designated as the pilot city for sustainable development by UN. Renowed as the Northern Pearl, Dalian was awarded the titles of Best Progress Model of Inhabitation Environment and Global 500 Best.

Entering the new century, we need to grasp more opportunities in the construction of a new Liaoning and speed up development, with problems solved in the process of development. Starting from Liaoning's real condition, the concept of recycling economy, based on the most efficient resource exploitation and environmental protection, should be incorporated into the restructuring, upgrading and technical renovation in Liaoning, which is a must choice for the harmonious developments of economy and environment.

Under the guidance of SEPA, some pilot programs for recycling economy have been carried out in Liaoning. Through a thorough research and demonstration, it's estimated to take 5 years time to set up a batch of recycling enterprises, ecological industrial parks, and several resource recycling cities, energy efficiency greatly improved, regional resource recycling industrial bases established, thus to cultivate new economic growth point. The concept of recycling economy should be promoted throughout our society, a new mechanism and framework of recycling economy should also be preliminarily set up. Based on the above measures, we can get to the

track of sustainable development featuring advanced production, well-off livelihood and sound ecological environment.

1. In economic restructuring, vigourously disseminate cleaner production practice, and establish a batch of recycling enterprises. At present, Liaoning is undergoing momentous period of restructuring and fast development. In order to get into a new industrialization track featuring high-tech, good profit, low resource comsumption, less pollution and full use of human resource, within the process of restructuring, resolvedly we closed a batch of enterprises and discard backward technique and equipment with wasted resources and severe pollution; within the process of technical renovation, cleaner production programs have been carried out in 230 enterprises, which means annual saving of 30m kwh electricity, 70m tons of water, over 100m tons of sewage emission, totaling 500m RMB. By the end of the 10th five-year-plan, all the 600 most polluting enterprises should meet cleaner production standards, thus to make the main industrial sectors and products meet or approach domestic and foreign advanced level in terms of energy, raw material and water consumption. Emphasis will be placed on metallurgy, thermal electricity, coal and petrochemical, vigourously spread the re-use of semi-treated water and realize zero emission of sewage. By the end of the 10th five-year-plan, the re-use ratio of industrial water will reach 80%, 130m tons of re-used sewage added and 75% ratio of reuse being reached. In large-sized enterprises such as Anshan Iron&Steel Complex, Fushun Petrochemical Company, key linkage technology will be introduced, grading energy use and recycling will be carried out, forming a new eco-industrial chain, maximizing resource efficiency and minimizing pollutant emission. Anshan Iron&Steel Complex has already set up sewage treatment plant with daily capacity of 220t tons, 180t tons of re-used water, reaching re-use ratio of 91%, a series of projects including comprehensive use of slag, recollection of fine powder and ecological recovery of mines, has been implemented. It's estimated to take 3 to 5 years time to build it into recycling model enterprise in China's iron&steel industry.

2. Introduce the theory of industrial ecology and establish ecological industrial park in economic transformation of resource exhausted areas, construction of economic and technological development zones and renovation of heavy chemical industrial areas. In the past, the leading industrial clusters in many cities originated from one or several mineral reserves. With the over exploitation and comsuption, some areas are facing the crisis of exhausted reserve plus deteriorating city, which poses a globally challenging task of economic transformation in resource exhausted areas. Based on the principle of industrial ecology, Fushun city, the past coal capital, carried out 1 mine plus 4 factories plus 1 gas project in Fushun Mineral Group, which includes restoration of east open mine, comprehensive utilization of shale and slag, gangue brick, coal bed methane; the city also carried out treatment project in Hunhe River, develop tourism spots and establish ecological industrial park. Coal and electricity city of Fuxin, within the pilot program of economic transformation, has already set off on a economic rejuvenation track by vigorously developing

replacement industry, optimizing the structure of second industry, emphasize the development of modern agriculture and service industry.

By implementing the project of “Envioronmental Management of China's Industrial Parks” initiated by UN Environmental Planning Bureau, Dalian Economic and Technological Development Zone established Ecological Industrial Park as well as the operation mechanism for solid waste recollection, treated water reuse system combining enterprise management and socialized service. The park has taken a new look at the same pace with its economic development, being titled “ISO14001 National Model Zone” by SEPA.

By applying Industrial Ecology Theory into practice, within the framework of industrial restructuring and enterprises relocation, Tiexi Industrial District in Shenyang has removed 30 severely polluting enterprises, closed 30 bankrupt enterprises and upgraded 20 key enterprises. Centering large enterprises like the Northeast Pharmacy Ltd.etc, the district has introduced key projects in chain, established the ecological network of symbiosis and metabolism among enterprises, thus to realize the integrated system of water, logistics and energy, and sharing of information and infrastructure facilities, minimize waste, lower production cost, improve ecological environment in urban area, strengthen regional all-round competitiveness

3. Focus on sewage and solid waste reuse, establish recycling society.

Liaoning province faces water shortage and serious water pollution which, on the other hand, means great potential of sewage reuse. In recent years, we have been focusing on the construction of urban sewage treatment plants in the overall treatment projects for Liaohe River Basin and Bohai Sea Region. At present, Liaoning has finished 12 urban sewage treatment plants with daily treatment capacity of 1.61 million tons; By the end of the 10^{th} five-year-plan, more than 50 sewage treatment plants will be completed, with estimated total daily capacity of 6 million tons. The water quality and the natural ecological environment are gradually improving. At the same time, we should vigorously promote water saving and sewage reuse programs, speed up the construction of treated water recycling systems in sewage treatment plants, inhabitation communities and scenic spots, etc, reaching treated water reuse ratio of over 30% in urban area. Dalian and Anshan cities have already reached reuse capability of 300,000 tons in sewage treatment plants.

From the perspective of social macro-cycle, according to the principles of "minimize, resourcing and harmless", solid waste sorting and recollection systems will be established first in Shenyang and Dalian, the construction of solid waste treatment plants will be sped up. During "the 10th five- year-plan", 26 urban solid waste treatment plants will be constructed throughout the province, reaching treatment ratio of 60%. The treatment ratio will reach 80 % for waste plastic, waste battery, waste electric applicance, waste computer etc. and 90% for waste metal package.

Making full use of Liaoning's advantages in economy, technology and location in Northeast China, the province will construct a batch of resource regeneration projects from which regional resource regeneration centers can take shape with new economic growth point, and the turnover in resource regeneration will hit 4 billion RMB.A regeneration management system has already been set up in Shenyang, including hazardous waste exchange and treatment, collection and utilization of urban restaurants, sorting and treatment of living solid waste; a batch of projects have been completed for the production of cement and hollow brick utilizing gangue and powder coal.

4. Strengthen urban environment construction, introduce the concept of "City Management", realize a win-win situation for both economy and environment. Through urban energy restructuring, infrastructure construction, enterprise relocation, greenery plantation, urban ecological environment has been improved, the overall value and competitiveness of cities appreciated. Dalian city sticks to the principle of environment representing the city, its urban environment has taken on a new look after over 10 year effort. Beautiful and comfortable urban environment is becoming Dalian's brand, which has attracted endless foreign investment and prompted fast development of new industries such as tourism, finance, information service and high-tech. The value of the city has increased dramatically. It realized a win-win for both environment and economy, serving as a model for implementing sustainable development strategy in heavy industrial northern cities. Panjin city sticks to the principle of ecology goes first, great efforts is made in developing ecological agriculture, improving ecological demonstration zone and building the city into National Environmental Protection Model City. Through the campaign National Environmental Protection Model City, Shenyang, Dandong and Huludao are working on upgrading cities' taste and style as well as improving economic efficiency. Fushun city strengthens urban ecological construction by planting trees and grass, vows to turn "Coal Capital" into "Green Capital". During "the 10th five-year-plan", Liaoning will vigorously plant forest belt surrounding cities, urban greenery coverage reaching 35%; dismantle 10 thousand boilers and 8,000 chimneys, urban central heating ratio reaching 85%; cleaner energy ratio reaching 40% in end consumption.

5. Build up mechanism, framework and social environment for the development of recycling economy. Recycling economy is still in its initial stage in China. Therefore government should play the role of planning, guidance, regulation according to laws, organization and publicity. We should speed up the establishment of related legal systems, identify the rights and obligations of various levels of government, enterprises and individuals in recycling economy, formulate favorable policies regarding finance, tariff, financial loan and industries, thus to offer guidance and support for the development of recycling economy. With market mechanism, we should form a multiple investment and fund-raising system, with enterprises as the main entity and joined by both domestic and foreign investment. Theoretical research

and training on recycling economy should be strengthened, and public participation awareness should be further raised through different kinds of mass media promotion. Encourage the public to purchase environmentally friendly products, reduce over-consumption and realize waste sorting. Government should call for green purchase and promote the establishment of green offices, green communities, green schools and green families thus to create a social atmosphere for developing recycling economy.

SEPA has identified Liaoning as the pilot province to implement recycling economy in China. It is of strategic significance for Liaoning to promote its industrial restructuring and upgrading, create new economical development model and implement sustainable development. We would further strengthen the leadership and coordination in regard to this task, stick to the mechanism of "governmental guidance, market promotion and public participation", depend on scientific and technology progress, learn from domestic and international experiences, try to obtain support from related international organizations and national departments and steadily achieve the set targets. We believe the day we establish the pattern of recycling economy in Liaoning will be the day we rejuvenate Liaoning's old industrial base and realize a well-structured economic development. At that time, a new Liaoning with flourshing economy, civilized society and beautiful environment will be emerging before us.

Thank you for your attention.

Exit

Enhancing the Ecological Environmental Protection and Promoting Inner Mongolia's Sustainable Development

Zhou Weide
Vice Chairman of Inner Mongolia Autonomous Region

Our esteemed committee members, every expert, ladies and gentlemen:

Environment protection is an essential national policy which relates to the survival and development of our descendants, it is an important part of carrying out the "Three Representative Thoughts" and implementing the sustainable development strategy, as well as a significant mark indicating the development, progress and civilization of a country or a region. It is meaningful of the meeting to focus on the topic of "Environment, Development and Government". Next, I'll address briefly on the circumstances and efforts of Inner Mongolia people about enhancing ecological environmental protection and construction.

I. Features and Status of Inner Mongolia's Ecological Environment

Inner Mongolia autonomous region stands in the middle Asia and is located at the southeast of the Mongolia plateau. It's the frontier area in north China, extending 2400 kilometers from the east to the west, stretching l700 kilometers from the north to the south. Its total area is 1.l83 million square kilometers. From the northeast to the southwest, this region consists of five different climate areas: temperate humid, semi-humid, semi-arid, arid and extreme arid climate respectively. Its rainfall decreases from 500 millimeters in the east to 50 millimeters in the west annually. Effected by the geography, climate and shortage of water resources, the ecological environment in the region has obvious regional diversification, fragile ecological condition and various ecological types. Daxinganling mountain area in the northeast is the largest coniferous forest in north China. It's the water source of Nenjiang River and Songhuajiang River. Moreover, it provides an ecological defense for the Songliao plain. Inner Mongolia Plateau in the north is the largest natural grassland in our country. It is the green ecological defense in north China. Alashan plateau in the west is the eastern drought desert region in northwest China. Erjina oases in Alashan League, intermittently scattered forest belts and forest vegetations in Helanshan hill land have formed natural defenses in northwest China. The special geographical location and the diversified ecological environment of Inner Mongolia are not only very important to our sustainable development strategy, but also have great effects on the ecological environment of the Capital Beijing and the north China.

Inner Mongolia is vast in territory and rich in resources. There are 680,000 square kilometers utilizable grasslands, nearly l90,000 square kilometers forests, more than 60,000 square kilometers arable land. There are lots of mineral resources under ground such as coal, rare earth, oi1, natural gas, salt, alkali, ferrous metal, nonferrous

meta1 and noble metal etc., its potential value is about several ten thousand billion RMB. For many years, due to the action of the nature and human being's damage, the originally fragile ecological environment have degraded year after year. At the end of the eighth-five-year Plan, the land of desertification, gravelization, salinization, activated dunes and water and soil erosion are more than l7 million hectares, covering l5% or so of the total area of Inner Mongolia autonomous region. Desertification and semi-deserification lands have occupied 60% of the total areas in this region. The ecological environment has deteriorated, mineral resources have been wasted and the water resource is short very much, the precious species reduce sharply, and the sandstorm weather is getting worse year by year. It not only seriously has effect on the sustainable development of the economy in our autonomous region, but also becomes a big threat to the ecological security of the Capital Beijing and the northern areas.

II. The Situation of Ecological Environment Protection and Construction in the Autonomous Region in Recent Years

With the development and progress of economy and society, in recent years we are getting more deeply to realize the importance and urgency of protecting environment. The autonomous region's party committee and governments in different levels have deeply recognized that ecological environment protection and construction is a historical task for all the people and the most important infrastructure construction in the region, so they claimed clearly to strengthen the work and increase input constantly. With the powerful support of the State, we have advanced ecological construction with a high speed during the ninth-five-year Plan period: planting trees of 5 million mu annually, water and soil restoration of 5 million mu annually, grassland improvement of 20 million mu annually. The restored lands of desertification has been accumulated to 0.1 billion mu. The area of forest or grass returned from arable lands sums up to l6 million mu, and the man-made forest comes to 5300,000 hectares. Forest coverage rate increases from 7.7% at the beginning of liberation to l4.82%. The whole region firmly implements the principle of "Developing in the course of protection, while Protecting in the course of development" and the principle of "Prevention mainly, Protection first". We have taken some active and effective measures in the fields of ecological environmental protection and construction, enhancing the construction such as laws and regulations, policy, science and technology, supervision, propaganda and education, and information etc..

Firstly, we set up a group of natural conservation as a rescue action in the areas where are good ecological conditions, various bio-diversity and abundant natural culture relics. Natural conservation areas have grown up from 14 in l995 to ll4 by the end of 2001 with total area of 84,200 square kilometers, occupying about 7% of our national lands. We have started to set up ecological demonstration areas, having constructed 87 ecological demonstration sites with different levels and types. In significant

ecological function areas and very fragile ecological environment, we have built up special ecological function areas and made plans to identify important ecological restoration engineering projects.
Secondly, we invest more than 3 billion RMB in Daxinganling forest area and 29 banners and counties in organizing and implementing natural resources protection engineering.

Thirdly, we took measures of enclosing and transference and returning arable land into forest and grassland etc. in degradation and desertification areas. We have restored more than 9.7 million mu this year.

Fourthly, we started ecological construction projects in the areas where the ecological environments have been too deteriorated to recover by themselves. In 31 banners and counties we have begun the wind and sand treatment project around Peking and Tianjin. Those areas that have been treated are more than 11 million mu. In 29 banners and counties we have started ecological environment comprehensive treatment project. There are more than 5 million mu lands have been treated. The projects aimed at water and soil erosion treatment have been developed in the sections of Yellow River and Xiliaohe River areas in Inner Mongolia. With more than 2.l million mu finished. We have enhanced "Three North" protection-forest engineering. More than 4.3 million mu of it have been established. As to initial statistics, by the end of 200l, nearly 80 ecological construction projects has been arranged the whole region and started 40 projects of it, with the early-stage capital about several ten billion yuan.

Fifthly, we enhance environmental protection in the development areas of mineral resource and tourism resource. Since 1996, we have cleaned up the mineral industry procedure. 3000 illegal mining enterprises have been abolished, more than 2000 mines have been banned in the Whole region. We have recovered 405l hectares vegetation in mining mountain for. In order to enhance the protection of tourism resource ecological environment, the regional government has issued "Notice on strengthen Environmental Protection of Tourism Resources", which raised clear requirement and necessary measures to be taken.

Through organization and implementation of the above measures, the deterioration trend has been restrained preliminarily. The sandstorm in 2002 reduces obviously, and the ecological environment is getting well to some extents.

III. Keep paces with the time and innovate. Do more efforts to realize the environmental protection object of the Tenth 5-year Plan.
While we enjoy our achievements, we should acknowledge clearly that the status of environment is still serious. Environmental protection and construction is an urgent and hard work endowed by the times for us to fulfill. We should take the historic chance to strengthen environmental protection and construction further, focusing on

building well-off society and west regions development strategy closely with encouragement of the spirit of the sixteenth CPC national congress. The initial objects of ecological environment protection are: at the end of 2005, to strengthen the supervising capabilities of ecological environment protection, to restrain deteriorating trends basically, to consolidate and spread achievements efficiently. The general guideline is: firmly set up the concepts that to protect environment is to protect and develop the advanced productive forces, to protect the advanced civilization orientation and to maintain the people's crucial benefits; to handle with the relationship appropriately between the economic development and environmental protection as well as those between human being and nature; to adhere the policy of combination of ecological environment protection and construction. We will enlarge the investment in partial areas with suitable conditions to carry on the artificial construction to recover vegetations in the large area lands by means of various protection measures such as enclosing, transferring, returning arable land to forest and grass etc. The overall arrangement recently is to mainly focus in five regions: water and soil erosion and saline-alkali areas in the upper and middle reaches of yellow River, Inner Mongolia's sand sources area around Peking and Tianjin, Daxinganling natural forest resource conservation area, Hulunbeier and Xilinguole grassland protection area, and Alashan natural enclosing area. We will take four measures: One is to put the development and utility of water resource at the first position in the ecological construction and try every mean to solve the water problem, two is to administrate grassland ecological environment protection and recovering; three is to connect ecological construction with the Western Development strategy the adjustment of agriculture and animal husbandry raising peasant and herdsman's income, poor reduction and development, ecological migration etc. so as to promote the coordinate development of ecology, economy and society; Four is for science and technology to fully play the leading role in the ecological construction and raise the content of science and technology in the ecological construction; Five is to exchange and cooperate with foreign countries actively with principles of self-dependence and hard struggle.

During tenth-five-year Plan, the ecological environment protection and construction of Inner Mongolia should focus on these projects:

One is to implement 8 main ecological construction engineering: grassland ecological construction and protection, natural forest resource protection, returning arable land to forest and grass, setting up main ecological construction county, curing and protecting desertification, "Three-North" shelter-forest project, green path and water and soil conservation engineering.

Two is to establish l0 special ecological function protection demonstration areas where ecological environments are fragile or have special ecological functions. They will occupy 20% of the whole territory in the autonomous region. We should try to restrain the deteriorating trend of the ecological environment in the special ecological

function areas.

At present, the ecological function protection demonstration areas in the lower reaches of the Hei River, Kerqin sandland ecological protection district at the north foot of Yin Mountain are listed in the experimental areas of the national ecological function protection. The total area is 295,500 square kilometers. The work in the earlier stage has been started.

Three is to establish a group of natural conservation as a rescue. There are l36 natural conservation areas have been set up totally. The coverage is 93,000 square kilometers and occupies 8% of the whole territory in the autonomous region. We have also enlarged the investment in natural protection zone. By the way of developing Inner Mongolia's life diversification protection and community construction project between China and Canada, 6 natural protection zones reaching the international level will be set up in 2005. We are trying to build up the natural protection network that has been reasonably arranged, various types, scientifically administrated and can strictly enforce the law. Therefore, various natural ecosystem and important species resources could be protected efficiently.

Four is to set up a group of high standard ecological models including 2 prefectures and cities, 15 banners and counties, 500 towns (Sumu), 1000 villages (Gacha). The whole area is about 300,000 square kilometers. They occupy 26% of the whole territory in Inner Mongolia autonomous region. We'll try to make these areas realize good ecological circulation, sustainable development of economy and society, In 2001, the provincial government approved l7 ecological models to be promoted as the provincial level ones.

Five is to make and improve: "Inner Mongolia Ecological Environment Protection Regulation", “Inner Mongolia Ecological Function Plan”, “Inner Mongolia Ecological Environment Standard” and the policies and regulations concerned. To set up and perfect, the information network and supervision and management system, to improve the work conditions and means of environment protection further to develop education deeply of environment protection and to promote the sense of leaders and citizens in different levels so as to make the consistent development of economy and environment as well as the harmonious relationship between human being and nature.

Thank you!

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Remarks at the 1st Meeting of the 3rd Phase of CCICED

Yuan Fenglan
Vice Governor of Guangxi Autonomous Region

Mr. Chairman, distinguished guests,
Ladies and gentlemen:
Peace and development is the theme of our times. As mentioned in the International Nature Protection Program, desertification, ozonosphere leak, flooding, biological species extinction, famine and diseases are seriously threatening the existence of human beings. Hence, upon the entering into the new century, people have shown more concems on the environment protection and sustainable development, especially on the earth-our only homeland. The theme of this conference, Environment, Development and Government, responding to the Sustainable Development Summit, has expressed the hopes of human beings to live in harmony with nature, and promote the relationship between environment and development. I believe, this conference, will undoubtedly draw the attention and support of the Chinese people and the peoples of the world. Invited by the secretariat, I' m honored to address here the main progress in Guangxi through implementation of the China's western development strategy and Guangxi's sustainable development strategy to all guests present. I would also like to avail myself of this opportunity to extend my sincere gratitude to the secretariat, and express my heartfelt congratulations to the opening of the conference.

l. Survey on Natural Resources

Guangxi Zhuang Autonomous Region is located in the south of China, backing on the southwest of China, facing to the southeast of Asia, bordering on Vietnam and neighboring with HK and Macao, the only minority nationality region bordering with foreign countries and having coastal lines among the 12 provinces, autonomous regions and municipalities under the Western Development Region. It is the most convenient gateway to sea for the southwest of China. The total land area of Guangxi is 236, 000 square km, accounting for 2.5% of the country's total. By the end of 2001, Guangxi has a population of 47.9 million, among which the Zhuang nationality constitutes 33%. Under its jurisdiction, there are 13 prefecture-level cities, 1 prefecture, and 109 counties. Guangxi situates in the subtropical area, with the Tropic of Cancer going through its center. So it has a mild climate, with plenty of sunshine and rainfall. It is rich in natural recourses, especially in the following 5 categories.

The first is forestry, animal and plant resources. Guangxi is one of the key forest areas in southern China. Its forest areas amount to 8.17 million hectares, with a forest coverage rate of 41% and a deposit of 2770 million cubic meters of wood. There are more than 8000 kinds of known plats, ranking the third in the country. The rare plants include about 30 kinds, such as golden flower tea trees, cathay fur, redbud, etc.,

among them the red trees is one of the rare plant species growing on the beach area in southern Guangxj. Some 729 wild vertebrate land animals have been found, among Which there are 59 kinds under the state protection such as white-headed monkey and giant salamander, etc.

The second is tourist resources. The karst sceneries are abundant in Guangxi. Up till now, over 400 cultural and historical sites and scenic spots have been developed, with characteristics of green mountains, clear waters, cultural relics and historical sites, subtropical coast and a strong flavor of ethnic groups, and beautiful border scenery. The scenery in Gui1in is famous all over the world.

The third is mineral resources. Among the 160 minerals available in the world, 89 kinds have been verified in Guangxi, among which 67 kinds have been developed, and deposits of 53 types rank top 10 in the country. Guangxi is one of the 10 key non-ferrous mental production areas in China.

The fourth is abundant hydropower resources. There is a 16.09 - million – KW installed capacity capable to be developed in GuangXi, ranking the sixth in the country, among which more than 3.6 million KW have been developed, accounting for 25. 4% of the total. The Hongshui River is the richest in hydropower, with 13.03 million KW to be developed, on which we plan to built 10 stair power stations. The Longtan Hydropower station, the second largest station in the country and one of the landmark projects of the western development, is now under construction.

The fifth is marine resources. Guangxi has an area of 1005 square km of beach with soft sand, 1438 square km of shallow sea areas with a depth less than 5 meters. It boasts more than 500 kinds of sea fish, abundant petroleum and gas resources, it is also the production base of the famous south pearl.

II. Implementation of the Western Development Strategy

Guangxi is one of China's border and ethnical groups inhabiting region, within the scope of the western development region. It provides a golden opportunity for Guangxi’s further development. We will follow the important thoughts of three represents, earnestly carry out the strategies of the western development.

First, we'll folly advance the readjustment of the economic structure, carry out the strategy of reinforcing the primary industry, optimizing the secondary industry and developing the tertiary industry on a large scale. In agriculture, readjust the structure of planting and breeding, develop high yield and good quality crops, increase the peasants' income and county and township's financial revenue. AS for the industry, we will focus on technology renovation of the traditional industry, cultivate superior and potential industries, and highly develop non - ferrous mental refining, forestry product processing, and Chinese herbal medicine, electronic information industries. On the tertiary industry, We will develop tourism, communications and transportation,

business and trade service, at the same time, develop private economy and enhance its position in economic structure.

Secondly, focus on the infrastructure construction. Over the last two years, we have continued our efforts on the improvement of infrastructure facilities. To further improve the leading gateway to sea for southwest China, emphasis was given on constructing the artery highways to sea and border, promote the transport capacity of railways and the construction of harbors. By the end of last year, Guangxi has already built up 5587 km high - level roads, among which 850 km are expressway. 53 counties have been accessed to the second - level roads. There are 2715 km mileage of railways in Guangxi, and 5 airports including Nanning, Guilin, Liuzhou, Wuzhou, Beihai airprts, 3 seaports including Fangchenggang, Beihai and Qinzhou ports and 4 large river ports. A three - dimensioned transportation network (by land, water and air) and a convenient telecommunitalion network have taken shape. Continue the building of coastal dykes, flood - relieving projects of the key cities and counties and main river sections in Guangxi, with a few years' efforts, the flood - relieving capacity of Guangxi has been improved tremendously. As for the construction of key projects, the Longtan Hydropower Station, one of 10 landmark projects of the western development, Baise Hydropower Conservancy Project, and the Second Phrase Project of Oxidized Aluminum of Pinguo Aluminum Plant and other key projects. are all under construction.

Thirdly, accelerate the science & technical education development. Various qualified personnel were trained or introduced from outside to foster western development since science & technical education is the foundation while qualified personnel is the pledge. Cored with production creation, we promoted extension of the advanced technology and accelerated the integration of technology and economy. Hence, good effects were achieved. We always emphasize the education as priority. The investment of 2.6 billion RMB was injected into the educational facility improvement and the higher learning scale expansion in the last two years. A large number of qualified personnel were trained or introduced from outside. In 2001 the enrolled number of higher learning institutes or colleges students reached 151, 600 and that of Master Degree and Doctor Degree reached 3,057. Guangxi University became one of the key universities under the “211 Project”.

Fourthly, poverty alleviation and living standard improvement. Guangxi has a large poverty - stricken area. Thus, providing those poor people enough food and clothing has always been an important goal. The poverty alleviation is one of the key works for western development. Over 470,000 irrigation works, water pools and water tanks have been built in the poverty stricken areas and the drinking difficulty of 36.72 million persons was solved. 63,000km village roads for automobile and 25,000km transformed electrical wire were built. Roads construction has been completed among counties and villages. Electricity, TV and radio broadcasting accessed to every residential area. Over300,000 households were removed from huts to tile - houses.

The education and medical treatment in poor are were also improved greatly. As a result, most of people are able to live up with enough food and clothing instead of poverty.

Fifthly, concentrating on border construction. Guangxi has long been at the war frontier, badly hampered the economic development. There are 2.42 million people within 18,000 square km of ethnic residential area in 8 counties and cities bordered with Vietnam still under poverty. It is not only an intense wish of the local residents but also needs of national defense reinforce. Therefore, the priority of initial phase for implementation of western development strategy is focused on the infrastructure construction of these border areas. Since August 2000, we have invested 2 billion RMB for 18,472 projects, Fundamentally improved the living conditions of local residents.

Over the last two years, Guangxi has made a good start by implementation of the China's western development strategy. Some vital progress on economic structure readjustment was accomplished. Primary industries and characterized economy developed rapidly. There are 139.1 billion RMB of fixed assets investment accomplished accumulatively and newly-start key projects reached 46. Border construction has scored important achievements with extending science and technology usage. The poverty alleviation project of "Eight - Seven" (which means from 1993 to 2000, within 7 years to solve the poverty problem of 80 million residents in the whole country) bas been fulfilled one year earlier. In 2001, Guangxi GDP reached 223.1 billion RMB, gross fiscal revenue reached 26.3 billion RMB and fixed assets investment reached 73.1 billion RMB. In the first half of 2002, our GDP increased by 11.8%, gross fiscal revenue increased by 13.4% and fixed assets investment increased by 16%. In the past two years, although we were facing a lot of difficulties and natural disasters occurred frequently, the regional economy remained a rapid growth rate with quality and efficiency improved.

III. Reinforcement of the Environmental Protection for Snstainable Development

Environmental protection is a great undertaking contributes to the contemporary times and brings benefits for future generations. We aim at building a beautiful green garden. Environment, resources protection and economic development are closely linked to avoid pollution or destruction. As the economy developed, the environmental pollution and ecological disturbance have also been brought under control. The environmental quality in some cities have been improved.

1. Strengthen the leadership on environmental protection. We realized that environmental protection is an important function of government. While we are implementing the western development strategy, the governments in all levels played the leading role on environmental protection. Firstly, place the environmental protection and construction on top agenda to ensure responsibility, policies and organization respectively. Secondly, establish target responsibility system on

environmental protection. The leaders must take the responsibility on this regard, Every year the provincial government signed agreements of liability on environmental protection with the municipal governments. The work of environmental protection reflects the local achievements partly. The other departments are required to cooperate closely. Thirdly, raise money in multi - channel to increase the investment on environmental protection. The provincial government invested about RMB11.4 billion to the environmental treatment of the whole region, accounting 1.2% of GDP. The increase of investment results in great improvement of environment quality. Fourthly, point is to enhance promotion and upgrade of the public's awareness of environmental protection. In recent two years, we have invited the public and news media to participate in the supervision and achieved a good result by a series of activities such as exposure of illegal behavior like environmental pollution and the eco-environment.

2. Pay close attention to urban environmental protection. We gave priority to controlling total pollutant discharge amount, urban environmental infrastructure construction and energy structure adjustment, focusing on the problems such as sewage and garbage treatment and air pollution etc. By doing this, Nanning, Guilin and Beihai, three National Environmental Protection key cities, met the required quality both in water and air; Guilin city ranks the top in the State's Quantitative Inspection of the Comprehensive Environmental Treatment in four consecutive years; Nanning City was awarded "the Award of China Residential Environment", the other cities also scored a significant improvement in environmental quality. What we have done mainly in the recent year are as follows:

(1) TO effectively control the total pollutant discharge amount. Firstly, we decided to eliminate the out - of - date productive techniques and equipments, give time limit to close the heavily polluted enterprises. The amounts of pollutants in all industrial enterprises were highly required to be controlled within the discharge standard and total index. Those failed must stop production for readjustment. Secondly, all new projects and technological reformed projects should be conformed with the Environmental Impact Assessment, sticking to the regulation issued by the State Council as to that the environmental protection treatment facilities in construction projects should be designed, started working and operated with the body project at the same time, which is called "Three - Simultaneity". Thirdly, to carry out cleanly production, push the ISO14000 Verification and Environmental Label products. Fourthly, the small - scale enterprises that waste resources and pollute the environment must be shut down. Fifthly, it is a task for the government officials in all levels to preserve their local land and prevent the eliminated enterprises from moving towards the west development region.

(2) Urban infrastructure construction enhanced by western development and domestic demand expansion. In recent two years, the whole region spent almost US $200 million of foreign capital on urban environmental infrastructure construction. Firstly, Guilin city invested RMB600 million in the first phase of Environmental

Comprehensive Treatment in the project of "two rivers and four lakes", which are Li River. Taohua River, and Rong Lake, Shan Lake, Gui Lake and Mulong Lake. The project has completed 7.8 km canals that leading the water into the lake, embedded the cutting pollution pipes along the lakes and accomplished the earthwork of millions of cubic maters, which connected Li River and Taohua River to the water system of inland lake and enlarged the water surface of inland lake. The project add more sceneries to this beautiful city, making it clearer in water, green in hills and blue in the sky. Secondly, in Nanning city, an investment of RMB 800 million in comprehensive treatment of Chaoyang Brook and South Lake took preliminary effect. Thirdly, the construction of urban sewage treatment plants has been increased. At present, seven cities such as Nanning, Guilin and Beihai etc. in our region have constructed or are constructing urban sewage treatment plants. The annual domestic sewage discharge amount is 87, 43 million tons, excluding 144 thousand tons of chemi - oxygen and 1. 2 thousand tons of ammonia - nitrogen. Fourthly, the construction of urban garbage treatment plants is encouraged. By the end of 2001, there are 26 urban garbage treatment plants that have been built and put into operation, among which 17 plants apply to innoxious treatment with 1.61 million tons of annual total pollutant discharge amount and 1.41 million tons of innoxious treatment. Fifthly, urban acid rain treatment has been enforced. In 2001, altogether RMB 1 billion has been put into the projects of industrial waste gas treatment in the whole region, and 180 waste gas treatment projects have been completed, increasing waste gas discharge capacity of 6.25 million cubic meters per hour. At the same time, high sulfur content coal and raw coal burning are forbidden, and sulfur dioxide discharge amount should be effectively controlled. In the whole region, acid rain frequency dropped from 58% during the period of the Ninth Five Year Plan to 41.1%, and the acid rain area is gradually decreased by year especially Liu Zhou city, which achieves remarkable effect in terms of acid rain pollution treatment.

(3) Urban afforestation. In recent years, the governments in all levels give the priorities on urban garden landscaping as improvement of investment environment. We focus on overall landscaping, deploying the nationwide tree - planting activities, conducting the landscaping on the urban surrounding barren hills and slopes, roadsides, river – banks, city squares and residential areas. The conspicuous result has been achieved. The urban per capita forestland reached 7.47 square meters. The provincial forest and forestland coverage rates reached 31 .73% and 26.78% respectively. Nanning, the capital city was awarded the title of National Garden City.

3. Rural protection and construction. During the implementation of western development strategy, we compiled (Guangxi Ecological Environmental Protection and Construction Scheme), setting the eco - environmental task and aim. The "Green Project" we carry out involves of closing off mountain for forest conservation, converting farmland to forest land. building shelterbelt of Guangxi area in Pear River and the middle and upper reaches of Yangze, sandification treatment in rocky mountains, small river treatment, coastal and marine eco – environmental treatment,

construction of the key ecological counties etc, which cause a good effect. Since the recent years, we have finished the afforestation of 443 thousand hectares, closing off rnountains of 209 thousand hectares for forest conservation and improve the soil erosion of 226 thousand hectares. There are 1.34 million marsh gas ponds have been built and gas usage reaches 15% households of farmers. The completed natural reserves number 58 with an area of 1.7 million hectares. The provincial forest coverage rate reaches 41.8%. A group of ecological model counties like Gongcheng County have been established. In the meanwhile, we have also enhanced the contamination prevention and control on the rural farming and animal husbandry, progressively develop the green food and organic foods, ensure the pollution - free farm and sideline products.

(4) TO advance the comprehensive environmental improvement of the key areas and drainage valleys. We have been focused on improvement of the environmental problems caused strong pubic concerns and achieved some positive results. In the last two years, efforts were focused on the comprehensive improvement of Diao River, Wuming River and Nanliu River, the water quality of these river valleys were substantially improved. Nowadays, there are four rivers (Zuo River, You River, Yong River and Yu River) under comprehensive improvement for solving the water contamination. We also pay attention to the protection of the offshore ocean waters. The water of Beibu gulf has been maintained as the most purified one among the offshore areas of the country. We have completed the ecological recovery of the 21 key mining areas. A provincial radioactive waste storage has been built and a radioactive contamination control administration has been established so as to strengthen the control of radioactive contamination and hazard wastes.

With long - term endeavors, we have scored some great achievements on the environmental protection the laid a solid foundation for the economic and social sustainable development. Nevertheless, we must be aware of the harsh situation we are still facing. It would take us long - term unremitting efforts to build a good ecological environment and fulfill an ecological virtuous cycle. We must continuously devote more time to this aspect.

Ladies and gentlemen,

Guangxi is an attractive tourism area that has the evergreen mountains and everlasting rivers, and full of ethnic cultures. We have a high quality of environment suitable for vacation and sightseeing. Please find time to visit Guangxi. The Zhuang people of Guangxi are hospitable and would welcome our guests in a special ethnic manner. To conclude my speech, I would like to quote some words of a former Italian Prime Minister said during his visit to Guilin city of our region. He said: the most regretted thing of my life was that I had not been to Guangxi until the age of 73 and must tell my fellow Italians not to make the same mistake. I wish you would not make the same mistake like the Italian Prime Minister.

At last, I wish the great success of the conference**.**
Thank you all !

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Exert Every Effort in Ecological Build-up and Strive for New Superiority in Balanced Development

Huang Xiaojing
Executive Vice Governor of Fujian Province

Dear Leaders, Experts
Ladies and Gentlemen,
According to the agenda of this meeting, I will now make a statement on FuJian's social and economic development, the implementation of its sustainable development strategy and our thought for the future.

1. Basic facts of Fujian and its economic development

Fujian Province is located in the southeast coast of China, covering a land space of 121.4 thousand square kilometers and a sea area of l36.3 square kilometers. The total population of the province in the end of 2001 standed at 34.4 million. Fujian is endowed with rich mountainous and sea resources and is one of the major timber producers in China, with a forest coverage rste of 60.5%. Its vast sea space contributes to the coastal line as 1ong as 3,324 kilometers and a number of ideal natural harbors which include Fuzhou, Xiamen, Meizhou Bay and Sandu'ao, etc. Fujian is also facing Taiwan across the Strait and is adjacent to Hong Kong, Macao and Southeast Asia. It therefore has a very close tie with Taiwan, Hong Kong, Macao, Southeast Asia and the rest of the wor1d in terms of cooperation and exchanges in the fields of economy and trade. Fujian is a renowned hometown for overseas Chinese and is a major ancestrsl home for Taiwan compatriots. There are altogether 10.33 million overseas Chinese of Fujian origin residing abroad, to be more specific, 90% of them are in Southeast Asian countries, 1 million of Hong Kong and Macao compatriots are of Fujian origin and 80% of Taiwan residents have their ancestral roots in Fujian. Fujian is the spearhead in China's reform and opening up drive and is one of the ear1iest provinces opening up to the outside world. A multi-level and all-direc-tional opening pattern has taken shape, consisting of special economic zone, economic and technologica1 development zone, coastal open city and coastal economic opening area. Since we adopted the reform and opening up policies, Fujian has brought its advantages of rich mountainous and sea resources, abundant overseas Chinese of Fujian origin, special tie with Taiwan and favorable polices granted to special economic zone into full play, actively pushed forward its economic restructuring, constantly expanded areas opening to the outside world, maintained rapid economic growth and strengthened its overall competitiveness. The GDP of the province has grown up to hit RMB 425.837 billion yuan in 200l from RMB 6.64 billion yuan in l978, averaging an annual growth of 13.2%. The total economic value and GDP per capita of the province have climbed up to rank 11th and 7th respectively in 2001 from the original 22nd both in 1978. With its rapid economic development and

the expanding of opening up drive, Fujian's foreign trade and economic cooperation have kept an upward momentum of growth. In the period of the 9th Five -year Plan of Social and Economic Development, the export of the province averaged an annual growth of 10.3%, the export volume in 2001 scored USD 13.926 billion. In the same period, the province has accumulatively made use of foreign capital worth USD 20.315 billion. In 2001 only, foreign capital that has been put into actual use reached USD3.918 billion. This year the province also witnessed the forceful growth in its economy. According to statistics, the GDP of the first 10 months reached RMB 357.676 billion yuan, increasing by l0.9% over the same period of the previous year. Foreign trade volume totaled USD 23.081 billion, up 26.8%, among which USD 14.096 billion went for export, a growth of 24.6 % over the corresponding period last year. The contracted value of foreign investment reached USD 5.064 billion, increased by 26.1%, with a paid -in capital of USD 3.674 billion, up l4.2%. It is estimated that the growth rate of GDP this year would be about 10%.

2. Make unremitting efforts in environmental protection and achieve noticeable progress in ecological huild –up

To build the province into a powerful one economically and to make people rich have always been the top task. While developing our economy, great importance has been attached to sustainable development and environmental protection, so as to improve ecological quality and to promote coordinated development of man and nature and harmonious progress of man and society in ways of marketalization, intensification, openness and sustainable development.

1) Stress the combination of environmental protection with economic restructuring and cut down the total discharge of pollutants.

To protect and build a sound ecological environment is a basic principle that is to be adhered to in the upgrade of industrial structure. In the efforts of adjusting and upgrading industrial structure, much attention has been paid to properly deal with the relationship between immediate and long term interests, partial and overall interests, industrial development and the protection of ecological environment. By vigorously fostering and developing ecological friendly economies and the green industry with own characteristics, the sustainable competitiveness is therefore enhanced. Through economic restructuring, outdated technologies and equipment were eliminated, small enterprises with high waste of resources, heavy pollution and low profit were banned, the environmental quality is thus improved and the pollution decreased. In 2000, the total discharge of all major pollutants is controlled within the target set by the central government for the 9th Five-year Plan period and was further cut down in 2001. The reduction rates for major pollutants are as follows: 13.5% for sulphut dioxide, 19.8% for industrial dust, 14.7% for smoke and dust, 3.9% for chemical oxygen demand, 3.9% for industrial solid residue. The EIA system is carried out strictly and projects with high consumption of resources, heavy pollution and low return would not be

approved. Thus, new pollutant sources are prevent from their root causes and much more environment capacity is left for development of little pollution and bigh return industries.

2) Attach equal importance to pollution prevention and ecological protection and make fresh progress in the protection of ecological environment.

We have conscientiously implemented the “Essentials on State's Ecological Environment Protection” stipulated by the State Couocil and actively protected major ecological function area, key resources development atea and ecologically sound area in accordance with the principles of different guidance and protection measures for various ecological areas. We have tightened the envitonmental protection in towns and rural areas and put the pollution generated from livestock husbandry under control. Efforts have been made to rectify mining industry, harness effluent of breeding industry, bring the soil and water erosion under control and plant ecological forests. With its forest coverage ranking forefront in the country, a forest ecological system has initially built up in the province. The green area in dykes along rivers and urban area reacbed 60% and 33.l2% respectively and the per capita green space stands at 7.73 square meters. The ecological -related economy in the province develops in a steady manner. Pilot bases for green and organic foodstuff production and ecological friendly industry demonstration area are established, a batch of products are approved as green and organic food and enterprises and organizations have passed and been authorized the ISO14000. The output value form the environmental related industry totaled RMB 6 billion yuan. The city of Xiamen is awarded the title of ‘International Garden City’, ‘State’s Model City on Environmental Protection’ and ‘State’s Garden City’. The city of Sanming is also awarded the title of ‘State’s Garden City’. In addition, the cities of Fuzhou, Zhangzhou and Quanzhou are cited as ‘Provincial Garden City’. The established nature reserves, tourist areas, forest parks and small-scale nature reserves in the province account for 8% of its total land mass, including 6 nature reserves at state level and another 25 at provincial level, 10 ecological demonstration areas at state level and l3 at provincial level. The Mountains of Wuyi is granted as the World Natural and Cultural Heritage by the UNESCO.

3) Efforts are exerted to tackle hot spots and knotty problems of common concern in environment and make noticeable improvement in river valley and regional environment quality.

In recent years, we have put the control of river valley, regional and industrial pollution as our most important work. Pollutant discharge of key enterprises with beavy pollution has basically satisfied the set requirement. Air and ground water quality in major cities have met the requirement of functioning area. The treatment of Minjiang River valley, emission of benzene -related fumes of shoe -making industry, dust of cement industry and smoke of ceramic industry have been completed on schedule. Achievement has been made in bringing the water environment of major

river valleys of Jiulogn River, Aojiang River, JinJiang River and Mulanxi River under control. Progress has also been made in cutting down the discharge of automobiles by ceasing the production, selling and using of doped fuel and replaced with unleaded gasoline. In 200l, 90.5% of 12 major water systems in the province has met or exceeded the requirements of Grade Three water quality standard, up 67.5 percentage point over that of 1995. Air quality in cities has improved year by year. In 2001, air quality index of 23 cities in the province is 0.6l, better than the previous year by 12.8% and basically met or exceeded the requirement for Grade Two air quality National Standard. The acid content in precipitation and acid rains have dropped and district and communications noise have eased.

4) Strengthen legal system build -up and tighten law enforcement related to environment.

We have adhered to the principle of protecting environment, using resources and controlling pollution in accordance with the law. We have promulgated and revised "Laws and Regulations on Environmental Protection of FuJian" which includes compulsory measures of law enforcement, the first one of its kind in provincial legislation among all the provinces in the country. Local laws and regulation such as" Regulations on Pollution Prevention and Ecological Protection of Jiulongjiang River Valley", Regulations on Protecting the Source of Aojiang Rive Valley" and Regulatiuons on Nature Reserves of Fujian' have been enacted. Campaigns such as 99' Environmental Protection, 2000 MinJiang River Environmental Protection had been carried out. Specialized movements of investigating and punishing severely environmental related malpractice in 2001 and that of checking the resurgence of such malpractice in 2002 have been implemented. Enterprises with heavy pollution are closed down and those who can not satisfy the requirement are to be ceased production for rectification. Malpractice that would jeopardize environment and ecosystem will be cracked down according to law. '110' social joint service concerning environmental protection and hotline '12369' are put into operation for investigating and punishing illegal cases and tackling environmental issues, therefore general public's legitimated rights on environment are safeguarded.

2. Bring the economic and social sustainab1e development forward in a down -to -earth manner under the guidance of the spirit of the 16th CPC National Congress

The just concluded 16th CPC National Congress agrees with the objectives of building a well -off society in an all round way with sustainable development as a key element. The Party congress put forward that we shall take the civilized development way of growing production, better-off livelihood and sound ecology with constantly increasing capability of sustainable development, improving ecosystem, raising effectiveness in resource using and harmony between man and nature. This has an important bearing in our implementation of sustainable developrnent strategy. Under

the guidance of the spirit of the 16th CPC national Congress and the "Three Representatives", we shall carry forward the sustainable development strategy, strive for new superiority in coordinated development, further improve aggregated economic power and build a well-off society in an all round manner by implementing the three key strategic passages for development set by CPC Fujian Provincial Committee, namely, to expand cooperation between mountainous and coastal areas, to establish links with provinces in the interior of China and to further open to the outside world.

1) Clarify the aim and task of ecological construction.

We should correctly handle the relationship between economic development and envirortmental protection, set up a scientific idcology of development, build a favorable environment and improve the ability of the economic and social sustainable development in earnest. Starting from the actual situation of the environment, the natural resources and the economic and social development in Fujian, the CPC FuJian Provincial Committee and the Provincial Government of Fujian have made a strategic disposal of constructing Fujian as an ecotype province, worked out a construction planning compendium of an ecotype province, and fixed on an overall aim of the construction of an ecotype province. Going through three stages of starting, promotion and improvement, we will establish six major systems as follows: a harmoniously developing economic system of eco-beneficial type, a resource-guarantee system for inex-haustible use, a natural and harmonious living environment system for township residents, a rural ecosystem in virtuous circle, a stable and reliable eco -safety insurance system, and an advanced and efficient system of scientific and educational support and management and decision -making. Through the following 20 years of great efforts, we will make FuJian into a sustainable developing province with an eco-beneficial developed economy in which the people and the nature coexist in harmony, a beautiful and comfortable living environment for both urban and rural residents, inexhaustible-using natural resources, a thoroughly optimized and civilized ecosystem, and a charming landscape.

2) Strengthen the program support for ecological construction.

Encircling the six major systems for eco-type province construction, we have put forward 98 influential programs of 34 varieties, which will be executed by emphasis during the Tenth-Five Period. The total investment of the programs will hit USD 7l.6 billion, including USD 37 billion is to be put into operation during that Period. Inside the eco-beneficial economic system, there are a safety production project for agricultural products, three eco-industrial zone construction projects, and northwestern Fujian green eco-tourism projects, etc. Inside the resource-guarantee system, there are the project of national forest construction for public benefit in 57 counties of Fujian Province, oceanic natural protection zone constructing project in 5 cities and the project of eco-restoring of the major mining areas in the province, etc.

Inside the system of living environment for township residents, there are projects of l9 harmless treatment spots for urban rubbish, 33 treatment factories for urban sewage and the greening-up of the urban gardens, etc. Inside the system of rural eco-environment, there are projects of the promotion of the residential use of 150,000 methane-generating pits, the construction of 300 sites of energetic environment, the treatment of a 4,000 square-kilometer area of watet-loss and soil-erosion, and a 3,000 hectare area of mountain-collapsing erosion, and the treatment of "the white spots in green mountains" and restoring the vegetation, etc. Inside the system of ecological safety protection, there are projects of the embankment of "five rivers and one stream", the fourth session of coastal shelter-forests, the first session of the riveride ecological forests protection, and the third session of the medium-size pre-warning system of disastrous weather, etc. Inside the system of scientific and educational support and management and decision-making, there are significant projects of ecology-related scientific and technological strategic pass like the warehouse for oceanic living fungus, the network for the monitoring and examining of eco-environment and information system, etc. We will make adjustments and supplement to the projects in time according to the requirements of the changing situation.

3) Forge and enlarge environment-friendly enterprises.

We are constructing a well-off society in an all-round way, so we will supply the environment-friendly enterprises with wider space for development. We will grasp the favorable opportunity, and offer more and stronger support so as to accelerate the development of the environment-friendly enterprises in the province. We will encourage a series of producers of environmental protection equipments in air purification, water treatment and harmless treatment of rubbish, to have the market as the guidance and develop a environment-friendly industry in which the scientific and technological content is high, the economic benefit is great, the expense of resources is low, the environmental pollution is little and the advantage of human resources is fully exploited. We will put emphasis on developing environment-friendly products with the prevention and treatment technology of polluted water and air, the treatment and storing of waste and the production of environmental protection monitoring and examining meters and instruments as the core. We will develop the technology for desulphurization dust-clearance of the smoke and steam emitted by coal-generating power stations, the treatment of urban sewage, the treatment of medical waste water, the concentration treatment of solid waste and the treatment of urban rubbish, and the equipment like catalytic purifying instrument for car tail exhausts. We will organize to execute a series of demonstration projects of environmental protection, and reform the traditional industries by using new hitech and "the Green Technology" to develop new energy and recyclable energy. In the meantime, we will vigorously explore the road of industrialization and steer the environment-friendly enterprises and all kinds of investment subjects into an ective participation of the construction of infrastructures for urban environmental protection. In recent years, we have put out policies of the industrialization of the treatment of urban rubbish and sewage, so as to arouse the

enthusiasm of environment-friendly enterprises and all kinds of inyestment subjects and thls has made preliminary achievements. We will promote this method and constantly put out new policies to make the environmental protection industry into the investment focus of environment-friendly enterprises and all kinds of investment subjects, and change the old mode of sole investment and operation of the government into a new structure of pluralization, market operation and corporate management.

4) Promote the coordination and harmony between mankind and nature.

We will have tbe improvement of environmeatal quality and the realization of the harmonious coexistence of mankind and nature as our main task when executing sustainable development. We will introduce and absorb circing econornic thoughts, aim at the establishment of a scientific and reasonable circling economic system. Centered on strategic adjustments to the economic structure, we will improve the level of the development of traditional industry by clean production. We will accelerate the adjustments to the structure by washing out the backward productivity, and encourage the rising of regional industrialization by building eco-industry demonstration gardens. We will strengthen the comprehensive competitiveness of agricultural products by developing eco-ragriculture, and improve the taste of tourism industry by developing eco-tourism resources, so as to develop the eco-economy vigorously, Sticking to the basis of mankind, we will build living eco-environment and improve the taste of urban and rural environmental construction by constructing "International Garden City", State's Model City of Environmental Protection, eco-city, eco-demonstration zone, eco-community and eco-township, etc. We will accelerate the pace of the construction of the infrastructures for the treatment of sewage and rubbish, etc. Up to 2005, there will be at least one sewage treatment factory and one rubbish harmless treatment site in every municipality of the province, and the urban sewage treatment rate will reach 45% and the rate of the rubbish harmless treatment will be over 90%. We will strictly execute the controlling goals of environmental quality and the total emission of pollutants, make great efforts in the comprehensive treatment of the water pollution around major rivers and the ecological destruction and consolidate and improve the achievements of the treatment of industrial pollution. We will promote the establishment of civilized and advanced eco-culture, forge public eco-civilization ideology, further dredge the ditches of the publication of eco-environment information, perfect the regulation of public repart, and protect the public right of being informed of the environmental situation in accordance with law.

5) Guarantee the safety of the eco-environment.

The protection of environment and resources, the maintenance of eco-logical virtuous circle and the guarantee of eco-environment safety have gradually become the necessity of the modern drives in the province. We will adopt practical measures and execute regional division of protective strategy, firmly control the exploitation of natural resources and guarantee the mexhaustible usage of resources through a

complete execution of “Essentials on State's Ecological Environment Protection”. We will accelerate the construction of forest ecological projects, improve the ability of self-restraint of water and soil, strengthen the treatment of water and soil loss and restore vegetation and set up new vegetation. We will improve the comprehensive treatment of the water pollution around the Minjiang River, the Jiulongjiang River, the Jinjiang River, Aojiang River, the Tingjiang River, the Mulanxi River and the Jiaoxi River and the ecological destruction, and promote the environmental protection and comprehensive treatment of the major sea areas of Meizhou Bay, Xiamen Bay and Fuzhou Port and major munipalities like Fuzhou, Xiamen, Quanzhou and Zhangzhou. We will also perfect the disaster pre-warning and prediction system and build up an eco-safety protection system.

6) Implement the regulation of governmental leadership commitment.

Governments of all levels will put sustainable development into the regulation of goal commitment for executive chiefs, forming a working structure in which there is level -division management of the province, the cities and the counties, the coordination of different departments, the cooperation between the higher and lower levels and a virtuous circle, thus realize the implementation of commitment, measure and investment. We will categorize the capital for eco-protection and construction into the budget of the very level, and establish the regulation of co-seat meeting for the usage of substantial eco-environment capital, so as to have an overall control of the usage of eco-environment construction and protection capital. We will accelerate the establishment of a pluralization investment system to promote the eco-construction and environmental protection developing towards industrialization. We will strengthen the establishment and execution of laws, and have severe punishment on the illegal deeds connected with the environment and the wrongdoings of ecological destruction, and thus put eco-construction onto the road of ruling-by-law. Furthermore, we will make full use of all kinds of effective publicity media and methods, improve the ideology of sustainable development among governmental officials of all levels and the overwhelming mass, motivate and exploit the initiative and creativity of the great mass, and make the departments of all levels and the whole society take part in the construction of ecotype province consciously.

Work Report of CCICED Secretariat

Mr. Zhang Kunmin
Secretary General, CCICED

November 23, 2002

Your Excellency Mr. Chairman, Vice Chair, Distinguished Members, Co-Chairs of Task Forces and Dear Guests,
Ladies and Gentlemen,

On behalf of the Secretariat, I would like to give a brief report on how the relevant central government departments and local governments adopted and implemented the recommendations made by the fifth Meeting of CCICED Phase II (hereafter named The Recommendations"), the preparation of CCICED Phase III, the work of the Secretariat as well as the financial statement of CCICED.

I. Implementation of Recommendations by Relevant Departments and Local Governments

By the end of September 2002, the Secretariat has received feedbacks and reports from 16 central government departments and 12 provinces, autonomous regions and province-level municipalities. These central government departments include State Development Planning Commission (SDPC), State Economic and Trade Commission (SETC), Ministry of Science and Technology (MOST), Ministry of Finance (MOF), Ministry of Land Resources (MOLR), Ministry of Construction (MOC), Ministry of Transportation (MOT), Ministry of Water Resources (MOWR), Ministry of Agriculture (MOA), Ministry of Foreign Economic Cooperation and Trade (MOFTEC), State Environmental Protection Administration (SEPA), State Forestry Administration (SFA), Chinese Academy of Sciences (CAS), State Meteorological Administration (SMA), State Oceanic Administration (SOA) and State Power Company. The provinces, autonomous regions and

province-level municipalities mentioned above include Beijing, Tianjin, Hebei, Inner Mongolia, Liaoning, Shanghai, Jiangsu, Jiangxi, Shandong, Hainan, Chongqing, Guizhou, Xizang, Shaanxi and Qinghai.

These responses and reports indicate that the recommendations are closely relevant to the environmental protection and sustainable development in China and play an active role in promoting this process. Indicative of this are some examples that follow. In June 2002, the National People's Congress (NPC) examined and adopted the *Law for Promoting Cleaner Production,* which will be enacted from January 2003. In October 2002, NPC also adopted the *Law of Environmental Impact Assessment*, which will enter into force from September 2003. By then, the cleaner production and environmental impact assessments in China will abide by these two legal instruments. The State Council has in principle endorsed the *Regulation Concerning Collection, Management and Use of Pollution Levies*. The relevant departments are actively formulating the related rules and procedures for enforcing this regulation, which will lay a good basis for reforms in the environmental taxation. A separate item for environmental protection has been established in the central government budget with the aim to increase year by year the public investment in the environmental protection. The central government has allocated more than 20 billion yuan for the projects on wastewater treatment, dust removal and desulfurization of flue gas, recycling and reuse of solid wastes, technical renovation for conserving energy and reducing consumption and demonstration projects in cleaner production in the sectors like metallurgy, nonferrous metals, building materials, chemical industry, power generation and paper making. Every year the central government places an investment of 100 million yuan into the small public benefit projects for rural energy. In addition, the central government has allocated 200 million yuan for the capacity building to establish a national network of research on ecosystems, which aims to upgrade the national capacities of monitoring, research, demonstration and consultancy in this field. As a result of the efforts in the past three years, 2.16 million hectares of arable land has been returned to forest land-use, with the forest coverage increased to 16.5%. Many local governments have also

studied very seriously and adopted the recommendations made at the fifth session of CCICED Phase II. For example, Tibet Autonomous Region, which is located at the southwestern part of China, gave full consideration to and adopted some parts of the recommendations when formulating and implementing its tenth five-year plan for social and economic development. In conclusion, there were a range of areas and issues covered in the responses and reports provided by the above-mentioned central government departments and local governments. For your information, the Secretariat has compiled these responses and reports as Annex I to this report.

II. Preparation of CCICED Phase III

The preparation of CCICED Phase III started in 2000. I am pleased to inform you that the preparation has been going on very smoothly thanks to the joint efforts and support of both international and Chinese sides.

The guiding principle identified for preparing CCICED Phase III is that this phase will build on the two previous phases and promote the sustainable development of China in a more effective and integrated way. The various sides concerned had a chance to summarize and assess seriously their experience working with CCICED through a self-assessment of the eight-year work of CCICED, which was completed in 2000. A great number of members, working group co-chairs as well as the relevant institutions and the mass media had a chance to undertake discussion and exchange of views in this regard. In this process, many of you had contributed a considerable number of suggestions and proposals for further improvement of CCICED. Thus, improvements and reforms will be introduced to this phase of CCICED while building on its past successes and maintaining its uniqueness. I would present these proposed improvements and changes as follow.

- Composition of the Bureau

To increase the representation of the international side in the Bureau and strengthen contacts with all the Council members, it was proposed following consultation with

various sides that a Vice Chairman from the international side be added to the Bureau. Among the Bureau members, Mr. Xie Zhenhua, Minister of SEPA and Mr. Good, President of CIDA, will act as the Executive Vice Chairs representing the Chinese and international side respectively and take charge of the decision-making and management of CCICED on a routine basis. Meanwhile, it was proposed that a new position in the Bureau be given to the Project Coordinator of the Secretariat Canadian Office to make its work easier.

- Streamlining the membership

There are 40 or so members (20 or so for the Chinese and international side) sitting on CCICED Phase III. So the total number of members has been reduced by over 10, compared with that of Phase II. Among the international members, there are 13 old members and 7 new members. Among the Chinese members, there are 8 old members. It should be noted that 40% of the Chinese members are selected from the scientific and educational communities.

- Selection of lead experts

It was proposed that Professor Sun Honglie and Dr. Hanson be selected as lead experts to strengthen the planning and coordination in the policy studies. A small working team will be provided to help with their work. Their main responsibilities have been identified as follow:

1. To examine the proposals presented by each task force;
2. To identify the areas that need to be urgently studied by CCICED;
3. To prepare the Issue Paper for the annual meeting of CCICED;
4. To propose themes or topics for discussion at each annual meeting of CCICED.

They may undertake other matters entrusted to them by CCICED.

- Fund-raising of core funds

After several rounds of discussion with main donors of CCICED, such as Canada, UK, Sweden, it was proposed that a Core Fund be established for CCICED Phase III. To establish this core fund, we welcome the donations and contributions in various forms from all donors to support the work of CCICED and achievement of its goals and objectives. The funds in the Core Fund that are not dedicated to particular work by the donors will be allocated to those task forces that need financial support, in accordance with the relevant decisions of the Bureau. The Core Fund will be managed by the CCICED Secretariat or Canadian Secretariat in accordance with the rules adopted by all the donors to CCICED or the internationally adopted rules for fund management. Transparency and cost-effectiveness will be increased in the management and use of these funds. To some donor countries that may not be able to contribute to the core fund due to their domestic regulations, we welcome them to continue providing funds to those task forces they are interested in working with. Meanwhile, we encourage all donors to earmark 3% to 10% of their donation or contribution for the annual meeting of CCICED and other activities that may need some funds.

- Reform in research mechanisms

This phase of CCICED will replace the relatively stable working groups with the more flexible and issue-oriented task forces to undertake policy studies and demonstration projects. The research topics of each task force will be determined following the recommendations of the Chinese government. They will have to be examined by the lead experts and approved by the Bureau. The duration of each research activity will not exceed 24 months in most cases. All the proposals for the proposed task forces will be submitted to the lead experts for evaluation, which will work out a list of priorities and present them to the Bureau for endorsement.

To ensure that inputs will be provided to the first meeting of CCICED Phase III and allow the task forces to have adequate time to work on relevant issues, 7 task forces have been established with the approval of the Bureau prior to this session. They include the task forces on WTO and Environment, Bio-Safety, Strategic and Mechanism Studies for Promoting Cleaner Production and Life-Cycle Economy, Environmental Industry Development, Mechanisms for Financing Urban Environmental Infrastructure Construction, Corporate Development and Environment, Energy Strategy and Technology. The task forces on forest and grassland in Western China and Environmental Economics, which will present their reports at this meeting, do not belong to this list since they just continue their work mandated by the Phase II. Meanwhile you will hear reports from the two newly established task forces: WTO and Environment and Bio-Safety. The reports from 5other task forces will be presented at the next Annual General Meeting in 2003.

Currently we are considering the establishment of the task forces that can contribute to the elaboration at the annual meeting in 2004. We hope to receive your comments and proposals in this regard, particularly the areas to be studied and the task forces that you think should be established.

III. Main Work of Secretariat in the past year

The Secretariat undertakes the following in addition to its routine work, under the guidance of the Bureau.

1. Collecting responses and feedbacks to the recommendations of CCICED.

The Secretariat takes as its first priority the implementation of the recommendations. Immediately after the closing of the fifth Meeting of CCICED Phase II, the Secretariat transferred the recommendations to the relevant departments of the State Council and all the provinces, autonomous regions and province-level municipalities. We have received written responses and reports from some central government departments and local

governments prior to this meeting concerning their implementation of the recommendations. Just now I had briefly reported on this and will not repeat here. Generally, we find that responses to the recommendations improve year by year. We find that the recommendations are being disseminated and implemented in a wider range of departments and governments, both central and local, particularly those departments responsible for economic development and natural resources management. The governments at all levels pay more and quicker attention to sustainable development in their decision- making. This is the ultimate objective of the work of CCICED.

2. Preparing for CCICED Phase III and its first annual meeting

I have mentioned earlier the preparation of CCICED Phase III and will not repeat. To prepare the first session of CCICED Phase III, the Secretariat has done three things.

The first thing was to identify the theme for this session. After consultation with the core experts and the approval by the Bureau, the theme selected for this Meeting is ***Environment, Development and Governance-Responses to WSSD***" considering that this Meeting is held soon after WSSD. (By the way, we have not found a proper Chinese translation for the word of governance", so here "government" is used temporarily considering WSSD is convened by the United Nations.)

The second thing was to draft and revise the *Draft Terms of Reference for CCICED Phase III* and the *Draft Rules of Procedures for CCICED Phase III*. This morning CCICED had endorsed in principle these two documents.

The third thing was to select the lead experts to prepare the *Issue Paper* and the *CCICED Recommendations* for this Meeting. The Issue Paper is one of the new reforms introduced to CCICED Phase III. The purpose of preparing such a paper is to provide more background information and latest developments to you all and facilitate the elaboration on related issues. As required by the reform, the lead experts and their working team

prepared the Issue Paper for this session based on the synthesis of the work reports of related task forces and their research results. Meanwhile the lead experts have drafted the Recommendations based on the theme for this session.

3. Disseminating CCICED experience in connection with WSSD

UNDP proposed last year that the experience of CCICED be introduced to WSSD to expand its influence in the international community. Following the guidance of the Bureau, the Secretariat produced a brochure of CCICED and a CD-ROM entitled Ten-year Achievements of CCICED", which were disseminated at WSSD with the help of China National Committee for Preparing WSSD. As we learn from the responses to these publications, they played a positive role in disseminating the information concerning the progress made in China in the field of environment and development as well as some successful models of international cooperation in this field.

4. Supporting international workshops or working meetings of different task forces

From October 2001 to November 2002, altogether 7 task forces organized 8 international workshops. During the same period, 7 task forces convened their working meetings. The Secretariat supported and participated actively in these workshops and meetings to facilitate their work and the dissemination of their research results.

IV. Financial Report of CCICED

The third phase of CCICED has won continued, strong support from both the Chinese Government and the international community. The funds pledged up to now include 10 million yuan provided by the Chinese government on a five-year basis, 8 million Canadian dollars provided by the Government of Canada to the related task forces and other activities of CCICED on a five-year basis, 1 million Euro provided by the Government of Germany (80% for the activities of the task forces and 20% for other activities of CCICED), 355,000 USD provided by the Government of Japan for the task forces on financing and investment and related activities of CCICED, 10 million yen by Japan as well to the task force on cleaner production and life-cycle economy, 600,000

USD by the Government of the Netherlands (300,000 USD to support the task force on corporate development and environment). In addition, the Chinese Government will provide in kind support worth 25 million yuan in the next five years.

In the past year, the Secretariat has explored various channels and sources to raise funds for various task forces and CCICED activities. By now, the Asian Development Bank has indicated that it would provide 85,000 USD to CCICED. Shell Company plans to contribute 72,000 USD to CCICED. The Government of Switzerland has indicated its willingness to provide financial support to the work of the task force on WTO and environment. The Government of Sweden has indicated its willingness to contribute to the proposed Core Fund. The detailed financial report has been prepared by the Canadian Secretariat of CCICED and will be presented as Annex II to this report.

- **Annex 1**

- **Annex 2**

Exit

Terms of Reference of CCICED Phase III

(Adopted by the 1st Meeting in November 2002)

Summary

1. The China Council for International Cooperation on Environment and Development (CCICED) is a high level, non-governmental international advisory body established in 1992. After 10 years of effective work during its first and second phase, it has successfully fulfilled its expected objectives, fostered cooperation between China and the international community in the field of environment and development, and created extensive and far-reaching impact both nationally and internationally.

2. In the past 10 years, the Council and its Working Groups (Task Forces) have made a number of valuable recommendations to the Chinese Government in light of China's practical situation. These recommendations attracted high attention from the Chinese Government. They were seriously considered, and some were adopted. This is a significant contribution to China's environment and development.

3. At the time when the Second Phase of CCICED is coming to an end, people from various sides have recognized unanimously the value and important role of CCICED, and agreed to continue their support for another phase of CCICED. The Chairman of the Council has clearly stated that, since its establishment, CCICED has provided strong support for the scientific decision-making of China in the field of environment and development. In the new Century, the Chinese Government will continue to support the work of CCICED. Therefore, it has been decided that CCICED (Phase III) should be established with adjustment of Chinese and international members and necessary reforms.

4. Given the change of situation in the field of environment and development in China as well as the shift of focus of the Council, and on the basis of the lessons learned during the first and second phase, CCICED (Phase III) will drop the "Working Group" mechanism and replace it with the more flexible and focused-mandate "Task Force" mechanism. At the same time, the capacity of the Secretariat to improve coordination among the Task Forces and tackle technical matters will be enhanced. In order to improve the impact and extend the influence of its recommendations, the Council will establish a multi-channel mechanism for

the collection, presentation and dissemination of the recommendations.

5. Based on Phase I & II, Phase III of CCICED will continue to make the Council's recommendations more practical, feasible and suitable for China's situation. Necessary policy demonstrations and project demonstrations should be carried out in key areas. In light of the changing situation in the field of environment and development, recommendations should also be made to the Chinese Government on how to adjust existing strategy and what counter-measures to take.

6. This Terms of Reference is based on the Terms of Reference of Phase I & II. The nature, goals, organization, and procedures of the Council as defined in the Terms of Reference of Phase I & II will continue to be effective, and will therefore not be reiterated here. This Terms of Reference only modifies and complements a number of key contents of the Terms of Reference of Phase I & II.

I. Objectives and Tasks

1. CCICED (Phase III) will adhere to the goals defined by CCICED (Phase I & II). In the meantime, it will, in accordance with China's 10th Five-Year Plan as well as the objective of building up a comprehensively well-off society in 2020 and long-term plan beyond, provide more practical policy recommendations, technical support and demonstration experience to the Chinese Government. It will assist the Chinese Government in promoting its implementation of the sustainable development strategy, adopting "win-win" strategy for environmental protection and economic development, achieving sustained growth of national economy and continuous improvement of environmental quality, continuing to play the international role of a responsible big country, and creating a cleaner, safer and sustainable future.

2. The objectives of CCICED (Phase III) are to:

    1) provide strategic advice and policy recommendations to the Chinese Government on how to ensure sustainable economic growth, protect and improve China's environment, and safeguard long-term supply and safety of energy and natural resources;
    2) foster international cooperation between China and the international community on critical issues of environment and development, such as relevant planning, projects, scientific development, technology transfer, and training, etc;

3) provide advisory service to the Chinese Government on important decision-making in the field of environment and development, and assess the economic, social and environment impacts of such decision-making;
4) provide the Chinese Government with international experience in the field of environment and development in the context of globalization, information technology, and scientific & technological renovation, and at the same time assist China in introducing its accomplishments and experience to other countries;
5) help enhance China's capacity in participating in negotiations of international agreements aiming to alleviate global environmental problems; and
6) play an advisory and assisting role in promoting public awareness and public participation in environmental protection.

3. While basing itself on the accomplishments and policy recommendations of the previous two phases, CCICED (Phase III) will make the policy recommendations of the Council more practical, carry out more in-depth and more extensive demonstrations, and propose new recommendations of strategy adjustment in light of a changing situation. Priority areas for research at the starting period of Phase III could include, but by no means be limited to, the following: comprehensive impacts of climate change; environmentally friendly energy strategies and demonstrations; trade and environment; prevention and control of non-point sources pollution in rural areas; environmental input mechanism; biodiversity conservation and bio-safety; environmental impact assessment for development policies, planning and regional development; cleaner production demonstrations; development of environmental industries; ecological conservation and restoration; public participation; Rio+10 action; etc.

4. A theme will be selected for each annual meeting of the Council to debate. The recommendations by the Council Meeting will include 2 parts: the first part will be recommendations on the annual theme, the second part will be specific recommendations by the Task Forces.

II. Organization and Procedures

1. The duration of CCICED (Phase III) will be 5 years (from April 2002 to March 2007).
2. The Council will consist of about 40 high-level Chinese and international members. Chinese members will be ministers, vice-ministers, eminent scientists. International members will be of comparable status. The Council Chair-ship will be held by a leader of the State Council of China. The Vice-Chairs will be

nominated and invited by the Chinese government, with agreement by the Council Meeting.

3. Normally the term of Council membership is 5 years. However, a Council member who is absent from Council activities for 2 consecutive years forfeits his (her) membership automatically. Under special circumstances (for example, a Council member changes his/her current position within his/her own organization), adjustment could be made on the Council membership with approval from the Bureau of the Council.

4. In principle, the Council Meeting will be held once every year. If necessary, the Council Chair could call special meetings after consultation with other Bureau members.

5. Officials at central and local levels, experts, entrepreneurs, NGOs, and representatives of international institutions, who are associated with the work of the Task Forces or the theme of the year, may be invited as special guests or observers to attend the annual Council Meetings or special meetings.

6. The proposals, recommendations and comments of the Council should be submitted to the Chinese Government and disseminated to greater audience through various channels, so as to foster their researches, adoption and implementations, as well as extending the influence of the Council. Such channels should include, but not be limited to, the following:

    1) The Chairman of the Council submits them to the State Council and the relevant government departments
    2) The State Environmental Protection Administration submits them to the relevant departments
    3) The Secretariat of the Council forwards the recommendations of the Task Forces to the relevant departments
    4) Other channels, such as the media, news conferences, workshops, website, and publications, etc, should be utilized to disseminate the Council's activities and recommendations to greater audience

III. Arrangements for Advisory Work

1. The work of the Task Forces shall serve as the basis for the Council's advisory function. The mandates of the Task Forces will be defined according to the

objectives and tasks of the Council. Decisions to establish or disband Task Forces should be based on careful assessment and coordination, and subject to the Bureau of the Council.

2. In order to meet the needs of phase III, the Secretariat should enhance its capacity to carry out relevant tasks, such as: selecting themes for the annual Council Meeting; coordinating activities of Task Forces; organizing relevant assessment meetings; preparing for the establishment of new Task Forces; assessing the accomplishments of Task Forces; and, monitoring the effectiveness of the Council's recommendations, etc. As for the work related to scientific area, it will be carried out by inviting Lead Experts and their assistants.

3. Council Members could propose to establish new Task Forces in light of China's actual situation in the field of environment and development. In order to ensure the effectiveness of research and demonstrations, the establishment of any Task Forces should be based on careful assessment, and is contingent on appropriate available expertise and sufficient funding support.

4. A Task Force shall be co-chaired by one Chinese and one international expert. The Co-Chairmanship of a Task Force should be approved by the Bureau of the Council. The Co-Chairs of a Task Force shall be responsible for selecting the members of the Task Force, and should report their decision in that regard to the Bureau for record-keeping after consultation with the Secretariat of the Council. In principle, the number of members for each Task Force should be 3-5 on each of the Chinese and international sides.

5. A Task Force should have clear objectives, tasks, work plan and work schedule. It should submit annual reports to the annual Council Meeting. While completing its annual work plans, a Task Force is encouraged to provide recommendations on the theme of Council Meeting for that year. In principle, the duration of research by a Task Force should not exceed 18 months, and the entire duration of a Task Force (including inception period and dissemination of research results) should not exceed 2 years. Upon completion of the intended tasks, a Task Force will be disbanded automatically.

6. The Council will be open to the society for policy recommendations on environment and development. These recommendations should, in principle, be research results or policy recommendations by independent research institutions and experts, and could be adopted by the Council after being evaluated. Those

whose recommendations have been adopted will be credited. Recommendations from independent sources could be provided to the Secretariat Head Office or the relevant Task Forces via the internet or by written form.

IV. Support and Service System

1. The Secretariat Head Office of the Council will be based in the State Environmental Protection Administration. Its responsibilities include, among others, the following: providing support for the Council's activities in China; preparing for the Council Meetings; maintaining and developing domestic and international contacts for the Council; coordinating various Task Forces; fostering website building and information exchange of the Council; forwarding the recommendations of the Council and Task Forces to the relevant departments; editing a quarterly newsletter for the Council; organizing news conferences and inter-Task Force workshops; and, carrying out the functions necessary to ensure proper follow-up by the Chinese Government to the Council' recommendations.

2. The Chinese Government will continue to ensure effective arrangement at the working level to encourage full and active participation and support of the relevant government departments, research institutions and NGOs.

3. The State Environmental Protection Administration will be responsible for inter-ministerial coordination and for supporting the activities of the Council.

4. Measures will be taken to enhance the capacity of the Secretariat Head Office, including: employing relevant staff for the Secretariat, conducting exchange and training activities, and speeding up website building so as to provide more information sources for the Council and the Task Forces and to promote exchange of information and research results through the internet.

5. The Council will set up support offices or designate liaison persons in Canada and possibly other donor countries to assist the work of the Secretariat Head Office and to coordinate the international cooperation activities of the Council and the Task Forces.

6. The Secretariat Head Office should organize news conferences and carry out other relevant activities to disseminate the research results of the Council and the Task Forces to the public, so as to extend the influence of the Council and encourage active public participation.

V. Financial Arrangements

1. Financial assistance from Chinese and international sources will be pledged for the activities of CCICED (Phase III).

2. Members of the Council and Task Force Co-Chairs should continuously help to ensure that activities of the Council are properly related to other international activities in the fields of environment and development, scientific research and investment, so that extensive contacts will be set up from all walks of life, and more international support will be mobilized to meet the needs of the Council and its Task Forces.

3. The Council should work actively to obtain contributions and support from private foundations, multilateral financial institutions and other countries. Additional contributions from public and private sources and wider participation will be sought in support of specific activities and necessary studies as required.

4. The Council sincerely hopes that interested international organizations – such as scientific, technical, academic, financial and business organizations – could assist in China's efforts to achieve economic development in harmony with the protection of the environment, and will make special efforts to support the work of the Council.

Rules of Procedures
of China Council for International Cooperation on Environment and Development

(Adopted by the 1st Meeting of CCICED in 1992, Amended in October 1997 and Re-amended in November 2002)

The China Council for International Cooperation on Environment and Development (the Council) is a non-governmental body, established by and providing advices to the government of the People's Republic of China.

1. The Mandate of the Council

(1) The Mandate of the Council is outlined in the Terms of Reference and was adopted at the 1st Meeting of the Council in Beijing in April 1992. By September 1996, the Council had successfully completed its mandate for Phase I. The 1st Meeting of Phase II of the Council defined the tasks of the Council for Phase II. The 1st Meeting of Phase III has defined the mandate of the Council Phase III: in principle to continue and improve research achievements, policy recommendations and successful experience of the first two phases; and to provide more executable policy recommendations, enhance and extend demonstration projects, and at the same time, to provide with new strategic policy recommendations in the new context.

(2) The objectives of the Council are to explore ways of coordinating and integrating environmental protection, economic and social development, science and technology and related areas in order to provide Chinese government with more executable policy recommendations, technology assistance and demonstration experience for China's "Tenth Five-Year Plan", 2010 long-term plan and beyond, and the implementation of sustainable development strategy.

(3) The Council will encourage the cooperation and support of the international communities for China's efforts to protect ecological environment, conserve energy and natural resources, and realise environmental, social and economic sustainable development.

2. Adoption of the Rules of Procedure

(1) The Rules of Procedure have defined the regular operation of the Council, its Bureau, Members, Lead Experts, Task Forces and the Secretariat. The Rules of Procedure have been amended after its adoption in Phase I and Phase II of the Council, and will be reviewed for adoption at the 1st meeting of the Council Phase III.

(2) Amendments to the Rules of Procedure will be made in accordance with Section 18 below.

3. Nomination of the Chair and Vice-Chairs

(1) The Chair of the Council will be a leader of the State Council.
(2) There will be five Chinese and international Vice-Chairs (three Chinese Vice-Chairs and two international Vice-Chairs). The Chinese Vice-Chairs will be nominated by the Chinese government. The international Vice-Chairs will be nominated by Canadian government in consultation with relevant countries. The candidates will be submitted to the Chinese government for adoption at the Council AGM.
(3) The terms of office for the Chair and Vice-Chairs shall be five years. Under special circumstances, they may resign before their term ends. If such circumstance occurs, the Chinese government will nominate new Chair or the Chinese Vice-Chairs, and the Canadian government, in consultation with relevant countries, will nominate international Vice-Chair(s).

4. Selection of Council members

(1) Members of the Council will be invited to serve on the Council by the Bureau acting on behalf of the Chinese government.
(2) Before any new member is invited, the Bureau shall consult with relevant parties.
(3) There will be 40 Council members (20 Chinese members and 20 international members), who will serve for five years on the Council. They may resign in mid-term to the Bureau.
(4) Arrangements will be made for members to retire if they do not perform their duties or, for other personal reasons, or no longer meet the requirements of the Council.
(5) The change in Council membership has to be approved by the Bureau and adopted by the Council AGM.

5. The Secretary-General and Deputy Secretariat-General of the Council

(1) The Secretary-General of the Council will be appointed by the Bureau. (If necessary, the Bureau may appoint 1-2 Deputy Secretary-Generals.)
(2) The Secretary-General is in charge of day to day operation of the Council, and supervises the work of the Council Secretariat. The Deputy Secretary-General assists the Secretary-General.

6. Participation in the Council AGMs

(1) Members participate in the Council AGMs in their personal capacities. They shall not send representatives in case of their absence.

(2) Special guests and observers may participate in AGMs at the invitation of the Council after approved by Chair or Vice-Chairs.

7. Notices of AGMs

(1) The Council AGM is held once every calendar year. Notice of AGM of the Council, unless otherwise directed by the Bureau, shall be sent out in writing to each Member at least 30 days prior to the date of the AGM.
(2) Under special circumstances, the Chair, together with other members of the Bureau, will decide whether a special meeting be called. Notice of such a special meeting of the Council, unless otherwise directed by the Chair, shall be sent out in writing to each Member at least 30 days prior to the date of the meeting.
(3) No meeting shall be invalidated as a result of any member's failure to receive notices as described in this section.

8. Procedures at AGM

(1) The Chair shall preside over AGM of the Council. In the event the Chair is absent or unable to preside, or the office of Chair is vacant, a Vice-Chair may assume the duties and functions of the Chair with approval of the Members. In the event both the Chair and Vice-Chair are absent from the AGM, the Members shall select one Member to preside.
(2) Decisions at the Council AGM shall be made by consensus. In the event consensus cannot be reached and, in the opinion of the Chair a decision is required, each Member present shall have one vote and a majority present shall decide the issue. If votes are equally divided, the Chair may cast the deciding vote.
(3) A quorum for any AGM shall be a majority of the Members consisting of at least half of the Chinese Members and one third of the international Members.
(4) The recommendations to the Chinese government submitted by the Council shall be forwarded to relevant Chinese government departments within 90 days.
(5) Task Force interim work reports shall be submitted to the Council Secretariat 30 days before the AGM. Other reports of the Council, Task Force activities or reports to the AGM shall be circulated to the Council Members prior to the AGM.

9. The Council Bureau

(1) A Bureau shall be established in the Council, consisting of Chair, Vice-Chairs, Secretary-General and Head of Secretariat Canadian Office.
(2) The Chair of the Council is also the Chair of the Bureau.
(3) The Bureau shall designate two executive Vice-Chairs (one Chinese and one international) to make decisions for the Council's regular operation.
(4) The Bureau shall meet at such times and places as it deems necessary with meeting agenda prepared before such meetings. The Bureau shall meet once a year in conjunction with the Council AGM. Between AGMs, decisions shall be

made through submission for approval. Under special circumstances, the Chair may call for or entrust executive Vice-Chair(s) to hold Bureau meetings.

(5) If any position in the Bureau shall become vacant, the Chair may appoint a Member of the Council to take the position until the next Council AGM.

(6) If the international Vice-Chair is unable to participate in the Bureau meeting, an international Council Member may be designated to be present at the Bureau meeting with the Chair's approval.

(7) A quorum of the Bureau shall be a majority of its members, including both Chinese and international members.

(8) For convenience, the Chinese and international Lead Experts and Head of Secretariat shall participate in Bureau meetings as required.

10. The operation of the Lead Experts

(1) Lead Experts will be invited by the Council. Assistants to Lead Experts shall be provided to carry out the work related.

(2) Lead Experts will be nominated through the consultation between the Chinese side and Canadian side, and approved by the Bureau.

(3) The major responsibilities of the Lead Experts include: assessing Task Force project proposals, identifying research priority areas of the Council, giving suggestions for Task Force management, commissioning issue papers for the Council, making recommendations on the themes of the Council AGM, assessing the work of the Task Forces, drafting and finalizing Council recommendations to the Chinese government, etc.

(4) Lead Experts and their assistants shall keep necessary contacts with Task Forces and other organization involved.

11. The operation of the Secretariat

(1) The Secretariat Head Office is established in the State Environmental Protection Administration (SEPA). It will provide support to, coordinate, and follow up on the activities of the Council and its Task Forces.

(2) The Secretariat shall obtain support in the international aspects of the Council's activities from a Canadian Executing Agency for CIDA. This Agency will be financed by Canada and shall serve as the Council Secretariat Canadian Office.

(3) The Secretariat, in the event that it cannot make decisions on its own, shall act as directed by the Bureau.

(4) The Secretariat Canadian Office shall operate in accordance with the management plan agreed upon by the Council and Canadian International Development Agency (CIDA).

(5) Heads of the Secretariat shall participate in the Council AGM and Bureau meetings as an observer. The Secretariat shall provide note taking and translation services for the above meetings.

12. Task Force activities

(1) Based on the needs of China's environment and development areas, the Council will establish short term Task Forces on an on-going basis to conduct studies (in general, each TF will not exceed two years at most,) (Please refer to the attachment for "The Establishing Procedures for Task Force").
(2) The basic requirements for TFs are: the subject area represents urgent priority in China's environment and development, there is sufficient funding for the TF, and suitable candidates for both Chinese and international Co-Chairs are identified. The TF proposal shall be assessed by the Lead Experts and submitted to the Bureau for approval.
(3) Each TF will have a Chinese and an international Co-Chairs with no more than 10 members (5 Chinese and 5 international members).
(4) When establishing the TF, the Council will clarify:
    - The study area, funding budget and expected objectives;
    - The qualification of the TF Co-Chair candidates;
    - The time table for the TFs;
    - The composition of TFs (international members should not be limited only to donor countries);
    - The scope of TF activities, including final report and financial requirements.
(5) The TFs will take into consideration assessment of the Lead Experts, with support from the Secretariat Head Office and the Secretariat Canadian Office.
(6) The Co-Chairs of the TFs will make decisions on its members and other issues in consultation with the Secretariat, to ensure the smooth completion of its work within the framework set up by the Council.
(7) The appointment of the TF members shall be carried out by the Co-Chairs individually, including (but not limited to) fees for service, estimated working days and duration of appointment.
(8) Any TF member wishing to resign from the TF shall notify the Co-Chair at least 60 days in advance.
(9) In the event of an unresolved disagreement related to the activities or membership of the TF, the case will first be referred to the Bureau. If it cannot be resolved at the Bureau level, it will be referred to the Council by correspondence if necessary. The decision of the Council will be final and binding for all parties.

13. Financial issues

(1) The funding for the Council comes from contributions of the Chinese government and international donors.
(2) The Council will set up a core funding mechanism gradually to finance studies that are unable to obtain other financial support. Donor countries are welcome to provide funds to the task force that they are interested in.

(3) The Secretariat Head Office and the Secretariat Canadian Office will administer core funding funds that enter their respective accounts according to their respective financial regulations and rules.
(4) The usage of funds will be subject to the approval of the Bureau based on the proposal in consultation with donors, the SHO and the SCO. The funds will be audited annually by a third independent auditing agency.
(5) The Council will actively seek contributions from organizations that are interested in cooperation with the Council. The Council will also make specific arrangement to ensure systematic and continuous financial and other support necessary for carrying out the Council's activities are in place.
(6) In the Council activities, contracts and agreement will be signed with approval of the Bureau. The Council may designate a representative or entrust a representative in writing as the signatory.
(7) The funds from international donors will be administered under guidelines accepted by donors and the Council, or the Council's Bureau.
(8) The funds from international donors will be audited as agreed upon by the donors and the Council, or the Council's Bureau.
(9) The funds for the Council and the TFs will be executed through budgeting and final accounting.
(10) The Council, TFs and any other organization or individuals accepting financial support must keep accurate and complete financial records according to financial regulations and practice.

14. Presents and donations

(1) No gift, present or donation shall be accepted by or on behalf of the Council without the approval of the Bureau.
(2) Where a gift, present or donation is approved by the Bureau, it shall be dealt with in accordance with the terms and conditions of its acceptance by the Bureau.

15. Conflict of interest

(1) When accepting any gift, present or donation or allocating funds, any member of the Council or the Bureau who is officially or formally connected to the contributor shall declare his/her connection.
(2) No Council member shall materially benefit, either directly or indirectly, from a contract or agreement entered into by the Council without prior approval of the Bureau.

16. Execution of document

Every agreement, contract, or official document in writing that requires execution or approval in the name of the Council shall be signed by the Council Chair, or by one or several members of the Bureau designated for such purpose by the Chair.

17. Statements and reports

(1) Any official statement and announcement (except for regular announcements and news briefs issued by the Secretariat) in the name of the Council shall only be made by the Chair of the Council or his/her designee.
(2) The Council will make an annual report to the Chinese government on its conclusions, activities and recommendations. This report will be discussed at the Council AGM and submitted with the entrustment of the Council Chair.
(3) The Council will make appropriate arrangement for its relations with the media.

18. Amendments to the Rules of Procedure

Amendments to these rules of procedure may be made by the Council at any Council AGM. The draft amendment shall be sent to Council members prior to AGM.

Exit

Explanation of Drafting of and Amendment to Terms of Reference and Rules of Procedures of CCICED Phase III

In order to fit in the new development and requirement of CCICED Phase III, in consultation with the key donors such as Canada, Germany and Japan as well as the relevant ministries and some Council members and co-chairs of Task Forces, and based on the documents of the previous phases of CCICED, the Secretariat has drafted the Terms of Reference of China Council for International Cooperation on Environment and Development (hereinafter referred to as TOR), and the Rules of Procedures of China Council for International Cooperation on Environment and Development (hereinafter referred to as ROP). The TOR has been revised many times and was submitted to the State Council in June 2001, and has been ratified by the State Council in principle. In accordance with the instructions of the Bureau of the Council, the Secretariat has drafted the Reform Program, which was submitted to the State Council on February 7, 2002, with approval. The key elements of the Reform Program has been integrated into the TOR and ROP. These two key documents are provided to the Council Meeting for review. The brief explanations on these two documents are as follows:

1. TOR

The TOR was drafted based on the TORs of the previous two phases of the Council. The basic contents of the background, mandate and purposes of the Council in the previous documents remain in the new one. In the meantime, the articles on the matters of organization, procedures and financial arrangement remain in the new document, with amendments to some words.

The experiences of the Council in the previous two phases indicate that the Council used to pay attention to the researches conducted by Working Groups and Task Forces, with significant achievements. In the past decade, the Council has enhanced both the policy demonstration and project demonstration, with more and more practical and operation results made. However, due to the huge number of Council members (almost 60 ones) and Working Groups reporting to the Council at the Annual General Meeting (at least eight ones), there is little time for the Council members to have discussions. The Working Groups have been working independently for a long time, with little coordination in their research and few comprehensive studies being conducted. Some of the Recommendations are not focusing on key issues, which is not easy to be summarized and hard to attract the attention of the top decision-makers and

decision-making departments. In addition, the feedback mechanism of the study and adoption the Recommendations is not so ideal, and it is not so easy to adjust the experts of the Working Groups. Therefore, relevant amendments have been made as follows:

A. The total number of the Council members is about 40, with approximately equally numbers for both the Chinese and international members;
B. The researches will mainly depending on Task Forces. The entire duration of the TFs will not exceed 24 months, thus increasing the flexibility and focuses of the researches on the key and urgent issues;
C. The capacity building of the Secretariat will be enhanced, and measures will be taken to strengthen the integrated researches and study on the TFs and the themes of the AGM;
D. Multi-channels of disseminating the Recommendations will be set up, including the non-governmental disseminating channels so as to promote the roles and effectiveness of the Recommendations;
E. To adopt the recommendations of some independent research institutes in an open way.

2. ROP

The ROP was adopted at the first meeting of the CCICED Phase I in April 1992, which was amended in October 1997 at the first meeting of CCICED Phase II. The amendment to the ROP in Phase III was based on the ROP of the amended ROP in Phase II. The principle for the amendment is to integrate the reform content into it so as to make it more practical and operational. In the amendment, the first, second, fourteenth and seventeenth sections remain in the new one, with revision on some words. The major amendment mainly ranges from the third section to thirteenth section, with some relevant new articles and amendments and supplementary contents. The key amendments mainly focus on the Bureau, Council members, Lead Experts, the Secretariat, Task Forces and Financial Issues. The key amended and supplementary contents are as follows:

A. There will be one new international vice-chair in the Bureau. Two executive vice-chairs will be designated in the Bureau, responsible for the decision-making and daily routine administration of CCICED. The Canadian Project Coordinator is a member of the Bureau;
B. The number of the members is about 40 ones;
C. One section on the Lead Experts is added;
D. The name of the supportive agency to CCICED set up by CIDA is the

Secretariat Canadian Office (hereinafter referred to as Canadian Office);

E. Task Forces will be set up in an on-going process according to the requirements. The conditions and requirements for setting up TFs are identified;
F. CCICED will set up a Core Funding Mechanism. The principles for handling the Core Funds are identified.

Exit

Recommendations of CCICED to the Government of China

The first meeting of the China Council for International Cooperation on Environment and Development Phase III (CCICED) was held in Beijing during November 23-25, 2002. The Council examined the relationship of Environment, Development and Governance at a very auspicious time. The meeting takes place a year after China's accession to the WTO, and just after the WSSD and the Chinese Communist Party's 16th Congress.

The smooth transition in leadership at this Congress, representing both continuity and change, marks the next phase of China's long march to the front ranks of the world's most influential nations. Certainly China's remarkable progress on sustainability is a tribute to the efforts of this great country's leaders who took bold steps in the years following the Rio Earth Summit. And the recommitment to sustainable development by the 16th Congress is an important decision.

The path ahead will be even more challenging. The nature of environment and development problems is changing. With a doubling of the Chinese economy projected for this decade, and a doubling again in the next, addressing environment and development issues in a timely and effective fashion will require a singularly strong will, more financial resources, and great ingenuity. Sustainable development will have to be linked much more strongly to employment and a number of social policies. The challenge of creating a sustainable national economy on the scale of China's is unprecedented. There is no existing model to draw upon for a country the size and complexity of China.

China's achievements have taken place at a time when the world community is still being drawn in many directions. China's best efforts for sustainable development will fall short unless there is a stronger implementation effort for sustainable development on the part of the global community. And China is a country whose choices during the coming decade will have significant environmental implications for the region and for the globe. In reality, China has much to contribute internationally on how to implement sustainability within a developing economy. For all these reasons, the Council applauds China's effective participation in international processes such as the WSSD, and the commitment at the highest level to fully meet international obligations under the global conventions. China should be preparing itself for an even larger international role in the future.

The Council has heard keynote speeches, issues papers, plus the reports of four CCICED task forces and from four provincial vice-governors on their sustainable development progress. Our recommendations address several urgent issues related to the six priority areas of China's new draft sustainable development action plan. While

the advice is intended for immediate use, it is with the recognition that today's decisions will affect the ambitious national objectives set for the year 2020.

PART A THE TRANSITION TO SUSTAINABLE DEVELOPMENT

Environment, Development and Governance

In the past CCICED has focused its attention on environment and development. The consideration of governance is new and in line with international views that this topic is essential for successful implementation of sustainable development. There are many definitions of governance, including the following one, from the Institute on Governance located in Ottawa, Canada: *Governance comprises the traditions, institutions and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern.*

Governance mechanisms cover a wide range of subjects, for example, the expanding role of civil society and communities in the management of natural resources, the role business can play in self-regulation of pollution, and partnership models to implement sustainable development. Good governance requires effective government. In this context the Council notes the need not only for improved coordination, but also for integrated approaches, so that sustainable development becomes the responsibility of all units of government and at all levels.

In all parts of the world the role of national and local government is shifting dramatically—from implementer to enabler, and as a partner for sustainable development. The right enabling framework will go a long way towards guaranteeing the success of the partnerships called for at the WSSD, and for attracting new environmental investment. An enabling framework should provide appropriate legal, fiscal, policy and regulatory conditions that promote sustainable development. This approach does not imply a shrinking role for government, since the issues of environment and development are growing more complex, and of larger magnitude. Instead it will permit a better balance of action on the part of government, private sector and civil society.

The CCICED recommends the following actions to improve governance for environment and development:

(1) Strengthen integrated policy-making for sustainable development, and improve government coordination mechanisms for environmental protection. An integrated approach to policy development and implementation has become

commonly accepted elsewhere in the world. Such policies deal with cross-sectoral impacts, the removal of systematic barriers to environmental and resource protection, and the internalization of sustainable development within organizations. The efforts of China to build integrated approaches to environment and economy could be further strengthened.

The existing level of coordination among departments and sectors is limited and forms a major barrier that has been pointed out in previous Council recommendations. At this point in time, when a renewed approach to sustainable development is under consideration, it is appropriate to seek new coordinating mechanisms that take into account the trend toward decentralized decision-making as well as cross-sectoral coordination within government.

(2) Build sustainable development implementation partnerships and capability among government, enterprises and civil society. For China, much work remains to be done in the establishment of such partnership relationships. New mechanisms are needed to provide for rapid funding and effective implementation of partnerships. Partnerships can be encouraged with both domestic and international enterprises. The goals for partnerships can include more effective sustainable development implementation, access to technologies and management experience, and attraction of more private investment. Some partnerships may best be carried out through international networks. An example where China could take a leadership role is in the development of an international Consultative Group on Clean Energy.

(3) Improve the incentives for enterprises to engage in environmental protection. Government can strengthen economic incentives for the participation of enterprises in environmental protection. While numerous initiatives already exist, much more needs to be done. Suggested measures include:

- Raising fees for polluted water and solid waste treatment to reflect total environmental damage costs, and then gradually opening more public utilities to the market.
- Ensure that prices reflect underlying costs and resource values.
- Establishing and improving environmental performance labeling (such as energy efficiency labeling, environmental labeling, etc.).
- Encouraging research and development of cleaner products.

(4) Encourage the development of non-government environmental protection

organizations, and establish and improve an environmental information sharing system. Solving environmental problems requires collective action, with participation by groups and communities. It is recommended that non-government environmental protection organizations should be encouraged to develop, and to participate in environment and development policy-making, activities and monitoring. Such organizations are very important for improving environmental self-discipline of the civil society.

At the same time, an open and transparent environmental information sharing system should be established. Elements of a system, operating at national, provincial and local levels might include a transparent, highly accountable environmental protection administration; monitoring of regional water quality and drinking water quality; a highly-respected system for food inspection; and a system for corporate reporting on sustainable development. Increased public access to environmental information is an important element for accountability.

(5) Pay special attention to, and reduce the incidence of environmental degradation and resource depletion on the poorer members of society. Regulatory and economic instruments to improve environmental performance should be explicitly tailored to poverty alleviation objectives.

A Sustainable National Economy

The renewed commitment of China to build a sustainable national economy based upon environmentally-friendly and resource saving approaches comes at a critical juncture for its future. China's rapid wealth creation could be based on ever increasing levels of consumption that within a few decades or less could result in unsustainable pressures on the environment. Or it could be used to foster unique Chinese patterns of growth placing much greater emphasis on high quality of life approaches, an information-based economy, a high level of investment in environmental goods and services to ensure ecosystem integrity, and an equitable distribution of the fruits of economic progress.

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. High profile and trend-altering events such as the 2008 Olympics can become part of the strategy.

CCICED recommends the development of scenarios that would explore the implications of developing a sustainable national economy. Such scenarios should

draw upon quantitative and qualitative information on cross-sectoral impacts of sustainable development strategies, introduction of new technologies, and other factors. And the scenarios should take into account the impacts of various international financial, security, environment and development conditions.

A sustainable development economy will require even more attention than in the past decade to both sustainable production and consumption. Thus CCICED recommends the following two actions.

(1) Greatly strengthen the transition to sustainable development in the industrial, biological, energy and service sectors of the Chinese economy. China's future economy will be more diverse, with hidden challenges to sustainability, such as those related to tourism, or biotechnology, in addition to the existing environmental problems of energy, manufacturing and resource exploitation. These issues cannot be considered in isolation from employment strategies and concerns such as environmental health.

CCICED welcomes the new Cleaner Production Law and the commitment to a Circular Economy that addresses material reuse, recycling, and reducing the amount of waste. But tougher administrative and regulatory action will be necessary, along with an improved and broader range of economic incentives. Finally, as the experience of leading provinces reveals, a sustainable economy requires major industrial restructuring and redesign set in the context of improved urban planning and development.

(2) Establish sustainable consumption models appropriate for China's changing economic and social conditions. China's current low per capita consumption pattern is an opportunity to avoid the mistakes of many other countries that have developed very high levels of material and energy consumption. In the next five to ten years new patterns of consumption may well be set within China, since so many of China's citizens will be substantially wealthier. It needs to be reinforced that sustainable consumption models can still lead to economic growth. Indeed, attention to environment is an important means for creating growth. Expanding domestic demands also should not mean encouragement of waste. Sustainable consumption patterns within China will push production towards sustainable pathways. Sustainable consumption should have the added benefit of fostering the competitiveness of domestic enterprises and help to eliminate green barriers in international trade.

Education and Knowledge for Sustainable Development

Although sustainable development has become one of China's basic strategies, awareness and understanding of sustainable development still needs to be raised to a much higher level. Education and knowledge expansion of sustainable development need to be further enhanced through a variety of means, including the following: sustainable development capacity building for decision makers, particularly for local level decision makers, and for business leaders; education and awareness-building for the public, using a variety of media; and strengthening sustainability elements of school and university curricula.

Role of China in the Global Community

Members of Council highly appreciate the international role China has played over the past decade. CCICED views that China is well positioned in the coming years for continuing, and, at a rate that only the country can determine, perhaps expand its substantial role in international environmental cooperation. Its membership in the World Trade Organization adds a major new dimension to this capacity.

There is growing international concern about the possible impacts of China's rapid growth on the regional and global environment. It is therefore particularly important that China's policies for growth and sustainable development should take full account of their international impacts and implications. This will go far to avoid international concerns and misconceptions, and will facilitate productive international cooperation in fields vital to China's development.

PART B RECOMMENDATIONS BASED ON CCICED TASK FORCE REPORTS

In this first meeting of CCICED Phase 3, four Task Forces were asked to present their results. These reports receive a full discussion by Council members, who modified and selected among the options presented. The summarized policy recommendations noted below reflect the views of Council. Additional information and detailed technical recommendations are available in the reports and publications of the individual Task Forces.

Environmental Economics

In order to integrate environmental concerns into the mainstream of economic decision-making, the following suggestions are proposed:

Improve the empirical basis and refine methodologies for strategic environmental assessment. According to the new Environmental Assessment Act, environmental and ecological issues of major development plans will be assessed. Effective implementation of the Act requires a series of guidelines on the technical, economic, environmental and social aspects involved.

Develop a Green National Accounting System that reflects the true social and environmental costs of economic activities. Costs should include production, environmental degradation and resource depletion. Such a system should be in the form of satellite accounts, paralleling conventional national income accounting measures.

Explore environmental pricing and taxation. The costs of depletion and degradation of the natural environment should be reflected in pricing policies such as user charges and pollution taxes. Increasing use of economic instruments for environmental management, paying particular attention to the implications for the poorest members of society, and in light of practical implementation issues, should be a key feature of environmental policy in China.

China's Accession to the WTO and its Environmental Impacts

The Government of China should require that the implementation process of its new Environmental Assessment Act specify that a strategic environmental assessment and perhaps a sustainability impact assessment be performed on the impacts of China's accession to the WTO and other important changes in trade policy. Studies have revealed that many of the important gains from liberalization can be dissipated by increased environmental costs if appropriate measures are not taken. A timely assessment and continued monitoring of the environmental affects of accession will allow China to adjust its environmental laws and regulations to counteract the harmful effects of rapid trade expansion.

China must strengthen the capability of its negotiators to negotiate trade and environmental issues in order to play a more active role in the Doha Round. Since China lacks the necessary knowledge and experience to deal with such a wide spectrum of issues simultaneously, considerable effort is needed to enhance technical support groups within SEPA (State Environmental Protection Administration) and MOFTEC (Ministry of Foreign Trade and Economic Cooperation). The enhancement effort should draw upon outside experiences, expertise and information to better inform Chinese negotiators. The technical support groups should become capable of providing analysis of the positions of other countries. And the strengthening effort

should update China on new developments outside the negotiation process, and provide access to the latest research on trade and environment.

The Government of China and industry organizations should establish mechanisms to monitor and report on significant changes in the laws and regulations of other countries that might affect China's international trade. This early warning system, combined with China's access to the WTO's transparency mechanisms will help China to identify potential barriers to Chinese exports at an early stage, and to formulate government policies that assist industries to adjust. However, the key solution for addressing green barriers lies in improving China's own environmental standards and bringing these more into line with international standards. The government should provide incentives to industry to seek ISO 14000 certification. It also should promote international cooperation and exchange on standards development and seek dialogue with China's principle trading partners as they formulate their standards for ecolabels.

Forests and Grasslands

Although China has achieved great success in forest and grassland protection and restoration, the central government still has great opportunities to improve policies and their implementation.

Improve the SLCP (Sloping Land Conversion Program) and the NFPP (Natural Forest Protection Program) under the existing policy framework.

For the SLCP, the government should adopt a more holistic, more flexible and multisectoral approach to make land conversion both ecologically and economically sustainable. Needed is an approach aimed at achieving ecological restoration while providing realistic, economic market-based incentives to households. This will require a more fine-tuned, decentralized, location-specific approach suited to highly diverse land conversion circumstances in the different provinces. Second, the government should promote routine independent monitoring and evaluation to improve planning and implementation at all level, adopting a more participatory consultative approach to planning that involves stakeholders.

For the NFPP, remove the logging ban from collectively-owned forests, where appropriate. Furthermore, the government should make a gradual and carefully planned transition over time from a blanket logging ban to a more diversified, flexible approach that enables sustainable forest management on state-owned forests. This will require establishment of land use planning for diversified land use that includes ensuring adequate protection of old growth forests, tree planting, as well as natural rehabilitation of sites.

Adjust overall forest policy.

Forest policy reform has lagged behind other sectors such as agriculture. Thus it is recommended that reform proceed in at least five priority areas:

- Restructuring of public/private forest management and decentralizing of authority in forest administration.
- Monitoring and evaluation of performance of government and private forest management at the different levels.
- Rationalizing of taxes and improved identification of authority to tax within various sectors.
- Strengthening of property legislation pertaining to collective forests in accordance with the new land contract law; identifying due process for land takeovers by government, and procedures for valuation and compensation in cases of *imminent domain.*
- Updating relevant domestic and international trade policies.

Eco-Security

China's rapid economic development, including explosive levels of growth in trade, transportation and tourism, is increasing the introduction of species—both intentionally and unintentionally. Serious attention should be paid to Alien Invasive Species (AIS) threats and damage to biodiversity and natural ecosystems, and, in turn, to economic loss. It is therefore recommended that:

China develop a national Alien Invasive Species strategy designed to combat the multiple threats of AIS. The strategy should incorporate risk assessment, full social cost pricing, the user pay and precautionary principles, development of an early detection and warning system, fast sharing of information, and rapid response mechanisms.

China's Convention on Biological Diversity (CBD) Enforcement Coordinating Group should for a special AIS administration office to support the overall AIS program. Consideration should be given to establishing AIS administrative institutions at various levels.

Based upon an overall review of the relevant existing legislation, a new set of regulations pertaining to the control of AIS should be formulated, together with an AIS list.

Genetically modified organisms (GMOs) pose similar potential problems to AIS with regard to native species and ecosystems. Similar risk assessments and field trials before permitting should be carried for GMOs.

Research and capacity building for dealing with AIS issues needs to be strengthened.

Exit

The 1st Meeting of the 3rd Phase of CCICED
Executive Summary

The 1st meeting of the 3rd phase of the China Council for International Cooperation on Environment and Development (hereby referred to as "the Council") was held in Beijing on November 23-25, 2002. Thirty five Chinese and international members, 15 Chinese and international Task Force co-chairs, 5 special guests and 53 observers attended the meeting. Mr. Xie Zhenhua, Mr.Good, Mr. Qu Geping and Mr.Lönnroth, Vice Chairs of the Council, chaired the meeting respectively.

Vice Premier Wen Jiabao, Chairman of the Council, addressed the opening ceremony of this meeting. He noted that, as an advisory body giving advice to the Chinese government in its decision-making, the Council has successfully made a great many recommendations and suggestions to the Chinese government and conducted remarkable researches for the part 11 years. The Council has done its part in the achievements of China's environment and development cause and has made important contribution to the government's decision-making. He also stressed that, China has entered into a new stage of development during the period of the current CCICED. The 16th CPC National Congress has set out a blueprint for China's development for the future 20 years. This is an important period for the CCICED, as the key for an effective solution to environmental problems and strengthened capability of sustained development lies in the government's policy and action. Vice Premier Wen Jiabao believes that, with joint efforts of all members, the 3rd phase of the CCICED is sure to play a bigger role in the process of China's building a well off society in an all around way.

The participating members endorsed the "Terms of Reference of the 3rd Phase of the CCICED", "Rules of Procedure of the 3rd Phase of the CCICED", and "Name list of Chinese and International Members, the Proposed Task Forces and Name list of Co-Chairs of the Task Forces of the 3rd Phase of the CCICED".

Compared with the last two phases, the 3rd phase of the CCICED has conducted some great reforms, including identifying two executive vice chairs, adding one international vice chair, the number of the Chinese and international members are reduced from 59 to 41, flexible task force system takes the place of the working group system which has not been changed for 5 year, and two Chinese and international lead experts are appointed to take the responsibility of reviewing the proposals of new task forces, drafting "Reports on Issue Papers" and preparing for the establishment of core fund system, etc. The above-said reforms have set out a new landscape for the 3rd phase of the CCICED.

The meeting was centered around the theme "environment, development and governance-response to the World Summit on Sustainable Development (WSSD)". Mr. Strong, Secretary General of the United Nations Conference on Environment and Development in 1992 and Mr. Töpfer, executive director of the United Nations Environmental Program and representatives from the State Planning Commission were invited to deliver keynote speeches, briefing the meeting on the WSSD, reactions of countries around the world after the meeting, directions of global sustainable development, China's support to the WSSD and its macro planning, general perspectives and important measures to implement its sustainable development strategy in the field of environment and development. The meeting listened to two Issue Papers by Chinese and international lead experts Professor Sun Honglie and Dr. Hanson, which talk about the overall situation and problems in world and China's environment and development. The meeting was also briefed by leaders from provinces and autonomous regions, namely Liaoning, Inner Mongolia, Fujian and Guangxi, on their trial projects of circular economy, eco-environmental protection and development, opening up policy, west development and sustainable development. With the above-said as basis, general debate was also carried out during the meeting. Many international members commended that, thanks to China's strategic planning, wealth that amounts to two present China and four present China will be produced around the world in 2010 and in 2020 respectively. It is necessary to make in-depth studies on what impact this will bring to China and world at large in the field of economy and environment. In this respect, it is essential to convert traditional development modality and to carry out sustainable development.

The meeting reviewed the "Working Report of the Secretariat", "Report on Coordination Meetings by Co-chairs of Task Forces" and working reports by task force on forestry and grassland, working group on environmental economics, task force on biodiversity and task force on WTO and environment. Quite a few international members voiced their concerns to China's large importation of woods and the invasion of foreign species. The participating Chinese and international members and co-chairs of task forces showed special interests in China's adherence to its sustainable development strategy while establishing a well off society in an all around way and set forth lots of good proposals. Based on these proposals and after repeated discussions and revisements, the meeting endorsed the "Recommendations to the Chinese Government by the 1st meeting of the 3rd phase of the CCICED"(see Annex).

The meeting was closed on the morning of the 25th. Vice Chairman Mr. Xie Zhenhua gave his sum-up remarks on behalf the bureau. He noted that, CCICED is a high level advisory body to the Chinese government and will continue to play a particular and important role in the field of environment and development during the important period of China's establishing a well off society in an all around way; the working

direction and focus of the CCICED is, by closely centering around the objectives set out by the 16th CPC National Congress and carrying out the spirit of the WSSD, to put forth suggestions on issues like how to coordinate the relationship between environment and development, how to strengthen the country's capability of sustainable development, and how to avoid various potential and practical challenges during the development process; the task forces should still put their priority on researches in the respect of implementation and put forth policy recommendations for the government to choose; By taking a down-to-earth and domestically oriented approach, we will solve China's environmental and development problems and contribute to the global sustainable development.

On the afternoon of the 25th, Premier Zhu Rongji met with the participating Chinese and international representatives and made an important speech. He said that, the Chinese government attaches great importance to the role of the CCICED. The Council has provided very good recommendations to the Chinese government, which are of great assistance to China's environmental protection and sustainable development. Premier Zhu noted that, it was during the process of industrialization that China has gradually come to realize the importance of environmental protection and sustainable development. Particularly after the Rio United Nations Conference on Environment and Development (UNCED) held 10 years ago, China began to pay more attention to environmental protection and sustainable development. Premier Zhu pointed out that, keeping sand storms under permanent control does not only requires China's action but also calls for the support of the international community. China is currently developing cooperation with Japan and South Korea in getting rid of the root causes of sand storms. Premier Zhu specially pointed out that, the Chinese government has been working actively in preventing air pollution and has formally acceded to the "Kyoto Protocol". In preparing for the 2008 Olympics Games, Beijing has formulated and begun to carry out grand plans on air pollution controls, and for instance, Beijing has raised the emission standard for automobile's pollutants. Premier Zhu stressed that, China is still facing some problems in the process of improving environment and sustainable development. However, China will continue to make unswerving efforts to improve its environment and fulfill sustainable development. Finally, Premier Zhu expressed his hope that the CCICED would continue to show their concerns to China's environmental protection and sustainable development.

On the morning of the 26th, representatives from the State Environmental Protection Administration and some donor countries attended the coordination meeting of CCICED projects co-hosted by the Ministry of Foreign Trade and Economic Cooperation and Canadian International Development Agency and fully exchanged their views on the establishment of core fund mechanism in a step-by-step manner.

After the meeting, the Secretariat of the CCICED arranged an investigation tour for vice chair Mr. Lönnroth and international member Mr. and Mrs Willoch(former Prime Minister of Norway) to visit Xi'an and Shenzhen. Through this practical investigation, the international members gained a comprehensive understanding of environment and development situations in these two places. They expressed their deep appreciation towards the measures and achievements of these two places in the field of environmental protection.

Exit

THE CHINA COUNCIL
FOR INTERNATIONAL COOPERATION
ON ENVIRONMENT AND DEVELOPMENT

THE FIRST MEETING OF THE THIRD PHASE

Kunlun Hotel, Beijing
23-25 November 2002

SUMMARY RECORD

December 2002

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ABBREVIATIONS

ADB	Asian Development Bank
AGM	Annual General Meeting
CAS	China Academy of Sciences
CBD	Convention on Bio-Diversity
CCICED	China Council for International Cooperation on Environment and Development
CCP	Chinese Communist Party
CDM	Clean Development Mechanism
CGIAR	Consultative Group for International Agricultural Research
CIDA	Canadian International Development Agency
CITES	Convention on International Trade in Endangered Species
CO^2	Carbon dioxide
CP	Cleaner Production
EIA	Environmental Impact Assessment
EU	European Union
FDI	Foreign Direct Investment
FYP	Five-Year Plan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GMO	Genetically Modified Organism
GNP	Gross National Product
GOC	Government of China
IAS	Invasive Alien Species
IISD	International Institute for Sustainable Development
ISO	International Standards Organization
IUCN	International Union for the Conservation of Nature
LDC	Less Developed Country
LE	Lead Expert
MEA	Multilateral Environmental Agreement
NFPP	National Forests Protection Program
NPC	National People's Congress
ODA	Overseas Development Assistance
OECD	Organization for Economic Co-operation and Development
POPs	Persistent Organic Pollutants
R&D	Research and Development
SDPC	State Development and Planning Commission

SEA	Strategic Environment Assessment
SEPA	State Environmental Protection Administration
SFA	State Forestry Administration
SLCP	Sloping Land Conversion Program
SME	Small and Medium Enterprise
SO^2	Sulfur dioxide
SOE	State Owned Enterprise
TF	Task Force
TORs	Terms of Reference
UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Science and Culture Organization
US	United States
WDS	Western Development Strategy
WG	Working Group
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization

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FOR INTERNATIONAL COOPERATION ON
ENVIRONMENT AND DEVELOPMENT

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SUMMARY RECORD

I. INTRODUCTION

1. The China Council for International Cooperation on Environment and Development ("the Council") was established by the State Council of the Chinese Government in April 1992 to facilitate cooperation between China and the international community in the fields of environment and development.

2. The Council is a high-level advisory body that makes proposals for consideration by the Chinese Government on the integration of environment and development. It has so far held five annual meetings in the First Phase, five annual meetings in the Second Phase and one meeting in the Third Phase. The Council assists in developing an integrated, coherent approach to environment and development and encourages systematic cooperation between China and other countries.

3. The Council is a non-governmental body but with strong government involvement. Currently the Council comprises 22 Chinese Members and 20 International Members, all chosen for their expert knowledge and their experience.

4. The Members of the Council attended the 1st Meeting of the 3rd Phase at the invitation of Wen Jiabao, Vice-Premier of China's State Council and newly appointed member of the Standing Committee of the Politburo of the Chinese Communist Party (CCP).

5. The host institution was the State Environmental Protection Administration (SEPA). SEPA has been made responsible for inter-ministerial coordination and for supporting the activities of the Council. It has established a Secretariat Head Office to maintain and develop international and domestic contacts and to ensure follow-up within China to the recommendations made by the Council, as well as to deal with the routine work of the Council when it is not in session. The Secretariat is assisted by the Secretariat Canadian Office which is directed by Prof. Earl Drake, is located at Simon Fraser University in Vancouver and is funded by the Canadian International Development Agency (CIDA).

6. This Summary Record of the 1st Meeting of the 3rd Phase of the Council was prepared for the Secretariat Canadian Office by Ms Lucie McNeill on the basis of more detailed notes recorded during the Meeting. The Summary Record represents the Secretariat Canadian Office's interpretation of the discussions and not necessarily the views of all participants. To ensure frank and direct exchanges it has been agreed that the Summary Record of the Meeting should present an overview of the discussions without attribution to individual speakers.

II. AGENDA ITEMS

ITEM 1. APPROVAL OF NEW COUNCIL MEMBERS AND PROCEDURES

7. The State Council approved list of Phase Three Chinese and international Council members, as well as the revised Phase Three CCICED Rules of Procedure and Terms of Reference (TORs) which were distributed to members prior to the meeting and unanimously accepted. The first slate of Council Task Forces and their co-chairs were also acclaimed by the Council.

ITEM 2. ADOPTION OF THE AGENDA

8. With Vice-Chair Xie Zhenhua presiding, the agenda for the 1st Meeting of the 3rd Phase was accepted as presented.

ITEM 3. OPENING CEREMONY

9. With Vice-Chair Xie Zhenhua presiding on behalf of Chair Wen Jiabao, the following participants made statements to mark the opening of the Meeting:

1) Vice-Chair Xie Zhenhua, Minister of SEPA, reading the speech of Council Chair Wen Jiabao, Vice Premier of China's State Council
2) Vice-Chair Len Good, President of CIDA
3) Vice-Chair Qu Geping, Chairman of National People's Congress Environment Committee
4) Vice-Chair Måns Lönnroth, Former State Secretary, Ministry of the Environment, Managing Director of Foundation for Strategic Environmental Research, Sweden

10. In the course of these remarks, the following points were made:

11. During the 16th Congress of the CCP, the country's future development plans and targets were unveiled. Among these goals are building a well-off society, deepening the economic and social reforms, and promoting sustainable development. The Chinese delegation to the World Summit on Sustainable Development (WSSD) in Johannesburg was led by Premier Zhu Rongji. China approves of the declaration and the action plan adopted at the WSSD. China plans to continue to cut down on greenhouse gas emissions, control pollution, increase

environmental protection effectiveness and pursue "ecological construction". During the 9th Five Year Plan (FYP), the Government of China (GOC) invested 580 billion yuan or 1.9% of GDP on these efforts. In the 10th FYP, China will invest an additional 700 billion yuan on the environment and projects another 10% cut in emissions.

12. The Council's task is to provide strategic advice to the GOC. The achievements China has made on the environmental front over the past ten years is to some extent due to the Council's contribution. China now has a twenty-year blueprint for development, set during the 16th Congress of the CCP. China's goal is to develop a well-off society in a way that is environmentally sound and sustainable. The Council's support is needed for China to succeed.

13. The Council's first two phases were successful and with the adopted reforms it is hoped that the 3rd Phase will bring improvements. The Working Groups (WG) have become Task Forces (TF) which have a set time and budget to conclude their work. During annual general meetings (AGM), there will be fewer reports to present to the Council, hence more time for the presentation of issues papers, keynote speeches and general debates. The expanded Bureau has an additional international co-chair and there are now Lead Experts (LE) to provide advice on TF work. The Council is more importantly a group of individuals providing advice to China and learning about China.

14. Although the WSSD did not achieve a substantive breakthrough on global environmental issues, some progress has been made, namely on implementing the action plan for Agenda 21 and setting targets for the next 20 years. The actions needed include the promotion of the recycling economy, strengthening integrated decision making and increasing public participation. These will require the full participation of government, markets and the forces of civil society; this does not imply the role of government will be weakened. With China's rapid economic growth, it is imperative to develop the necessary legal and legislative system to promote environmental protection. China's new Environmental Impact Assessment (EIA) Law was enacted in October; any plans or programs that could affect the environment will have to go through strategic environmental assessments (SEA). The legislation also sets out the procedures for public participation in the EIA process. This will entail an important shift in how government decision-making takes the environment into account. It also presents an opportunity for environmental protection agencies to become more integrated into government decision-making.

15. With China's present economic growth targets set at the 16th CCP Congress, we will see in effect the emergence of another China by 2010, and another 2 more Chinas by 2020. This is the implication of 8% GDP growth over twenty years, with the size of the economy doubling every ten years. This unprecedented development represents a tremendous challenge and an opportunity for sustainable development for China. The road China takes and the trajectory of its development will have repercussions for the world.

ITEM 4. KEYNOTE SPEECHES AND GENERAL DEBATE

16. Council Vice-Chair Len Good presided over the keynote speech by Mr Maurice Strong, senior advisor to the United Nations' Secretary General, advisor to the president of the World Bank and chairman of the Earth Council – among other duties. During his presentation, Mr Strong made the following points:

1) The essential link between development and the environment was first put on the global agenda at the Stockholm conference in 1972 and then elaborated in the agreements reached at the Earth Summit in Rio de Janeiro in 1992. The broader concept of sustainable development now integrates economic, social, population, gender and human settlements dimensions. Despite progress between Rio and the WSSD, development on the planet is still not sustainable.
2) There is a growing recognition of the relationship between sustainable development, and sustainable peace and security. Scarcity of resources due to environmental degradation can lead to conflicts within and among countries. The global commons, 70% of the earth's surface that lies beyond national jurisdictions, is increasingly the object of competing interests. The militarization of space, the largest global commons, could lead to a new and dangerous generation of conflicts and insecurity.
3) China has consistently championed the interests of developing countries since Stockholm in 1972. It was also the first country to adopt its own Agenda 21. China is now well positioned to take a major leadership role in international environmental cooperation. China has recognized its environmental problems and their associated costs; it has taken vigorous legislative, administrative and budgetary measures to deal with them. China has ratified the Kyoto Protocol, affirmed its commitment to realizing sustainable development and has committed to greater international cooperation on this front.
4) Special efforts should be made: in improving China's access to new technologies particularly through private sector partnerships; improving energy efficiency, reducing the impact of fossil fuels and giving high priority to the development of alternative energy sources – the establishment of a Consultative Group on Clean Energy modeled on the Consultative Group for International Agriculture Research (CGIAR) is recommended; developing the agriculture sector in ways that are less energy and chemical intensive; improving water quality and water supply through a system of public-private partnerships that provide foreign companies and investors with incentives to participate in China's water development; further developing the environmental services industry; improving China's integrated management capacity; and developing innovative means to mobilize private funds to support China's environmental plans.

17. Vice-Chair Len Good introduced State Development Planning Commission (SDPC) Director General Guo Peizhang who spoke on behalf of SDPC Vice-Chair Liu Jiang. During the presentation, the following points were made:

1) The 16th CCP Congress has entrenched the principle of sustainable development as fundamental to economic growth and to the achievement of the goal of having a well-off society by 2020. To coincide with the WSSD, the GOC has been drafting a Sustainable Development Action Plan which is in the last stages of approval.
2) The Action Plan will be based on the following principle: gradually adopting an economic model featuring low consumption and low pollution; limiting the population to 1.4 billion while improving school attainment and participation in higher education as well as eliminating illiteracy; improving the efficiency of resource use while continuing to improve forest and vegetation cover as well as increasing the proportion of urban sewage treatment.

3) In order to attain sustainable development, China will need to continue to restructure its economy, reduce the imbalance between rural and urban areas, build a comprehensive social safety net, better manage its natural resources, better monitor its conservation efforts, reduce pollution, and strengthen its legal, regulatory and administrative capacity to protect the environment.
4) Measures adopted to achieve the above will be: administrative measures including the use of indicators and EIAs; fiscal and financial measures including appropriate pricing of resources; scientific and educational measures such as the development of technology and improved public education; legal measures; setting up demonstration zones for sustainable development; and using international cooperation such as the international agreements to which China is signatory.
5) China has an effective framework of governance and a comprehensive sustainable development strategy. Yet there is room to improve in administrative areas such as environmental monitoring and improved coordination among sectors and regions.

Discussion

18. The WSSD has been described as "disaster averted, opportunities lost". Little progress has been made on substantive issues. Johannesburg should have emphasized: the role civil society must play while recognizing governments' responsibilities; the need to redefine the term 'development' which can be misused; the need to attack the idea of excessive consumption in developing countries. Johannesburg neglected to focus on the impacts of climate change. There is as yet no appropriate global governance institution, such as an environmental version of the World Trade Organization (WTO).

19. A key element of the WSSD was to look at the tri-partite partnership of government, business and civil society. Next year at the CCICED AGM, 5 TF will report on issues which are linked, namely industry and sustainable development, environmental industries, cleaner production, financial mechanisms for environmental protection and sustainable energy technologies. Now that private entrepreneurs are welcome in the CCP, it would be desirable for the Council to have more representatives from China's private business sector.

20. There is a misconception in the West that China will leave a large ecological footprint on world resources; this is because world opinion is not aware of China's efforts to mitigate its impact on the environment. It is to China's advantage to reduce greenhouse gas emissions, to improve river basin management and conserve resources. However, there are areas where China's impact on the environment is externalized. China is the largest fishing nation and has tremendous influence on the management of fish stocks in the global commons. Similarly in forestry, China's imports are increasing following the logging ban, but a large part of the logging taking place in countries selling lumber to China is illegal. The Council has a role to play in increasing China's awareness to these effects.

ITEM 5. LEAD EXPERTS' ISSUES PAPERS AND GENERAL DEBATE

21. Vice-Chair Len Good presided over the presentation of issues papers and the resulting Council general debate. Council Lead Experts are Dr Arthur Hanson of the International Institute for Sustainable Development (IISD) and Professor Sun Honglie of the Chinese Academy of Sciences (CAS).

22. During Dr Hanson's presentation on international environmental issues and China, the following key issues were underlined:

1) The paper reviews the outcomes achieved at the WSSD, the Doha WTO meeting and the Monterrey Conference on Development Financing. In projecting the global future development path, several different scenarios emerge namely: 'Fortress World' or increasing isolationism; leaving change to market forces; using policy reforms to effect change; and making the great transition to sustainable development requiring behavioral change from government, business and civil society.
2) China may have key impacts on the global environment picture, most notably in the areas of trans-boundary pollution in persistent organic pollutants (POPs), greenhouse gases and acid rain. At the Doha conference, we saw for the first time the issue of the interaction between trade and sustainable development recognized. In Monterrey, we saw the emergence of new conditionalities, and commitments to address poverty and the Millennium Development goals. But it is unclear whether or not these commitments will induce governments to mainstream sustainable development in their national accounts.
3) The WSSD was a global marketplace for ideas promoting sustainable development. A key result of the conference was the emphasis on partnerships, and on the role of business and civil society. Ten key issues are open for discussion, all are related to governance:
    a) China's success in achieving sustainability depends on global progress on environment and development;
    b) Global outcomes in 2030 depend on decisions made during this decade;
    c) Social dimensions such as poverty reduction, environmental justice and better recognition of human ingenuity are essential to achieving sustainability;
    d) There are inadequate investment in sustainable development;
    e) The partnerships between government, business and civil society are essential for accelerating the pace of implementation;
    f) Multilateral environmental conventions (MEAs) require an effective implementation system;
    g) Science and technology knowledge for sustainability is lacking or inaccessible;
    h) International concern exists over China's environmental impacts in the region and globally;
    i) China can become a source of advice and a model for sustainable development;
    j) China appears to be well positioned to take a global leadership role in sustainable development.

23. The Chinese Lead Expert paper was presented by Dr Wang Yi. The following issues were emphasized to members of Council:

1) Environmental protection and economic development complement each other. In order to promote environmental protection, environmental institutions must be strengthened, policies must be sound and enforcement mechanisms effective.
2) Over the past ten years, the nature of China's environmental problems has changed. There has been a shift from point pollution threats, to the more pervasive threat of non-point pollution, and from industrial pollution to the combination of industrial and household pollution. There are new

pollutants which are difficult to control such as POPs. Trans-boundary pollution is increasing. Ecological degradation of eco-systems and watersheds is becoming more serious and there is a growing threat from invasive alien species (IAS).

3) Global warming is recognized as the most daunting global environmental problem and as the second largest CO^2 producer in the world, China is increasingly asked to assume its responsibilities as a large developing country. How China deals with global environmental issues and implements the MEAs to which it is signatory will have an impact in turn on China's prospects in economic, social and political arenas.
4) Nuclear safety is of key concern; China has seven nuclear power stations of different design posing a management challenge in the future, particularly in the areas of emergency preparedness and waste disposal.
5) Environmental issues are closely linked to social and economic development. The public is increasingly aware of the impact of the environment on human health. Social and economic development as well as accession to the WTO bring both opportunities and challenges to the environment. China's large and still growing population continues to put pressure on scarce resources; supply of strategic resources such as water, land and oil is becoming more problematic. Domestic consumption is growing, but so is environmental awareness on the part of the general public.
6) Economic restructuring could allow for better integration of environment and development. Market mechanisms can be used to protect the environment; technology can help solve environmental problems. Old approaches focusing mostly on end-of-pipe pollution control are not sufficient. Economic and social decision-making does not yet integrate sufficiently environmental considerations. No single environmental protection agency in any country can suffice to the task. Environment institutions and governance structure need to be reformed.
7) The new administrative framework needs to avoid splintering responsibilities and overlapping areas of competence. Monitoring and supervision need to be strengthened, there needs to be better coordination of institutions, decision-making needs to integrate social, economic and environmental factors, and there must be a mechanism for effective public participation. The latter will require the encouragement of NGOs promoting environmental protection, and the improvement of transparency in environmental information.

Discussion

24. China's leadership in environmental cooperation is needed because developed countries have not made the change of course called for at the Rio Earth Summit. Some countries are retreating from global commitments such as the Kyoto Protocol. China could exert its influence to reverse this trend.

25. The advisability of inviting China's business sector representatives to become members of Council is questioned. Business tends to advise governments against imposing costs and responsibilities on the private sector.

26. Forests are a key natural resource in China; the GOC is investing heavily in its reforestation and conversion of sloping land programs. It is expected this eventually will allow China to meet its lumber and wood fibre demand. An increasing proportion of paper pulp will be composed of grasses. China has no intention of causing negative impacts on its neighbours. In addition, China cannot afford to spend scarce foreign exchange on imported lumber.

27. China must have the capacity to offer leadership in setting the environmental agenda for the international community. The priorities of less developed countries (LDCs) have not been fully represented since the Rio Summit and China could take the lead in this regard. China can also help combat current trends towards unilateralism and restrictive measures; it can support concepts of collective security and social justice. China can help set guidelines for the appropriate financing framework for public-private partnerships. China can show the policies and measures necessary to implement the spirit of the Kyoto Protocol; this could shape future coordinated regimes where national policies take a lead role.

28. The WSSD presented opportunities to integrate environmental goals and financing issues; it also allowed for a discussion of the Clean Development Mechanism (CDM) which could support sustainable development and outstrip overseas development assistance (ODA) investments. At present, there are conflicting interests between governments and business which impede progress. UN and Bretton Woods institutions need guidance on how to proceed from the three conferences discussed in the issues papers. It is also necessary for countries to provide an integrated, strategic response to these conferences. Aid, trade and environment are linked; China can take a leading role in setting both the agenda and the example.

29. While China has a trans-boundary impact on tropical forests, bio-diversity and POPs, China also has the potential to be a world innovator in addressing domestic environmental issues. China is also in a position to take the lead role in environmental protection with respect to other countries. China has set and reached impressive goals such as food self-sufficiency, poverty reduction and supporting MEAs; forest coverage has increased; there has been a reduction in key pollutants despite rapid economic growth. In future, China's environmental needs and opportunities should be strongly linked to strategies applied elsewhere. The Council could help China in exploring more fully CDM, certification of trade goods, the role of ODA and private-public partnerships.

30. In order to pursue long-term sustainable development, China needs to embark on a new path, different from mass consumption and disposal. China's natural resources and carrying capacity will not allow for conventional development. The key to success is to adopt sustainable production and consumption at an early stage. There is a growing interest in China for the Japanese concept of "circular economy", which comprises elements such as zero-emissions, recycling and cleaner production (CP). The Council has a role to play, emphasizing the fact that only fundamental change will put China on the road to sustainable development.

31. Education should be one of the Council's priorities; a TF should be established to look into sustainable development and education issues. To implement sustainable development will require that university graduates in a range of disciplines, not just environmental sciences, be versed in the concepts and tools of sustainable development. Curricula will need to be developed and faculty will have to be retrained. There may also be need to redraft the relevant education laws.

32. Business can and must be at the core of solutions for the implementation of sustainable development. Only business has the ability to assemble people, capital and innovation to make it happen. As China promotes growth to increase per capita GNP to $ 3,000 US, energy consumption will increase. China will be dependent on a rapid growth in energy supply. The private sector is involved in the construction of the western gas pipeline project which will help cut CO^2 emissions and improve energy efficiency. It is important that this project be done in such a way as to minimize environmental and social impacts – another aspect over which foreign private investors can have good influence.

33. The WSSD is an opportunity missed because Agenda 21 hasn't garnered financing or public buy-in. In China, the challenge will be to empower people in government, in the business sector and in the public to take responsibility for the enforcement of the legislative framework. Capacity must be built so people can fulfil that role.

34. The 2008 Olympics in Beijing are to be the "green Olympics". There are lessons to be learned on green procurement for the Chinese authorities. The Olympics are also an opportunity for public education on the environment.

35. There needs to be a stronger focus on the link between environmental degradation and human health. What is the point of quadrupling the GNP if people are better off but lead shorter lives? Life expectancy is not rising in China anymore. There also needs to be greater focus on the rising frequency of extreme weather incidents, natural disasters and emergency preparedness. Mitigation and preparedness are more cost effective than mopping up after the fact.

36. The prospect of three additional Chinas by 2020 could contribute to climate change which is a real threat to peace and security. Government departments have problems integrating the environment in their planning; they have problems coordinating each other's actions. In its Third Phase, the Council should provide more systematic forward assessments of China's development strategy, identifying risks and enabling the integration of environmental concerns across all critical issues both domestically and externally. Employment is a priority for China and underlies the country's development policies; it should also be kept in mind by the Council.

37. The WSSD focused on partnerships and the business sector was seen as proactive in contributing necessary solutions in order to build such partnerships. Most of the critique at the WSSD was aimed at governments and their inaction. It would be useful to keep in mind that "business" and "governments" are not monoliths. What the world needs are "coalitions of the willing".

38. The magnitude of China's needs and potential goes beyond the experience of other countries. If China moves towards Western consumption patterns, we would need several Earths. What we need is a new model of economic development, and given its governance structure China is ideally suited to experiment with this. Gradualism will not work.

ITEM 6. KEYNOTE SPEECH, PRESENTATIONS BY SELECTED PROVINCIAL GOVERNMENTS AND GENERAL DEBATE

39. With vice-chair Qu Geping presiding, several presentations were made to Council, followed by a general debate.

40. United Nations Environment Program (UNEP) executive director Klaus Töpfer highlighted the following issues in his keynote speech to Council:

1) The progress that was to be accomplished between the Rio Conference of 1992 and the WSSD had to do with implementation. As the Chinese proverb says, it is not the knowing that is difficult, it is the doing. Market forces alone cannot solve the problem; political decision-making is called for. The main findings from the WSSD are:
    a) there needs to be a focus on the regional dimensions of sustainable development; - as was exemplified by the attention paid to Africa;
    b) new and additional timetable and targets were agreed upon – a total of 35, of which the key ones for China concern renewable energy, the Rotterdam and the Stockholm (POPs) Conventions, standard labeling of chemicals, oceans and bio-diversity among others;
    c) specific new issues were addressed: changing production and consumption patterns focusing on non-environmentally subsidized consumption; informed consumerism through eco-labeling; changes in the supply-chain demand in LDCs as a result of consumption changes in developed countries; LDCs and local populations need to have increased access to and share in the benefits of genetic knowledge – making bio-diversity work for their development;
    d) There is a need to shift from point to non-point pollution in dealing with air pollution, and especially particulates.
2) The WSSD saw an increasing recognition of the importance of cultural diversity and ethics. There is a relationship between globalization and diversity – in particular cultural diversity which encompasses traditional knowledge, an asset for LDCs.
3) There was a focus on partnerships among government, business and civil society, with the recognition that there has to be accountability and therefore, monitoring and reporting so commitments can be verified.
4) There was a growing conviction that there is a need for a world environmental organization similar to the WTO for trade. However, at present there are different instruments and conventions such as the MEAs to deal with specific environmental issues; their integration in a world environment governance body needs to be considered.
5) UNEP is now 30 years old; it was a result of the Stockholm Conference, the UN Conference on the Human Environment. In order to better integrate environmental issues and promote sustainable development, we need to consider what actions must be taken and what institutions are needed.

41. The Vice Governor of Liaoning Province, Mr Zhao Xinliang, discussed sustainable development progress in the north-east province, focusing on the following points:

1) Liaoning is enjoying 9% GDP growth annually, and yet steps have been taken to curb pollution. Shenyang is no longer listed among the 10 worst polluted cities in the world, Dalian ranked among the Global 500 Best Cities and pilot programs exploring the concept of "recycling economy" have been started.
2) Liaoning is taking advantage of the massive industrial and economic restructuring now taking place by promoting cleaner production in 230 enterprises. By the end of the 10th FYP and focusing on the province's iron and steel industry, 80% of all industrial waste-water and 75% of solid waste is to be recycled.
3) Liaoning is taking steps to restore open pit coal mines and reuse waste shale and slag; new ventures that are ecologically sound are starting over the ashes of traditional heavy industry. In cooperation with UNEP, an Ecological Industrial Park has been established in Dalian.
4) Water pollution and shortages are chronic in the province; the government is investing heavily at present in water and sewage treatment. Solid waste treatment and recycling waste are also increasing.
5) Urban planning and extensive greening projects are transforming the province's major cities. Public information campaigns focusing on green consumerism and conservation have been conducted. Government is also promoting the concepts of "green procurement" as well as "green offices, green communities, green schools and green families".

42. Mr Zhou Weide, Vice Chairman of the Inner Mongolia Autonomous Region (IMAR), discussed the following issues before Council:

1) IMAR is a vast region encompassing five different climatic zones; it is ecologically important in that its desertification can affect all of northern China including Beijing, it possesses China's greatest expanse of grasslands, and it is the source of important rivers.
2) IMAR's environment has been degraded: desertified and semi-desertified land now covers 60% of the region; bio-diversity has been affected; sandstorms of increasing frequency and severity are battering the region and reaching Beijing and beyond.
3) IMAR has taken steps to combat these problems, including extensive reforestation and conversion of marginal farmland to grassland. Illegal mining operations have been closed and the land reclaimed.
4) IMAR is using the Western Development Strategy (WDS) support to proceed with massive "ecological construction" programs. In addition, it is setting up ecological function protection demonstration areas in order to protect fragile and bio-diverse areas. Other administrative and legal measures are being taken to promote more sustainable development

43. The Vice Governor of Fujian Province, Mr Huang Xiaojing, presented to Council their sustainable development plans. During the course of his remarks, he highlighted the following points:

1) Economic restructuring of state owned enterprises (SOEs) has allowed Fujian to eliminate or transform the worst polluters through investment in new technologies. The province has also worked to control agricultural non-point pollution, cut down on erosion and restore natural vegetation.

2) Fujian has established pilot organic farming areas; some enterprises have earned ISO14000 certification. Xiamen is a State-level model environmental protection city. Nature reserves now cover 8% of the land area; the most prominent is the Wuyi Mountain Reserve which is part of the UNESCO World Natural Heritage network. Eco-tourism and environmentally-friendly enterprises are being promoted.
3) The province has strengthened its system of administrative and legal control measures to prevent pollution. A major thrust at present is to promote better solid waste management and sewage treatment through major public investments – targets have been set to the end of this FYP.
4) Fujian is now starting to integrate sustainable development concepts in all its planning. Greater efforts are being made to educate the public on the issues.

44. The sustainable development plans of the Guangxi Zhuang Autonomous Region were presented to Council by Vice Governor Ms Yuan Fenglan. She focused on the following points:

1) Guangxi is blessed with abundant fauna and flora, mineral resources, hydropower potential, marine resources and is a tourist destination. It is also comprised in the central government's WDS.
2) For Guangxi, WDS participation will imply significant economic restructuring, infrastructure construction, investment in science and technology, efforts in reducing poverty and increasing people's standard of living, and developing border trade while ensuring national security.
3) In order to foster environmental protection, the Guangxi government is making relevant authorities responsible for key targets, increasing its investment to 1.2% of provincial GDP and is working on improving public awareness of environmental issues.
4) The government is targeting its efforts at improving the environment in its major cities which includes investing in such infrastructure as waste water treatment and solid waste recycling and disposal, in controlling total pollutant discharges, and in controlling acid rain emissions.
5) In rural areas, Guangxi has implemented the logging ban and has been converting sloping marginal lands back to natural vegetation. Some counties have been selected to become green models for others. Organic and biological agriculture are promoted among farmers.

Discussion

45. Clearly provinces are avoiding the mistake of pushing development first and cleaning up after. Most provinces' sustainable plans are presently focusing on "ecological construction"; with the poorer western provinces, the government is assisting this effort through the WDS. China is still facing intractable problems where ecological degradation has not yet stopped or been reversed. China is still a LDC and despite comments by members, China is not yet ready to assume any kind of leadership on this front.

46. Chinese scientists are working on climate change due to the country's heavy reliance on coal for energy and the known impact of acid rain and SO^2 on the climate. We are now looking at the relationship between climate and soot levels. Chinese scientists need to be cautious and responsible in studying this, given the regional impacts that are occurring. There is also a need to do more research on the issue of trans-boundary pollution for small particulates and aerosols.

47. The Council needs to do serious work on the formation of, and mechanism for the generation and transport of small particulates. Research is especially key since the GOC economic growth plans are ambitious and are sure to imply a massive increase in consumption of energy. The State Council needs to lead this process, rather than leave it to the sectoral authorities.

48. Capacity for sewage treatment in China is at present 20% in urban areas; the target is to have 45% of all waste water treated by 2005 in cities with more than 5 million population. For key areas, the central government provides funds; in other cases, local governments use pollution levies or other fees. The costs of sewage treatment vary depending on the area, the type of treatment and other factors. The price should be sufficient to motivate private investors but this sector is regulated in China, so the profits may not be sufficient to accomplish this.

49. Particulate pollution is getting much more serious due to the continued use of coal as fuel and the increasing use of private cars. Particulates are not dealt with systematically; in the past they were not an important factor but the composition of air pollution has changed. In reviewing air quality in key cities, we now find that particulates are the number one offender and most of these are fine particulates. Organic matter is a major source of these; some are carcinogenic. Since they are also trans-boundary pollutants and their control is beyond the purview of SEPA, an integrated approach is needed.

50. The WSSD shifted the debate to encompass poverty. The vicious circle of unsustainable development and environmental degradation and poverty are clearly linked. Education is also part of the action plan agreed upon in Johannesburg, since education and health are linked to sustainable development. Although there was no target for renewable energies agreed upon at the WSSD, countries will have to increase the contribution of renewables to the energy mix. Partnership agreements will need to be concluded in order to promote the use of renewable and German ODA will be used in LDCs to this effect.

51. Much of China's progress has been achieved through regulation and government intervention. But with increased liberalization, economic growth will be increasingly fuelled by the private sector and regulation will not be sufficient. It is important to educate business that compliance is not enough; business must take a leadership position. The ISO14000 program can be a good tool to motivate business. Consumers will also be key; if they choose environmentally-friendly products, this can create the demand that business will seek to satisfy. It will therefore be key to educate consumers in China.

52. Western technology for sewage treatment remains expensive; more simple, domestically produced systems could be more cost-effective. Treated waste water can also become a revenue to the enterprise doing the treatment. Perhaps establishing a fund to develop cheaper, appropriate technologies would help stimulate R&D. Attention must also be paid to the cost of water after treatment; market instruments can work in richer provinces but in poor provinces, high costs for water could be counter-productive. Where environmental industries are starting to grow, there is still the need to forge more effective partnerships with the public sector.

ITEM 7. REPORT ON THE WORK AND FINANCES OF THE SECRETARIAT

53. With Vice Chair Qu Geping presiding, CCICED Secretary General Zhang Kunmin presented the report on the work of the Secretariat Head Office and the Canadian Office. While presenting his report to Council, Professor Zhang emphasized the following points.

54. Since the last Council AGM and following the distribution of the 2001 recommendations, the Secretariat has received feedback from 16 government departments and 15 provinces. Findings show that the Council's work is relevant to China's needs. For instance, the NPC adopted two environmental laws over the past year, the first on CP and the second on EIAs – Vice Chair Qu Geping heads the NPC's environment committee and many of the experts from the CP WG contributed to drafting and revising the legislation.

55. The Secretariat was also much taken with preparations for Phase Three of the Council. While its guiding principles remain the same, some reforms were incorporated in the new TOR and Rules of Procedure of the Council – both documents were approved at this AGM. The operations of the Council will thus be streamlined and the work of TFs will be strengthened by the LEs. The move from WG to TF represents a fundamental change in the nature of the work that will be done.

56. With the assistance of UNDP, the Council made a presentation at the WSSD; a report on the Council and a CD-ROM on its progress were distributed to interested participants.

57. Over the next 5-year phase, the GOC will provide 10 million RMB in cash and 25 million RMB in kind to the Council. Foreign donors have so far committed the following support: Canada, $8 million (Cdn); Germany, a minimum of 1 million Euros; Japan, $600,000 US; the Netherlands, $600,000 US. The United Kingdom, the Asian Development Bank, Shell, Norway and Sweden have also indicated they will provide funding to the Council. The Council is moving towards the concept of core funding in order to ensure there is a responsive, flexible mechanism to support the TF work in a timely fashion.

ITEM 8. REPORT ON THE TF CO-CHAIRS' COORDINATION MEETING

58. With Vice Chair Qu Geping presiding, Lead Experts Dr Art Hanson and Professor Sun Honglie reported on the meeting of TF Co-Chairs which had been held on the previous day. During the report, the following points were underlined:

59. Practical issues facing TF Co-Chairs were signaled, namely the slow start-up in TF funding and getting contracts in place; as a result some groups did not have time to start their work. This represents a transition time and some problems were expected. But participants strongly suggest that each TF have a full two years to do its work and prepare its report.

60. LEs had been asked to assess 17 TF proposals; of these, the Bureau approved 9. Phase Three of the Council has the capacity to fund 40 TF-years of work; there will therefore be more TF proposals considered in the coming few years. One of the tasks expected of each TF report is to present to Council a range of three options for strategic consideration; this has not yet been fully implemented.

61. The status of the work for the five TFs that will report to Council in 2003 was discussed. The Energy Strategies and Technologies TF has yet to start work but the group will focus on poly-generation involving coal and include modeling and cost-considerations. The TF on CP and the "circular economy" will be meeting this winter; the proposed expanded focus for the group is in response to China's interests and priorities. The TF on Urban Environmental Infrastructure Financing Mechanism is making progress and focusing on a range of mechanisms that could be used to expand funding for environmental infrastructures during the 10th FYP, with attention paid to the needs of small and medium enterprises (SMEs) in this sector. The TF on the Development of an Environmental Protection Industry started work in spring, with EU experts focusing on the development of the EU's environmental industry, and seeing what experience is relevant to China; it was noted that perhaps there is a need for this TF to bring in a more global approach and experience. The Industry and Sustainable Development TF will focus its efforts on providing China with policy advice on bringing its industry up to world standards.

62. As the Council moves forward in Phase Three, coordination of TF activities will become key. It remains key to have the work of the Environmental Economics TF inform the work of the others. Trade considerations need to be incorporated in the work of the Bio-security on the issue of IAS. This is also the theme of the new EIA legislation, which several TFs are considering from their own sectoral viewpoint. Commonalities will need to be sought and recommendations will have to be coherent.

63. There is an opportunity in 2003 to pursue this integration and coordination among TFs since the five groups reporting do share many issues. But there is a caution not to reduce the richness of each group's findings by seeking to homogenize recommendations.

ITEM 9. COUNCIL GENERAL DEBATE ON THE THIRD PHASE

64. Council Vice-Chair Qu Geping presided over the members' general debate on Phase Three. The following views were expressed by Council members:

65. An inconsistency between the Council Phase Three TOR and the Rules of Procedure regarding the process to approve TF work was pointed out. The Secretariat has taken note of the point and will amend the appropriate documents for Bureau approval.

66. Urban decay, the need to reclaim brown fields, unused construction sites and other wastelands are presently debated in the UK. The move in that country to adopt different concepts of urban planning and to rebuild inner cities could be of relevance to China. It would be useful to consider this in the context of the need to stop urban sprawl and support local communities and neighbourhoods.

67. Phase Three of the Council coincides with the 10th FYP and the WDS. China already has stated goals and targets in these documents. The role of the Council is to help China identify concrete measures and programs to reach these targets. TF work must target high priority areas; only then will active Chinese

participation and feedback be guaranteed. It would be a great encouragement if there was additional feedback from relevant authorities to the Council work reports and recommendations.

68. When discussing the issue of technology transfer for environmental industries, it is often stated that high import costs are a barrier. In fact, much of this technology can be manufactured domestically and, if there is quality control, this adapted technology can be effective. Chinese enterprises can manufacture these products for the domestic market. This is a sizeable opportunity for China.

ITEM 10. REPORT BY THE TASK FORCES

69. Vice-Chairs Måns Lönnroth and Xie Zhenhua presided over the presentation of the Task Force reports and ensuing Council discussions.

a) Bio-security Task Force

70. The Task Force Co-Chair Professor Wang Song and Dr John MacKinnon – sitting in for Co-Chair Peter Schei - outlined the group's findings as they tabled their report before Council. The following points were made:

71. Ten years ago when the Convention on Bio-Diversity (CBD) was signed, the concept was a new one for most people. Now the public is aware that species are threatened and that there is a need for bio-diversity protection. Over the past few years in the international community, it is the concept of bio-safety which is now drawing attention; the focus is on invasive alien species (IAS) and the threat they present for native species. The TF held a workshop to review available data and scientific findings on this issue in China; the work encompasses genetically modified organisms (GMOs) as well. Further work is needed to detail case studies in China and bring in the economic implications of IAS.

72. IAS are defined in the CBD as organisms which are non-native to the area, have been introduced intentionally or accidentally, and are aggressively spreading in their adoptive eco-system thereby displacing or threatening native species. There are other definitions used by different organizations and this issue will eventually have to be resolved.

73. IAS in China are found in all taxa (mammals, fungi, vascular plants etc) and are affecting the economy and people's health. China is vulnerable to IAS because it has a range of ecosystems where IAS can spread: fresh water systems have been invaded by water hyacinth and zebra mussels; some Yangtse River fish species are now economically extinct due to invasive alien fish species; unpalatable eupatorium and lantana are spreading in pastures affecting livestock feed. Many pests are IAS, such as the brown rat and the cockroach. IAS cause changes in landscapes, in ecosystems, in watershed capacity, water flows and sediment regimes, in the bio-diversity of an area - even causing local extinctions. There have been estimates in China of the scale of damage caused by IAS and the costs incurred.

74. IAS are often introduced intentionally (new food crops, trees to use in reforestation schemes, or ornamental plants) or accidentally (pest beetle in log shipments, zebra mussels in ship ballast). Global trade and the increase in tourism are factors in spreading IAS. There are international instruments and existing domestic laws to fight IAS but many overlap and some conflict with each other; there are no laws on the protection of ecosystems; aside from the Convention on International Trade in Endangered Species (CITES), there are no laws to limit the importing, testing and releases of alien species in ecosystems.

75. IAS are highly adaptable, reproduce quickly and some ecosystems are vulnerable to some IAS because of an absence of pests or a high level of human disturbance. It is therefore possible to predict species which are likely to become problematic in a given environment and do a risk assessment. The TF developed a simple scoring system to assess risk based on these and other criteria. The system can be used to screen the species which should not be introduced at all from another country or another region of China itself.

76. Studies in the US show that depending on the species, it is much cheaper to prevent the introduction of IAS rather than having to control them after they've become established. China is planting more land to GMO seed than any other country; GMOs can cause genetic contamination of similar native species and should be screened just as rigorously as other IAS. The new SEA law could be used to deal with IAS and GMOs.

77. The guiding "polluters pay" principle can be applied to IAS, whereby importers would be liable for the cost of clean-up and the price of goods could reflect the IAS risk. The assumption should be that there is a risk until proven otherwise. The greater public good needs to be protected over the individual or firm's short-term profit. Control and regulation should be delegated to the most competent local authority . A new law may be needed that encompasses IAS' threat to ecosystem functions.

78. The TF has published a book on IAS; a database of 128 IAS in China has been compiled. In the US, IAS cost an estimated 137 billion dollars per year; costs would be similar in China but there is a need to raise awareness of the issue and to do more research on the problem.

79. The TF needs Council direction on the work it should focus on in the coming two years. The options are: case studies to document the threat and costs of IAS, broadening the scope of work to include GMOs and related issues such as bio-piracy, or redefining the TF as ecosystem security that could encompass more strategic work on the WDS and wetlands.

Discussion

80. China is already heavily involved in aquaculture, with more growth projected in the coming years. IAS may be an issue and there could be a role for the TF in considering preventive measures that could be cost effective.

81. Prevention is better than cure. It would be worthwhile for the Council to make a recommendation to the GOC on the IAS issue and on the need to develop a strategy that includes participating in the Global Invasive

Species Program. This international perspective should be added. Regarding GMOs, the EU is on the verge of passing strict regulations on content and traceability. This may warrant the attention of the TF.

82. There is a lack of awareness on intentional introduction of alien species in China. Often decisions are made at the local level where there is little understanding of what is at stake beyond immediate economic returns. When problems occur, then there is finger pointing between Chinese officials and scientists. There is an urgent need to introduce legislation to curb the problem that would impose scientific risk assessments on each introduction. Regional differences in capacity and wealth need to be taken into account in China.

83. Work needs to be linked to bio-safety as outlined in the CBD's Cartagena Protocol, later finalized in Montreal. It is important that countries ratify this protocol which deals with IAS and GMOs. With funds from the Global Environment Facility (GEF), UNEP is now doing pilot capacity building activities in China. The TF might consider work on the need to develop in China the capacity to handle ballast water as a prevention measure.

84. IAS are now the second largest threat to bio-diversity in the world and are not yet documented systematically. It would be important for the TF to assess IAS threat in China and outline the global implications. It is important to go beyond sectoral perspectives; prevention and implementation of mitigative measures should be located in the line ministries and the industries dealing with the material.

85. There should be emphasis put on determining the economic incentives needed to send the right signals on the control of IAS, perhaps through the establishment of a liability regime.

86. The issue of GMOs is very emotional in the EU. In exporting agricultural products, China has to meet non-GMO standards; there is a need to mark off parts of China where GMOs are not grown. The threat of IAS introduction should be part of a broader public education on the functions of ecosystems, thereby using public awareness to help control their spread.

87. Past experience and the present example of the WDS tell us that there is a tendency for resources to be used unwisely. China is committed to rapid future growth. Major commitments for the future need to be reviewed to avoid repeating mistakes. It is important for this TF to look at emerging policies and programs and assess bio-security implications scientifically. Issues raised may be awkward, but the result would be beneficial for China.

88. It may be advisable to have a cross-sectoral IAS commission in China; this would have to be established by the State Council. Unfortunately, there are many similar cross-sectoral priorities for the GOC to consider and it is not expected commissions be set up for each. The best way to ensure integration is through education, particularly of decision-makers at all levels and of the public. It may be useful to use the Council AGM for this purpose, inviting key GOC personnel to an awareness-raising seminar.

89. In order for legislation to be developed on IAS control and mitigation in China, it is important for the State Council to submit a draft of the law to the NPC for deliberation. Therefore, the impetus should come from Minister Xie as a result of the Council AGM; simultaneously, SEPA could report on the issue. This will allow

central authorities to take action. The most important is to act in order to prevent intentional introductions; local governments and businesses are involved in this and the central government must have tools to control it. Authority must not be vested in local governments which are mostly self-interested and shortsighted.

90. The State Council has been alerted by CAS and SEPA; now the government is looking into the best management regime for this problem. The TF's report will be used as additional input to the State Council.

91. The 4,000 km West to East Pipeline under construction from Xinjiang to Shanghai needs to be screened for environmental impacts, but this should include IAS impacts. There is scope for China to use the SEA process to find out a project's impacts on bio-diversity and on bio-security.

92. Climate change is no doubt a factor in bio-diversity changes and the spread of IAS. This aspect should be taken into consideration by the TF.

93. IAS spread can cause damage, but it also represents potential benefits. China has successfully introduced new forest species that are playing a positive role in the economy; similarly for the Louisiana crawfish which is now produced in many Chinese provinces. It will be important for China to establish a sound risk assessment and approval system for species introductions.

b) Forests and Grasslands Task Force

94. Dr Uma Lele and Professor Shen Guofang presented to Council members the results of their two years of work. During the course of their report, they emphasized the following issues.

95. In the first part of its work, the TF evaluated the National Forest Protection Program (NFPP) and the Sloping Land Conversion Program (SLCP). Secondly, the TF learned through case studies, policy studies and a series of workshops and conferences. The recommendations deal with improvements to the NFPP and SLCP, broader policy issues and research priorities. The timing is fortuitous because the GOC is presently looking into these areas.

96. The present forestry experiment in China is of importance because it is the largest in the world, substantial resources have been committed by the GOC to this and it covers a large area that started with 13 provinces, expanded to 17 and now is open to all provinces wanting to convert sloping land.

97. On the SLCP, the TF finds that it leads to temporary increases in incomes among participating households who receive both grain and cash income. The environmental impact is not clearly understood. There are issues with the methods used to reclaim diverse ecosystems; the focus of the program is tree planting rather than bringing back native vegetation. The funding can be untimely with impacts on the quality of nursery

materials used. There are also issues with the targeting of the site and the monitoring of results which tends to focus on number of trees planted and area covered rather than people's livelihood. There are unintended adverse impacts such as distortion of local grain markets with lower grain prices and hence reduced farm incomes.

98. It is recommended that the program look beyond forestry to other sources of erosion and their control. The SLCP needs to be less top-down and more incentive-based. For the instrument to be less blunt, there needs to be capacity building for planning, implementation and monitoring at local and provincial levels. The financial sustainability and the outcomes of the program need to be considered.

99. On the NFPP, and looking more particularly at the logging ban which is strict in some areas and partial in others, the TF finds that impacts are not fully understood. There has been some recovery in the natural forests, some increases in tree cover, but the quality of the seedlings has been a problem and there is no evidence this is having an impact on water retention. Due to untimely flow of funds, there has been a reduction in employment and incomes of enterprises, households and local governments. There have been implications for land tenure with farmers who had contracted land for tree-planting but who were prevented from harvesting by the ban. The impact on China's national minorities has been significant. It is unclear whether or not the logging ban has affected lumber imports.

100. Some recommendations deal with improving the implementation of the program, such as lifting the logging ban on collectively-held forests and developing an exit strategy for the ban in state-owned forests. The resource could be managed in a more sustainable way so that China's healthy forests can generate incomes for people and support communities. There is a need for improved land use planning, compensation packages for farmers, and incorporating natural forest regeneration approaches.

101. The TF conducted a survey of 1,400 households to look at how provincial, county and township governments are implementing policy. The TF finds a multi-sectoral approach is needed, with more fundamental forest sector reform – it lags other sector reforms such as agriculture at present. The TF presents recommendations in 5 areas: forest sector governance and administration, taxation and fiscal policies, forest land tenure and ownership, forest harvesting regulations, and forest products trade. Each is divided into priority actions, policy implications and identification of needed research.

102. There are three implications for the work of the TF. First, there are no silver bullets in the forest sector; logging bans were thought to be the way to control over-harvesting, but work in China and elsewhere has shown that the matter is more complex and the logging ban policy needs to be fine-tuned. Secondly, the TF did not do justice to grasslands in its work; in many cases, the solution is not only planting more trees but looking at a variety of vegetation; there is a need for a separate TF solely concerned with the issue of grasslands and composed of specialists in this area. Thirdly, the TF is undertaking an evaluation of its work and feels the Council has to look at the complexities of evaluating short-term TF work when impacts sought are strategic and long-term.

Discussion

103. The Bio-diversity WG had recommended a logging ban over five years ago, but this was to protect old growth forests. In reviewing the present logging ban, it would be advisable to clarify that one of the objectives of the logging ban is to protect the bio-diversity of old growth forests. In those areas, a more sophisticated application of the logging ban should be upheld.

104. There has been a rapid increase in illegal logging globally, but especially in East Asia, Africa and Russia. This is related to insufficient forestry administration due to lack of resources and to an increase in criminal activity. China has been a major importer of logs mostly from Russia, Indonesia and Malaysia – countries with the highest incidence of illegal logging - both before and after the logging ban. There are indications that imports have gone up since the logging ban and there are estimates that one third of China's log imports are from illegal sources. There are several measures that should be taken. Timber certification is part of the answer; public procurement procedures for timber should be tightened (13% of logs imported into China in 2000 was under public procurement).

105. The UNDP has two pilot projects with the State Forestry Administration (SFA), one under NFPP in areas severely affected by the logging bans. Findings show that communities are able to adjust, especially if they get budget allocations from the central government to diversify the economy into areas such as eco-tourism. Those communities see both incomes increase and public revenues go up. However, in many areas there is a need for better planning and more systematic implementation; local government needs help with education, training and more broadly speaking, capacity building. There is a need to find funds for this kind of investment, yet most often there is only money for land conversion.

106. The report shows it is important to take a wider perspective in assessing programs, including the socio-economic impacts of policies. It also recognizes the importance of engaging more systematically all stakeholders, and not only when dealing with compensation but with overall decision-making. The report recognizes that the land tenure issue is central and must be taken into account. A major challenge is that several ministries share partial responsibility for these areas at all levels, leading to confusion, duplication and less than optimal implementation. Budget resources committed have been sizeable, but is this sustainable?

107. China has historical experience, dating back to the Han dynasty, of deforestation and desertification. In 1998, China took a historically unprecedented step in imposing the logging ban. This is a controversial policy but it is necessary given the extent of the degradation. The results have been equally impressive. For example, vast expanses of the Loess Plateau in Shaanxi which were barren these past 100 years are now greening. Because farmers are paid to plant the vegetation, there is support for the program. The SLCP should be firmly upheld. However, there is agreement on the need to fine-tune these policies. There is a concern that farmers who had contracted land to plant trees now find their investment worthless and cannot support their families; yet farmers need to be motivated for these programs to bear fruit.

108. The report makes clear that the logging ban has reduced pressure on forests and helped to restore vegetation. However, negative impacts are also sizeable, since it is the SOE sector that has received most of the

NFPP compensation package and farming households have not been included. While the report has precise recommendations on the fine-tuning of the logging ban, it does not discuss compensation in detail.

109. The Trade WG at the end of Phase Two conducted a study on China's growing timber imports and its environmental impacts in LDCs. The gap between timber supply and demand in China has grown larger following the logging ban. China needs a global perspective when looking at the impact of the domestic logging ban on illegal logging and deforestation in other countries. Timber exporting countries may not be exploiting their resources in a sustainable manner and there may be abuses; they are reluctant to admit to this. There is as yet no consensus within China, but possible steps could include eco-labeling in order to ensure improved logging and manufacturing methods in source countries. This needs to be studied in the context of China's membership in the WTO.

110. Sustainable development as a concept was developed from forest science. Forest laws worldwide deal with three functions: economics, protection and conservation. It is often the case that one function gets over-emphasized at the expense of the other two and measures need to be taken to restore equilibrium. One agrees with fine-tuning, but is a recommendation as sweeping as lifting the logging ban from all collectively owned forests really fine-tuning? Forests need to be used in a sustainable manner. The only function of forests that is linked to the return on private property is the economic function; the other functions are public goods. Perhaps the appropriate response is to compensate for the functions that are common good. At COP6 of the Convention on Bio-Diversity at The Hague, the work program on forests has just been finalized. Important studies have revealed that the best form of carbon sink is agro-forestry, which allows for local livelihoods as well as conservation and protection.

111. The TF has not made a convincing case for the removal of the logging ban on collectively owned land. It has made the case for distinguishing between conservation of forests and compensation. An appropriate response to these problems is capacity building, eco-tourism in different forms and above all, giving local communities the incentives to look after their forests without unsustainable logging. The policy needs fine-tuning and the statement on this should be qualified. The TF report should also put market forces in the context of public interest.

112. Forests need to be viewed within the framework of ecosystems and with a view to restoration. What needs to be restored is not only the forests, but its ecological function, its products and services. In future work, a few issues of interest could be considered: non-timber forest products and the impact of the past few years' policies on these products; diversity and marketability of new tree crops and the eco-systems that are being created with their promotion. Another key issue is the question of socially and environmentally critical forests – for instance forests sacrificed to strategically needed hydro reservoirs but where transfer payments or compensation was not assessed.

113. Forestry is at the heart of sustainable development. It requires nuanced policies; blunt policies and instruments in China will not work. Some lessons on the fine-tuning required from the report include issues of property rights, subsidiarity, ecological and land management – all of which need to be site-specific. The next generation of work needs to get closer to the clients: the people in the poor counties where the policies are

implemented. An implication of the recommendations is the need for deeper analysis and the possibility to assist China with this process.

114. The NFPP and the SLCP programs were a response to a real threat. The programs need to be stabilized, not eliminated. Fine-tuning is called for, based on scientifically sound work. China is regionally diverse and there cannot be blanket solutions; the policies and programs need to be adapted to specific areas. Some tree-planting programs have not been appropriate (such as extensive plantations of apple trees on the Loess Plateau).

115. In China, it is difficult to ban anything. The policy needs to be coherent and applied uniformly. The logging ban should not be curtailed. The policy is based on the fact that China is now self-sufficient in food and that peasants can be encouraged to diversify production. Without the SLCP compensation package for farmers, land conversion would not take place. The policy should be sustained over the long term. But some sustainable logging could take place.

116. There is a need for improved efficiencies in the forest products manufacturing sector. Waste products of this manufacturing need to be recycled. Consumers must be more conscious of their misuse of wood products: excessive use of rare materials in interior decoration or the use of disposable chopsticks should be discouraged. There should be greater efforts to make paper from recycled stock.

117. The FAO's forecast on the overall demand for forests products by China shows this to be unsustainable by the entire world. There need to be substitutes for timber in some processes. And by improving technology in sawmills, waste can be reduced by half. By analyzing the chain linking production to consumption, there are many opportunities to reduce demand.

118. The NFPP is not synonymous with the logging ban; the logging ban was introduced as part of the NFPP following the floods of 1998. The logging ban was imposed to control illegal logging. The SFA has already started to implement some of the TF recommendations, and following a review by the State Council will be relaxing the logging ban in certain circumstances. Compensation of people affected by the logging ban may be extended beyond the state-owned sector; there is also wide acceptance of the SLCP. The SDPC has arranged for budget allocations in order to help maintain the program. The SFA also intends to submit recommendations to the State Council on the need for a better enabling environment for the forest sector. There will also be funds devoted to the development of alternatives to timber products in the construction industry.

119. The NFPP and SLCP are unprecedented in the history of China; the GOC has invested significant funds and resources to make it succeed. There are hiccups in implementation given China's size and diversity, therefore there is a need for fine-tuning, taking local realities and specificities into account. In some areas, there is no need for human intervention and natural regeneration should be allowed to run its course. At present, different departments and agencies are approaching these issues in fragmented ways, projects overlap and resources are wasted. The GOC needs to integrate this work

120. The purpose of the TF was to generate debate and that has been accomplished. The independence of the TF has allowed for thorough examination of the issues. The TF survey of households was extremely useful in examining grassroots impacts. There is more work needed now in looking at efficiency gains from integration, devolution of authority to lower levels of government, and fine-tuning policies, as well as on the trade-offs between short term and long term considerations. A key point to keep in mind when restoring eco-systems is to consider who will pay for this. Very poor mountainous communities do not have a voice, yet they're asked to pay. The work of the TF has helped to better understand this.

c) Environmental Economics Task Force

121. Vice-Chair Xie Zhenhua presided over the presentation of the Environmental Economics Task Force report. Co-Chair Jeremy Warford and Professor Wang Qiwen, sitting in for Co-Chair Li Yining, highlighted the following issues for Council members.

122. The TF report is a wrap up of work that was done by the Environmental Economics WG during the past two phases of the CCICED. It focuses on three themes: resource pricing, strategic environmental assessments (SEA) and green taxation. Resource pricing case studies of timber, rice, fish and grassland among others were conducted. The studies show there is a significant gap between the price of a good or a resource, and the full cost of producing the good or using the resource. The gap represents the cost to the environment. This is a perverse subsidy which encourages wasteful use of resources. Proper pricing is critical in order to promote sustainable development.

123. On SEA, the difficulty lies in assigning monetary values to some of life's most critical elements such as clean air and water. The TF work has provided a basis for doing these estimates as well as outlining techniques and methodologies. On green taxation, sector studies propose that the tax cover the gap between current price and true cost. A book has been published which encompasses the research done by the former WG.

124. The TF recommends a system of pricing be developed which is based on the full cost recovery principle using green taxation. At present, price adjustments are too low and reforms must be accelerated to promote conservation. However, reforms should be introduced gradually in order to avoid undesirable income effects. The TF also recommends capacity building in government agencies to understand and use environmental economics. In addition, SEA should be applied to government programs and policies, not only projects. There also needs to be work on general equilibrium models which would allow for better understanding of the impacts of green taxation (at various levels, on various resources) throughout the economy.

125. The TF is proposing future work be done in areas where the Council and the TF have comparative advantage. The possible areas of study include extending work done on green taxation over the past ten years, emphasizing that the tax need not be revenue raising but could be revenue-neutral. The desired goal is consumer behaviour change. For markets to work efficiently and equitably, all costs should be factored in, including

environmental costs even if they are not in the national accounts. Governments need to step in where there is market failure, as there is in the case of the market's inability to truly reflect environmental costs.

126. Perhaps the TF should be renamed "Environmental Pricing and Taxation TF", or "Fiscal Policy and Environment TF". The work being proposed is in line with the Council's 3rd Phase focus: strategic, cross-sectoral and high-level. There would be a need to work with general equilibrium models to track through the economy the impact of resource price changes and the imposition of green taxes. The TF would also want to look into how environmental policies and green taxes could have differential impacts on different income groups – income distribution being an issue of key concern to the GOC. Finally, implementation of green taxation would be considered. Were the TF to go ahead with this kind of program, it would want guidance from Council on priority areas and on the geographic focus and scope of the studies.

Discussion

127. The case studies of the TF show that environmental depletion or degradation costs are ignored in pricing policy and that the difference between true environmental cost and price is large. It would be recommended for the next phase of work that the TF focus tightly on China, with recommendations that are specific to its conditions, with estimates of magnitudes of costs for instance. On the issue of income distribution, it is interesting to note that some forms of taxation on the consumption of resources could have minimal impact on the poor.

128. Privatization and the government's progressive withdrawal from certain sectors will pose a challenge in terms of achieving environmental goals. The pricing of resources is central to meeting that challenge. Perhaps there should be a comprehensive assessment of subsidies and taxes that have perverse or negative impacts on the environment, focusing on a specific sector, in order to get the quantitative estimates needed and to help crystallize policy makers' thinking.

129. While it is important to conduct SEAs on economic programs and policies, it is equally important to do economic assessments of environmental policies. In formulating environmental regulations, the authorities must look at the costs and benefits of imposing the measure. This is something general equilibrium model work would allow the TF to do. On the issue of green taxation, it is important to look also at incentives for good behaviour since the carrot is sometimes better than the stick approach.

130. There is a correlation between economic growth and energy demand, but it is pessimistic to assume that energy efficiencies cannot be realized. To produce one dollar of GDP, Japan uses 40% less energy than the USA. For China, past experience of other countries points the way to economic growth that is also energy efficient. As the TF report makes clear, this cannot happen without financial incentives to promote the development of new energy sources in the private sector. Prices can provide such economic incentives. Green taxes on consumption can replace taxes on employment; green taxes on consumption affect the rich more than the poor. Any social impact can be further mitigated by other tax reductions, or by increases in social benefits for the poor. However,

green taxes need time to affect consumer behaviour. Going the route of incentives to industry for good environmental behaviour would cost the treasury too much.

131. While some countries manage to achieve growth with energy efficiency, it is true that as LDCs move from $1,000 US per capita GDP to the $15,000 level, their rate of growth of energy use per dollar of GDP produced increases dramatically. This can be expected in the case of China over the next twenty years. There is a need to reflect environmental impacts in taxation, but tax is a blunt instrument and it is important to sort out the undesired effects of taxes. In some countries, the green tax on energy consumption does not distinguish between clean and dirty energy sources. If a country moves towards carbon taxation, dirty emissions such as soot are not necessarily penalized. Impacts on income distribution and on international competitiveness also need to be taken into account when considering different tax regimes. Until there is a robust system of emissions reporting, taxes can create a non-level playing field between companies that are transparent and those that are not. The TF should look also at other flexible market mechanisms, such as emissions trading that could produce similar results to green taxes.

132. From the perspective of the institutional user of this information, there is a need for more readily accessible criteria or indicators that could be applied immediately. For instance, the GOC has done some work on the issue of water tariffs or user fees which could discourage wasteful use of this resource. In Ningxia, by increasing the price of water from 0.006 to 0.012 yuan per cubic meter, the GOC realized a total water conservation of 900 million cubic meters per year – and this price is still well below the actual full cost of water. The basis for water fee collection also shifted from a per hectare of land irrigated basis to the actual volume of water used, thereby encouraging conservation; the fees were collected through farmer associations. Increases in water fees have been even more dramatic in urban areas. But there are inequities that the GOC has problems dealing with, such as that between arid areas and areas where water is plentiful; the heavy users of water in arid areas are farmers, the poorest people in the population. The Ministry of Water Resources endorses the recommendations of the TF that full cost pricing be applied to this scarce resource, but further guidance is needed.

133. On the question of energy pricing, an earlier Council study identified a major gap in the capacity to analyze options for policy making. There is also agreement with the TF report on the need to address the link between environment, economic growth and poverty; these issues are at the core of the Council's current phase. The market needs to be oriented, directed by social choices of communities and nations. It is hoped that China will opt for a different growth path than that adopted by Western countries. Tinkering will not ensure the economy can double in size over the next ten years in a sustainable way. And the impacts of this growth path on employment are critical to the GOC. Council TF studies should assist China in making these difficult strategic growth path choices.

134. Europeans are keenly interested in how China will deal with green taxation. France tried to impose a low-level carbon tax, but this had to be abandoned. The GOC has the power to impose such a tax, but with this comes a heavy responsibility. Sectoral impact studies need to be complemented by general equilibrium model work so reverberations of the tax on the total price system can be assessed ahead of time. Taxes are powerful instruments, but if the price system is not coherent, the effects of a tax can be the opposite of what had been intended. The imposition of a tax also needs to be politically feasible, and it is key to consult a broad cross-

section of stakeholders. A debate is needed around the tax instruments that will be used; the transparency of these instruments is key to efficiency and equity. But given the pace of growth in China, the reaction time to these financial signals will be shorter. Slower growing economies have limited experience to share with China because they have not dealt with issues of such scope or such dynamism.

135. For green taxation policies and full cost pricing to work, there has to be some market coherence; if competitors are not doing full cost pricing, a country's competitiveness could be affected on international markets. Financial instruments considered to promote sustainable development should be weighted in favour of incentives rather than penalties – more carrots and fewer sticks. For instance, allow companies that invest in clean technologies to write-off the investment in the first year; the other option is to make green investments tax deductible. There are many such examples to be found internationally featuring fiscal arrangements, soft loans and targeted funds, which can encourage investment by the private sector and by different levels of government. The TF should be providing China with some of these options.

136. The Energy Strategies and Technologies TF is interested in financial instruments to support investments in clean energy. Without tax incentives or such encouragement, it is not feasible for power generators to invest in wind power generation. China's power generation body is now being reformed and will be split into 5 entities; it is expected that this will slow down the investment in clean coal technologies. With China's economic growth, there is the need to increase power generated every year to the equivalent of an additional Three Gorges Project. The environmental impacts of such energy choices need to be quantified to assist policy makers.

137. The capacity of tax authorities to collect any given tax also has to be considered. The easiest tax is on fuel at the gas pump; each gas station becomes a revenue collector for the treasury; but the tax is on fuel as an input, not on emissions. Other modes of taxation are more difficult to assess and to collect. Urban development patterns reflect yesterday's price structures; with cheap fuel, it becomes possible for people to build in the suburbs and to commute. Changing price structures rapidly becomes a problem for people because they don't have the time to react to price signals. It is strongly recommended that increases start slowly, but that the signal sent is clear and that people understand that the trend will not be reversed; this will foster behavioural change and the development of new technologies.

d) China's WTO Accession and Sustainable Development Task Force

138. With Vice-Chair Xie Zhenhua presiding, Co-Chairs David Runnalls and Professor Ye Ruqiu highlighted the main points of their report to Council.

139. In addition to the TF report, an issue paper has been produced and is commended to Council members.

140. The TF has yet to receive funding so no research has been initiated as yet; only one meeting was held in September in order to prepare the interim report which is now before Council. The TF has produced a book on trade opportunities for China under the WTO; this book comes out of the work done by the Trade and

Environment WG during the last phase of the Council. Also a product of the previous WG's efforts is the report on the CDM and the promotion of sustainable development.

141. China is the largest recipient of foreign direct investment (FDI) in the developing world, and WTO membership will accelerate this. There are key issues for China as a result of this. Environmental consequences of WTO accession are unclear as yet although they will most certainly be major ones; there are new techniques to assess environmental impacts of trade agreements, similar to the SEA process. The TF would like to do some work on this in the coming months; textiles would be an interesting sector given its prospective growth following WTO accession and the known impacts textile mills have on water pollution among others. The reverse effect is also important to study, namely in textiles where competition in high value markets such as the EU will force producers to adopt ISO14000 standards.

142. There are important policy implications to WTO accession. China needs to revise its laws, regulations and measures to ensure WTO compliance; this is a process which has already started. Environmental protection efforts will have to increase inside China in order to counteract some of the deleterious effects of trade liberalization.

143. There are important issues for China to consider under the general rubric of market access. Two are highlighted. There is a concern over the green barriers to trade; this is something the previous WG studied, for example trade bans on certain textile dyes or on wood packaging materials. China will need to be proactive in anticipating such barriers and in dealing with them. But conversely, there are numerous green trade opportunities open to China; a good example is organic or biological agriculture markets in the EU.

144. During the last WTO ministerial meeting in Doha, sustainable development was stated as one of the goals of the organization; there are to be specific sections of the next agreement that will deal with the environment. It is expected that the main environmental issues will crop up in the agricultural negotiations. China will need to study up on these issues prior to the negotiations. There are also pressures to open negotiations again on a new agreement on investment. The relationship between environment and investment is even more key than that between environment and trade. It is now necessary for China's negotiators to look beyond issues which are obviously environmental, and to consider the environment as an integral aspect of other issues which are up for negotiations, such as agriculture, fisheries, investment and so on.

145. There are three broad policy options for the GOC to consider:

1) To deal with trade and environment primarily as technical issues. Under this option it is recommended that: China monitor and assess environmental consequences of WTO accession; address issues of market access; establish a technical support system; and enhance capacity of its personnel to deal with complex trade issues.
2) To link trade and environment to China's sustainable development efforts. Under this option, it is recommended that: China strengthen the implementation of sustainable development and improve policy and institutional coordination; fully understand sustainable development dimensions of the Doha Round of trade negotiations, and identify negotiating objectives and principle.

3) To build a coherent trade and sustainable development action domestically, and seize the opportunity for international leadership. Under this option, it is recommended that: China take the lead in developing international rule governing the linkages between trade and sustainable development.

Discussion

146. International Council members overstate the case when they suggest that China take the lead in promoting sustainable development on the global stage. This is premature. China despite its rapid growth rate remains a LDC; it needs to develop and grow since it was a late starter. China also needs to become more versed in the international rules of the game.

147. The TF should consider tailoring its work to the trade negotiations agenda; that would mean beginning to focus on non-trade concerns such as environmental protection, food safety, rural development and trade related property rights as they relate to health. There will be detailed trade proposals tabled on these topics shortly for which China needs to prepare. Then on the Cancun Meeting agenda for September 2003 are issues such as market access and eco-labeling. And finally there are long-term impacts of the WTO and the MEAs. It is important that Chinese officials get input on these issues in a timely way.

148. Consumers' environmental concerns are on the increase and hence, countries are putting up so-called green barriers to trade. This is becoming a market reality for exporters to deal with. There is a gap between environmental production standards in developed and LDCs. After accession, the perception was that China would be spared the usual trade barriers, but non-trade barriers such as environmental issues are bound to become more numerous. This is actually a positive opportunity for China to develop green products, to upgrade its national standards and to seek eco-labeling certification. There is interest in the TF taking on a preliminary assessment on non-trade barriers facing China.

149. China has so far performed well in global trade negotiations, but the Doha and Cancun agendas are tackling new issues. These issues are tied to fundamental questions related to nations' domestic choices, values and measures. In Europe, the public is reluctant to continue on the road of trade liberalization. These concerns over the negative impacts of trade on environment and equity are leading to scrutiny of the legitimacy of trade negotiations. China needs to understand clearly where these impediments to negotiations are coming from in countries of the EU and others. Because the issues confronting all country teams are new, China is in a good position to stake out this new ground. In trade negotiations, LDCs have been defensive, seeking exemptions that are linked to their relative disadvantage. This is where China has a role to play given the size of its economy, the different growth model it pursues and its independence.

150. This TF has an important work plan to pursue but it needs to prioritize. The first option presented by the TF, with two initial recommendations that are directly related to environmental issues, could be tackled first, with SEPA being the obvious agency to do this work. It will be important for the TF to help China see green barriers in terms of green opportunities. It would also be possible to conceive of the convention on persistent organic

pollutants (POPs) as a green barrier; the development of production standards for trade goods need to include POPs.

151. It is important to consider ways to support sustainable development in China in the context of high FDI. Past negotiations on an agreement on investment failed because of massive protests over environmental concerns. FDI can lead to the imports of cleaner and more advanced technologies.

152. MEAs all involve trade issues; CITES has trade in its very name. To this point, there has been no conflict between MEA measures and the WTO rules. Work on this is needed to emphasize how important it is to foster greater cooperation among the various sectoral MEAs. The WTO has a commission on trade and environment now. And the issue has been included in the agenda of the Doha round of WTO negotiations.

ITEM 11. DISCUSSION AND APPROVAL OF THE RECOMMENDATIONS

153. Vice-Chair Xie Zhenhua moderated the Council debate on the recommendations of the meeting to the State Council. A first draft of the recommendations had been submitted to members prior to the AGM; the LEs then revised this draft based on TF reports and Council deliberations. In both cases, the text was first written in Chinese and then translated in English. During discussion on the second draft, members made the following points.

154. The text is a good beginning but sections dealing with the “circular economy” and China’s role internationally need to be strengthened. In addition, the introduction to the recommendations needs to situate these in the context of the three key international meetings on the environment which took place over the past year. There needs to be emphasis put on the commendable progress China has made on the environment over the past ten years under Premier Zhu Rongji’s leadership.

155. In the section on the participation of civil society, the role enterprises must play should be brought forward. The words “good governance” have no meaning in Chinese; an alternative term should be found.

156. The wording dealing with the logging ban on collective lands needs to be considered seriously; there was a heated discussion in Council earlier, which has not been reflected in the text. The need to develop better indicators for monitoring and evaluation should be mentioned.

157. Definitions are needed for concepts which may be clear in China but which are unknown under those terms elsewhere. For instance, “circular economy” and “ecological construction” are not well defined in English at this point.

158. The issue of logging ban on collective lands is complex but needs to be addressed in the recommendations. The ban at present is difficult because of the issue of property rights. Wording needs to be carefully crafted in order not to give the wrong message.

159. The recommendations are aimed at high-level policy makers. The first section of the text should refer to China's intention to double its economy in ten years and should refer to the discussions that took place on this since unbridled growth could easily threaten sustainable development. The text also needs to highlight the critical choices the GOC needs to make in terms of growth path. Tinkering will not be enough; a major reorientation is needed. And employment implications need to be underlined since this is a key concern of the GOC.

ITEM 12. GENERAL DEBATE ON KEY ISSUES AND ON ESTABLISHMENT OF TASK FORCES

160. With Vice-Chair Len Good presiding as Chair, members engaged in a general debate on the establishment of Task Forces and on the key issues they should tackle.

161. The Chair clarified the process whereby a TF can be created, how it is to be funded and how it can be expected to operate. Recommendations for task forces can come from the GOC and its agencies, experts and Council members. Recommendations should be followed by the submission to the Secretariat of a detailed proposal for the TF. The Secretariat will first screen the proposal to ensure it fits accepted criteria and refer acceptable proposals to the LEs for technical screening. The LEs put forward their recommendations on proposals that should be funded as task forces to the Bureau. The Bureau makes the decision on the selection of any TF.

162. The Chair specified that, because a TF idea takes some six months to be fleshed out as a proposal and requires two years to complete its work before reporting to Council, the Bureau has already approved a number of TF which reported in 2002 and will be reporting in 2003. For 2004, a number of proposals have been screened by the LEs; the topics are river basin management, non-point source pollution and green taxation; proposals on the WTO, bio-diversity and transportation need to be revised before the Bureau gives them the green light. No final decision on 2004 TF has been made. New ideas for TF brought forward at the 2002 AGM will only come to fruition in 2005.

163. The Chair clarified that to date, TF funding has come from two streams: core funding for Council provided by a few donors, and funding earmarked for a specific TF coming from a specific donor. For Phase Three, the intention of the Bureau is to encourage donors to contribute to core funding so there can be greater responsiveness and flexibility for TF selection. The Council has at present a budget sufficient to finance 40 TF-years of work; 12 of these are as yet not allocated, which implies room for 6 additional TF.

164. During the ensuing general debate, members raised the following issues.

165. The problem of POPs has been brought forward earlier. It is of critical importance to better understand the environmental and human health impacts of fine particulates, and to identify the components, translocation and dynamics of these POPs. They may have also climate change effects, and they are likely to be persistently

dangerous. China's emission of POPs needs to be understood in terms of regional and more global effects. It is important that policy options that are eventually taken by China be the right ones.

166. A point of key importance which would warrant a TF is the impact of environmental changes on human health.

167. There is already quite a lot of fundamental research done in China on issues which are of importance to a number of task forces. The Council should not be involved with doing basic research, but should review and integrate the information already known and make focused and strategic policy recommendations.

168. There is a need for a TF on environment and education. For a critical mass of people to become committed to sustainable development, public and targeted information programs are needed. China is committed to ambitious growth targets to 2020; for this to be achieved in a sustainable way, China would have to increase the efficiency of resource use by a factor of 8 or 9 – an unlikely prospect. It will be key to do work on the ecological footprint that China is likely to have as a result. China will need to comply to international standards in order to avoid widespread degradation of the environment. China will need concrete support and advice in order to achieve this.

169. At the moment there are two proposed TFs dealing with energy, one on coal and the other on renewable sources. Energy will be a key factor in allowing China to pursue its growth targets; the choices China makes on the energy to power this growth will have impacts on air pollution and climate change, which in turn have implications for human health, ecosystems and other issues locally and globally. The Council needs to assist China answer these questions and explore the impacts of these options.

170. Next year, the TF on Energy will report on the more efficient uses of coal such as poly-generation and coal gasification, but there is a lack of holistic, long-term energy strategy in China. Renewable energy has not been considered seriously enough, nor is there yet a consideration of alternate energy sources for cars. China's existing energy policy is not sustainable. This should be the focus of an additional TF.

171. The performance of investment in China with respect to energy consumption will be key. The conditions that will foster investment in cutting edge technology in all sectors, but especially in transport, industry and construction are critical. Work done so far by the TF on Environmental Economics is laudable, but more needs to be done on the incentive structure needed to foster this.

172. Information is requested on the progress made by task forces, as well as on the status of any TF with respect to Bureau approval. The Chair commits to providing Council with timely information on this.

173. Some issues that were the focus of WG studies and are now taken up by task forces will not go away and will require continued attention – issues such as bio-diversity and energy. Productive work in these fields depends on the maintenance of research networks and working relationships between international and Chinese TF members. This should be kept in mind when planning a TF.

174. Integration of the environment in government policy-making is difficult. As its economy grows, China will need to be aware of the international consequences of its choices. The Council can help in this regard. China's footprint on timber trade, fisheries, climate and energy is undisputed and is of concern internationally. China should take a forward-looking approach and be proactive in avoiding conflicts over these issues. Some Council activities should focus on the international dimensions of China's growth.

175. In the context of the proposal for a TF on environment and education, civil society, the role of NGOs and of public participation should be considered. Taking action on the environment requires the cooperation of civil society; this in turn requires a degree of transparency. The public through well-informed and motivated NGOs can become an agent for monitoring and enforcement of environmental policies. These issues should be included in a TF on public education.

176. The 16th CCP Congress stated China's goal to realize a reasonably well-off society by 2020; this is understood to include a healthy environment. There are social indicators of this well-off society, but there are only a few vague indicators for the environment in this context. The relationship between the well-off society and the environment needs to be elucidated with quantifiable indicators. Having set targets that can be measured using indicators would be of great assistance in helping China meet its stated goals.

177. It would be useful if Council members were provided with more information on the TF proposals that are being considered by the Bureau. This would allow members to offer more pointed suggestions.

178. In considering the continuing work needed in the areas of energy and bio-diversity, there could be an effort to put this work in the context of the WDS and the initiatives now planned in these areas; this would allow the work to be focused and specific. There is also a need for the Council to become more proactive in becoming an advocate for the work China is doing on the environmental front; this may help avert some of the conflicts that could arise between China and the global community.

179. There is a need for more assiduous monitoring of the fate of Council recommendations after they are made; unless Council members know the response generated by their recommendations can they be effective. A performance track record of the Council needs to be kept.

180. The focus of the Council's work should be strategic, not technical or scientific. The impact of China's proposed economic development is the central issue for the Council now. For this to happen, there has to be qualified personnel taking part in a TF and this TF needs sufficient funding. In addition, any TF should take into account the work already done in China and elsewhere on any given issue.

181. In the context of a TF on education, the increasing role of business in this area should be taken into account. As China goes through its phenomenal growth, the majority of economic agents will be small and medium enterprises (SMEs). Their involvement in the environment must go beyond responding to incentives and disincentives; their capacity to understand and manage the environmental issues they face is essential.

182. The Council during Phase Three should respond to the challenge posed by the targets set during the 16th CCP Congress. Strategic information needs to be given to the GOC so it can avoid reaching its economic and social targets at the expense of the environment.

183. As a result of the economic and social targets included in the 16th CCP Congress declaration, China will accelerate its urbanization, mostly through the growth of small and medium cities. Yet cities have large impacts on the environment especially if this is not managed or planned well. There need to be improved regulations on resource use, on urban planning and on the protection of farmland. This area of study would be worthy of TF attention.

ITEM 13. CLOSING CEREMONY

184. With Vice-Chair Xie Zhenhua presiding, Vice-Chairs Xie Zhenhua, Len Good, Måns Lönnroth and Qu Geping addressed members of Council during the closing ceremony of the First Meeting of the Third Phase. During their remarks, the following points were underlined.

185. The Meeting concludes after fruitful discussions. Chairman Wen Jiabao wishes to express his gratitude to members and experts for their efforts in the cause of environment and development in China.

186. The Meeting included keynote speeches, issues papers, presentations by four of China's regions and provinces. Four task forces reported on their findings and these reports led to active debate on the part of Council members. The theme of the meeting was Environment, Development and Governance, a Response to the WSSD. Issues discussed included development paths, integrated government decision-making, partnerships between government, industry and the public, strengthening education and science and technology, ecological conservation and construction, and global issues.

187. Regarding the work of this Phase of the Council, it is important that this work be situated within the context of China's overall goals, set at the 16th CCP Congress, namely the building of a relatively well-off society by 2020. Capacity for sustainable development must increase and so must the efficiency of resource use.

188. The Council must also align its work to the agenda set at the WSSD. China is keen to grow on a path that emphasizes science and technology, high economic returns, low resources consumption and low environmental pollution, high human capacity and efficiency.

189. Task Forces play a key role in the CCICED; their work provides the foundation for the discussions among Council members. The Bureau has set several principle that apply to the TF mechanism: the focus of TF work must be an issue that is of urgent concern to China, funding needs to be available for the work, and top expertise from China and abroad needs to be recruited for TF participation.

190. Task forces reporting at this AGM made valuable contributions. The TF on Bio-Security report raised awareness on the issue of IAS and the threat they pose to China's environment; it is imperative to set up a risk

assessment system and a scientific supervision system to control the introduction and spread of IAS. The TF on Forests and Grasslands had positive comments on the NFPP and the SLCP. The TF on Environmental Economics made points on resource pricing and green taxation. The TF on Trade and Environment summarized its findings to date and presented an agenda for future work.

191. The Council's reports, policy recommendations and TF research findings are all important outputs of the CCICED. This work must be conveyed in a timely fashion to pertinent authorities. An improved dissemination mechanism for the Council's views should be developed to optimize reach; feedback from relevant authorities must also be provided to members.

192. China is a LDC and is still facing serious environmental problems; the rapid pace of growth will no doubt exacerbate some of these. China is determined to tackle these challenges and is committed to continued international cooperation and implementation of the international conventions it ratified.

193. There will be changes in the GOC personnel in March 2003; it is not yet possible to set a date for the 2003 Council AGM until a new Chair for the CCICED is appointed. Members will be advised in good time. There is also the possibility that the membership of the Council may increase.

194. The path ahead for China presents both opportunities and risks for the country and the world. China's efforts and successes are to be applauded. China is willing to engage the global community on these issues and is willing to experiment and take bold decisions. As China continues to grow and make progress, new issues will have to be addressed; income distribution is most certain to be one of these issues. China could take the lead on the international stage, setting an example for sustainable development. But China's reluctance to assume this responsibility must be respected.

III RECOMMENDATIONS OF THE COUNCIL TO PREMIER ZHU RONGJI

195. Recommendations of CCICED to the Government of China

First Annual General Meeting of CCICED during the Third Phase, November 25, 2002

The first meeting of the China Council for International Cooperation on Environment and Development Phase III (CCICED) was held in Beijing during November 23-25, 2002. The Council examined the relationship of Environment, Development and Governance at a very auspicious time. The meeting takes place a year after China's accession to the WTO, and just after the WSSD and the Chinese Communist Party's 16th Congress.

The smooth transition in leadership at this Congress, representing both continuity and change, marks the next phase of China's long march to the front ranks of the world's most influential nations. Certainly China's remarkable progress on sustainability is a tribute to the efforts of this great country's leaders who

took bold steps in the years following the Rio Earth Summit. And the recommitment to sustainable development by the 16th Congress is an important decision.

The path ahead will be even more challenging. The nature of environment and development problems is changing. With a doubling of the Chinese economy projected for this decade, and a doubling again in the next, addressing environment and development issues in a timely and effective fashion will require a singularly strong will, more financial resources, and great ingenuity. Sustainable development will have to be linked much more strongly to employment and a number of social policies. The challenge of creating a sustainable national economy on the scale of China's is unprecedented. There is no existing model to draw upon for a country the size and complexity of China.

China's achievements have taken place at a time when the world community is still being drawn in many directions. China's best efforts for sustainable development will fall short unless there is a stronger implementation effort for sustainable development on the part of the global community. And China is a country whose choices during the coming decade will have significant environmental implications for the region and for the globe. In reality, China has much to contribute internationally on how to implement sustainability within a developing economy. For all these reasons, the Council applauds China's effective participation in international processes such as the WSSD, and the commitment at the highest level to fully meet international obligations under the global conventions. China should be preparing itself for an even larger international role in the future.

The Council has heard keynote speeches, issues papers, plus the reports of four CCICED task forces and from four provincial vice-governors on their sustainable development progress. Our recommendations address several urgent issues related to the six priority areas of China's new draft sustainable development action plan. While the advice is intended for immediate use, it is with the recognition that today's decisions will affect the ambitious national objectives set for the year 2020.

PART A THE TRANSITION TO SUSTAINABLE DEVELOPMENT

Environment, Development and Governance

In the past CCICED has focused its attention on environment and development. The consideration of governance is new and in line with international views that this topic is essential for successful implementation of sustainable development. There are many definitions of governance, including the following one, from the Institute on Governance located in Ottawa, Canada: *Governance comprises the traditions, institutions and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern.*

Governance mechanisms cover a wide range of subjects, for example, the expanding role of civil society and communities in the management of natural resources, the role business can play in self-regulation of pollution, and partnership models to implement sustainable development. Good governance requires

effective government. In this context the Council notes the need not only for improved coordination, but also for integrated approaches, so that sustainable development becomes the responsibility of all units of government and at all levels.

In all parts of the world the role of national and local government is shifting dramatically—from implementer to enabler, and as a partner for sustainable development. The right enabling framework will go a long way towards guaranteeing the success of the partnerships called for at the WSSD, and for attracting new environmental investment. An enabling framework should provide appropriate legal, fiscal, policy and regulatory conditions that promote sustainable development. This approach does not imply a shrinking role for government, since the issues of environment and development are growing more complex, and of larger magnitude. Instead it will permit a better balance of action on the part of government, private sector and civil society.

The CCICED recommends the following actions to improve governance for environment and development:

(1) Strengthen integrated policy-making for sustainable development, and improve government coordination mechanisms for environmental protection. An integrated approach to policy development and implementation has become commonly accepted elsewhere in the world. Such policies deal with cross-sectoral impacts, the removal of systematic barriers to environmental and resource protection, and the internalization of sustainable development within organizations. The efforts of the SDPC (State Development Planning Council) to build integrated approaches to environment and economy could be further strengthened.

The existing level of coordination among departments and sectors is limited and forms a major barrier that has been pointed out in previous Council recommendations. At this point in time, when a renewed approach to sustainable development is under consideration, it is appropriate to seek new coordinating mechanisms that take into account the trend toward decentralized decision-making as well as cross-sectoral coordination within government.

(2) Build sustainable development implementation partnerships and capability among government, enterprises and civil society. For China, much work remains to be done in the establishment of such partnership relationships. New mechanisms are needed to provide for rapid funding and effective implementation of partnerships. Partnerships can be encouraged with both domestic and international enterprises. The goals for partnerships can include more effective sustainable development implementation, access to technologies and management experience, and attraction of more private investment. Some partnerships may best be carried out through international networks. An example where China could take a leadership role is in the development of an international Consultative Group on Clean Energy.

(3) Improve the incentives for enterprises to engage in environmental protection. Government can strengthen economic incentives for the participation of enterprises in environmental protection. While numerous initiatives already exist, much more needs to be done. Suggested measures include:

- Raising fees for polluted water and solid waste treatment to reflect total environmental damage costs, and then gradually opening more public utilities to the market.
- Ensure that prices reflect underlying costs and resource values.
- Establishing and improving environmental performance labeling (such as energy efficiency labeling, environmental labeling, etc.).
- Encouraging research and development of cleaner products.

(4) Encourage the development of non-government environmental protection organizations, and establish and improve an environmental information sharing system. Solving environmental problems requires collective action, with participation by groups and communities. It is recommended that non-government environmental protection organizations should be encouraged to develop, and to participate in environment and development policy-making, activities and monitoring. Such organizations are very important for improving environmental self-discipline of the civil society.

At the same time, an open and transparent environmental information sharing system should be established. Elements of a system, operating at national, provincial and local levels might include a transparent, highly accountable environmental protection administration; monitoring of regional water quality and drinking water quality; a highly-respected system for food inspection; and a system for corporate reporting on sustainable development. Increased public access to environmental information is an important element for accountability.

(5) Pay special attention to, and reduce the incidence of environmental degradation and resource depletion on the poorer members of society. Regulatory and economic instruments to improve environmental performance should be explicitly tailored to poverty alleviation objectives.

A Sustainable National Economy

The renewed commitment of China to build a sustainable national economy based upon environmentally-friendly and resource saving approaches comes at a critical juncture for its future. China's rapid wealth creation could be based on ever increasing levels of consumption that within a few decades or less could result in unsustainable pressures on the environment. Or it could be used to foster unique Chinese patterns of growth placing much greater emphasis on high quality of life approaches, an information-based economy, a high level of investment in environmental goods and services to ensure ecosystem integrity, and an equitable distribution of the fruits of economic progress.

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. High profile and trend-altering events such as the 2008 Olympics can become part of the strategy.

CCICED recommends the development of scenarios that would explore the implications of developing a sustainable national economy. Such scenarios should draw upon quantitative and qualitative information on cross-sectoral impacts of sustainable development strategies, introduction of new technologies, and other

factors. And the scenarios should take into account the impacts of various international financial, security, environment and development conditions.

A sustainable development economy will require even more attention than in the past decade to both sustainable production and consumption. Thus CCICED recommends the following two actions.

(1) Greatly strengthen the transition to sustainable development in the industrial, biological, energy and service sectors of the Chinese economy. China's future economy will be more diverse, with hidden challenges to sustainability, such as those related to tourism, or biotechnology, in addition to the existing environmental problems of energy, manufacturing and resource exploitation. These issues cannot be considered in isolation from employment strategies and concerns such as environmental health.

CCICED welcomes the new Cleaner Production Law and the commitment to a Circular Economy that addresses material reuse, recycling, and reducing the amount of waste. But tougher administrative and regulatory action will be necessary, along with an improved and broader range of economic incentives. Finally, as the experience of leading provinces reveals, a sustainable economy requires major industrial restructuring and redesign set in the context of improved urban planning and development.

(2) Establish sustainable consumption models appropriate for China's changing economic and social conditions. China's current low per capita consumption pattern is an opportunity to avoid the mistakes of many other countries that have developed very high levels of material and energy consumption. In the next five to ten years new patterns of consumption may well be set within China, since so many of China's citizens will be substantially wealthier. It needs to be reinforced that sustainable consumption models can still lead to economic growth. Indeed, attention to environment is an important means for creating growth. Expanding domestic demands also should not mean encouragement of waste. Sustainable consumption patterns within China will push production towards sustainable pathways. Sustainable consumption should have the added benefit of fostering the competitiveness of domestic enterprises and help to eliminate green barriers in international trade.

Education and Knowledge for Sustainable Development

Although sustainable development has become one of China's basic strategies, awareness and understanding of sustainable development still needs to be raised to a much higher level. Education and

knowledge expansion of sustainable development need to be further enhanced through a variety of means, including the following: sustainable development capacity building for decision makers, particularly for local level decision makers, and for business leaders; education and awareness-building for the public, using a variety of media; and strengthening sustainability elements of school and university curricula.

Role of China in the Global Community

Members of Council highly appreciate the international role China has played over the past decade. CCICED views that China is well positioned in the coming years for continuing, and, at a rate that only the country can determine, perhaps expand its substantial role in international environmental cooperation. Its membership in the World Trade Organization adds a major new dimension to this capacity.

There is growing international concern about the possible impacts of China's rapid growth on the regional and global environment. It is therefore particularly important that China's policies for growth and sustainable development should take full account of their international impacts and implications. This will go far to avoid international concerns and misconceptions, and will facilitate productive international cooperation in fields vital to China's development.

PART B RECOMMENDATIONS BASED ON CCICED TASK FORCE REPORTS

In this first meeting of CCICED Phase 3, four Task Forces were asked to present their results. These reports receive a full discussion by Council members, who modified and selected among the options presented. The summarized policy recommendations noted below reflect the views of Council. Additional information and detailed technical recommendations are available in the reports and publications of the individual Task Forces.

Environmental Economics

In order to integrate environmental concerns into the mainstream of economic decision-making, the following suggestions are proposed:

Improve the empirical basis and refine methodologies for strategic environmental assessment. According to the new Environmental Assessment Act, environmental and ecological issues of major development plans will be assessed. Effective implementation of the Act requires a series of guidelines on the technical, economic, environmental and social aspects involved.

Develop a Green National Accounting System that reflects the true social and environmental costs of economic activities. Costs should include production, environmental degradation and resource depletion.

Such a system should be in the form of satellite accounts, paralleling conventional national income accounting measures.

Explore environmental pricing and taxation. The costs of depletion and degradation of the natural environment should be reflected in pricing policies such as user charges and pollution taxes. Increasing use of economic instruments for environmental management, paying particular attention to the implications for the poorest members of society, and in light of practical implementation issues, should be a key feature of environmental policy in China.

China's Accession to the WTO and its Environmental Impacts

The Government of China should require that the implementation process of its new Environmental Assessment Act specify that a strategic environmental assessment and perhaps a sustainability impact assessment be performed on the impacts of China's accession to the WTO and other important changes in trade policy. Studies have revealed that many of the important gains from liberalization can be dissipated by increased environmental costs if appropriate measures are not taken. A timely assessment and continued monitoring of the environmental affects of accession will allow China to adjust its environmental laws and regulations to counteract the harmful effects of rapid trade expansion.

China must strengthen the capability of its negotiators to negotiate trade and environmental issues in order to play a more active role in the Doha Round. Since China lacks the necessary knowledge and experience to deal with such a wide spectrum of issues simultaneously, considerable effort is needed to enhance technical support groups within SEPA (State Environmental Protection Administration) and MOFTEC (Ministry of Foreign Trade and Economic Cooperation). The enhancement effort should draw upon outside experiences, expertise and information to better inform Chinese negotiators. The technical support groups should become capable of providing analysis of the positions of other countries. And the strengthening effort should update China on new developments outside the negotiation process, and provide access to the latest research on trade and environment.

The Government of China and industry organizations should establish mechanisms to monitor and report on significant changes in the laws and regulations of other countries that might affect China's international trade. This early warning system, combined with China's access to the WTO's transparency mechanisms will help China to identify potential barriers to Chinese exports at an early stage, and to formulate government policies that assist industries to adjust. However, the key solution for addressing green barriers lies in improving China's own environmental standards and bringing these more into line with international standards. The government should provide incentives to industry to seek ISO 14000 certification. It also should promote international cooperation and exchange on standards development and seek dialogue with China's principle trading partners as they formulate their standards for ecolabels.

Forests and Grasslands

Although China has achieved great success in forest and grassland protection and restoration, the central government still has great opportunities to improve policies and their implementation.

Improve the SLCP (Sloping Land Conversion Program) and the NFPP (Natural Forest Protection Program) under the existing policy framework.

For the SLCP, the government should adopt a more holistic, more flexible and multisectoral approach to make land conversion both ecologically and economically sustainable. Needed is an approach aimed at achieving ecological restoration while providing realistic, economic market-based incentives to households. This will require a more fine-tuned, decentralized, location-specific approach suited to highly diverse land conversion circumstances in the different provinces. Second, the government should promote routine independent monitoring and evaluation to improve planning and implementation at all level, adopting a more participatory consultative approach to planning that involves stakeholders.

For the NFPP, remove the logging ban from collectively-owned forests, where appropriate. Furthermore, the government should make a gradual and carefully planned transition over time from a blanket logging ban to a more diversified, flexible approach that enables sustainable forest management on state-owned forests. This will require establishment of land use planning for diversified land use that includes ensuring adequate protection of old growth forests, tree planting, as well as natural rehabilitation of sites.

Adjust overall forest policy.

Forest policy reform has lagged behind other sectors such as agriculture. Thus it is recommended that reform proceed in at least five priority areas:

- Restructuring of public/private forest management and decentralizing of authority in forest administration.
- Monitoring and evaluation of performance of government and private forest management at the different levels.
- Rationalizing of taxes and improved identification of authority to tax within various sectors.
- Strengthening of property legislation pertaining to collective forests in accordance with the new land contract law; identifying due process for land takeovers by government, and procedures for valuation and compensation in cases of *imminent domain.*
- Updating relevant domestic and international trade policies.

Eco-Security

China's rapid economic development, including explosive levels of growth in trade, transportation and tourism, is increasing the introduction of species—both intentionally and unintentionally. Serious attention

should be paid to Alien Invasive Species (AIS) threats and damage to biodiversity and natural ecosystems, and, in turn, to economic loss. It is therefore recommended that:

China develop a national Alien Invasive Species strategy designed to combat the multiple threats of AIS. The strategy should incorporate risk assessment, full social cost pricing, the user pay and precautionary principles, development of an early detection and warning system, fast sharing of information, and rapid response mechanisms.

China's Convention on Biological Diversity (CBD) Enforcement Coordinating Group should for a special AIS administration office to support the overall AIS program. Consideration should be given to establishing AIS administrative institutions at various levels.

Based upon an overall review of the relevant existing legislation, a new set of regulations pertaining to the control of AIS should be formulated, together with an AIS list.

Genetically modified organisms (GMOs) pose similar potential problems to AIS with regard to native species and ecosystems. Similar risk assessments and field trials before permitting should be carried for GMOs.

Research and capacity building for dealing with AIS issues needs to be strengthened.

IV. MEETING WITH PREMIER ZHU RONGJI

a) Council presentation:

196. During the meeting with Premier Zhu Rongji, several Members of Council addressed the Premier and emphasized the following issues:

197. There have been changes made to the Council for this Third Phase. Discussions at this First Meeting focused on the road ahead for China. The Council recognizes the achievements made by China under the leadership of Premier Zhu, in terms of environmental protection and the promotion of sustainable development. Spending on environmental protection has reached its maximum level to date; despite rapid economic growth, pollution has decreased, reforestation has increased and degraded lands have been restored; and important administrative changes in the environment portfolio have been made.

198. With 8% annual GDP growth, we can expect to see China's economy double by 2010 and quadruple by 2020. This will no doubt have severe impacts domestically and globally. The WSSD has revealed that countries are not yet on the road of sustainable development. There are new partnerships needed in order to achieve this goal: partnerships between government, industry and civil society. Markets are at the heart of these partnerships; but markets need to serve sustainable development. There are four ways to achieve this:

1) Environment needs to be integrated in all endeavours such as transportation, forestry, agriculture, urban planning;
2) There must be coordination among government agencies;
3) Economic incentives and disincentives need to help reflect the true cost of resources and pollution;
4) There is a need for greater transparency through open information, education and communication on environmental issues.

199. China is unique and has a long tradition of government service; it is in a good position to promote public, industry and government partnerships. It also has the will and capacity to do this. The rest of the world will observe, learn from and follow China's example.

200. The GOC has been listening to the Council over the past 10 years and many of its recommendations have been implemented. Humans are now changing the world to disastrous effect; "business as usual" approaches will not work anymore. China has already begun to use environmental assessments, integrated policy making and financial instruments as incentives and disincentives. The Council is encouraged by China's commitment to policies of low consumption, low pollution, greater public awareness and greater use of the rule of law. China is also willing to deal with the social implications of growth, such as income distribution, employment and vulnerable populations. The forces of the market must be mitigated. The role of the State is to help the most vulnerable and protect the environment.

201. China's growth objectives are impressive, especially from the perspective of mature economies where 4% growth is considered cause for jubilation. There is no doubt this growth will have large impacts on China's society, economy and environment. In adopting the path of sustainable development, China can assume its rightful place at the table of global rule makers. At the Doha trade negociations, the environment will feature prominently; the issue of green barriers needs to be better understood. Environmental issues represent a challenge and an opportunity for China; green markets could be tapped. For this to occur, education and public awareness of sustainable development need to be included as a key element of public policy.

202. This meeting of the Council is timely, as it follows on the heels of key international meetings on the environment, namely WTO meetings in Doha, the conference on financing for development in Monterrey and the WSSD in Johannesburg. The consensus reached at these conferences must be implemented in an integrated way in order to overcome poverty. This poverty dimension was highlighted during the Council meetings. There are consequences to a blanket logging ban on local communities; there are also impacts on illegal logging in neighbouring countries. There is a need to fine tune the forestry policies and take into account people's livelihoods. The Council also discussed the issue of IAS which represent the second largest threat to bio-diversity, and with disastrous economic consequences. Further work needs to be done in order to control the intentional introductions of IAS.

203. China has undergone massive changes over the past twenty years; one visible change is in the increase in vehicle traffic. This could become one of China's major environmental problems. Green taxation can be an

effective means of adjusting people's behaviour; governments can switch from taxes on employment to taxes on consumption to effect change.

204. Sustainable development should be seen as an opportunity for China rather than a problem. In Canada, environmental industries now represent the third largest industrial sector. There are opportunities for China to create employment in environmental goods, services and industries. The Council would be pleased to assist China in this area.

b) Premier Zhu Rongji's response

205. China has paid a high price for ignoring the environment in the past; it now recognizes the importance of sustainable development. Population went from 1 billion to 1.3; in order to develop the economy, industrialization was promoted at the expense of the environment. In the ten years that followed the Rio Earth Summit, the GOC paid increasing attention to the environment and to sustainable development. It realizes that an environment can be rapidly destroyed, but that it will take decades to restore it.

206. Prior to 1995, China did not have enough grain to feed itself. As a result farmers opened new fields on sloping lands. After 1995, China achieved self-sufficiency and has since been exporting grain. The hillsides can now be restored to natural vegetation, both forests and grasslands. It is possible for China to raise livestock more intensively and avoid overgrazing.

207. At the WSSD, China's policies on reforestation and conversion of sloping lands were explained and the progress made discussed. Farmers who convert their land back to natural cover are provided with the same amount of grain they would have produced on their land. This is possible, thanks to China's abundant grain reserves.

208. The violent sandstorms that battered Beijing a few years ago were said to have originated in Inner Mongolia Autonomous Region; in fact they were also coming from the Mongolian Republic and Siberia. These storms are now reaching Japan, Korea and as far afield as the United States. China's plans to fight desertification involve massive efforts at reforestation and the regeneration of grasslands.

209. Air pollution in Beijing is still a serious problem because of the large increase in car traffic. But because of the 2008 Olympics, Beijing has an action plan involving the use of natural gas buses, among other methods to fight pollution. Emissions standards on these vehicle are the highest in the world and have been modeled after the EU.

210. China is taking climate change seriously. The Kyoto Protocol has been ratified and although China will not be held to Kyoto targets, it will implement measures to do so. Already, the use of coal is being curtailed. Despite massive coal reserves, China is importing natural gas and oil which are cleaner fuels and contribute less to greenhouse gas emissions.

211. China is improving its environment and promoting sustainable development. But China still has problems with implementation. This is due in part to the country's size and regional diversity. China's legal framework is as yet insufficient to the task of curbing violations of environmental standards. But step by step, China is putting in place the principle and infrastructure that will enable us to embrace the spirit of Johannesburg.

212. The Council is warmly thanked for its contribution. China looks forward to a long relationship with the Council. The CCICED could be in existence forever, since environmental problems are bound to be everlasting.

Exit

Report on the Task Force Co-Chairs' Coordination Meeting

Arthur Hanson

22 November, 2002.

Present: Art Hanson, Sun Honglie, Zhang Kunmin, Uma Lele, Wang Song, John MacKinnon(representing Peter Schei), Thomas Johansson, Wang Yangzu, Rudi Kurz, Zhang Kun, Shi Hanchang, Tsugio Ide, Li Lifeng, Hu Tao, Hidefumi Imura, Jiang Xinyan, Liu Jian, Ye Ruqiu, David Runnalls, Jerry Warford, Shen Guofang, Earl Drake, Björn Stigson, Sir Crispin Tickell, Claude Martin, Pan Chenglie, Ni Weidou.

Introduction

This was the first group meeting of the Co-Chairs of the nine task forces so far approved to complete their work for presentation at the CCICED Annual General Meeting. Also in attendance were Minister Xie Zhenhua and Len Good, the Lead Expert Group and several members of Council. The Meeting was co-chaired by Prof. Sun Honglie and Arthur Hanson.

The discussions, lasting from 10 am to 4 pm, covered: the new procedures for operations of the task forces and the role of Lead Experts; expectations of the Council and Bureau concerning the work and results of task forces; brief reports concerning the status of work of each task force; coordination issues among the task forces; recommendations for the 2002 CCICED AGM; review of content and approach of the Chinese and international issues papers; future activities of task forces and CCICED.

Summary of Meeting Discussion and Outcomes

Implementation of Task force work in 2002

There is complete agreement on the changeover from the model of working groups to task forces, and acceptance of the procedures that have been designed to improve the effectiveness and immediate relevance of the output from task forces to urgent priorities of China. The focused effort should be helpful for a results-based management approach to the work of task forces and the Council.

However, there have been practical issues during this first year of implementation. Delays in obtaining funding approvals and other difficulties related to rapid and clear decisions led to a very short period to implement activities.

Some of the task forces were only able to start work from June 2002, and are preparing reports for dissemination at this meeting. Task forces reporting in 2003 also

began their work only in mid-2002. Now that the Third Phase of CCICED is functional, these problems are expected to diminish in the future. It is suggested that task forces should have a full two years in which to develop and complete their work.

ver the past year procedures for selection of new task forces have been developed and implemented with the assistance of the lead experts. In brief these are: recommendation for task forces may be made by Chinese institutions, council members, donors the suggestions must respond to Government of China urgent needs and be presented as a written proposal outlining scope, outputs, proposed members, etc.; after screening by the Secretariat, the lead experts will make technical written assessments on proposals; the Bureau will then reject, approve or seek further clarification or modification. Upon approval, the task force co-chairs will proposed members, workplan, and budget. The Secretariat arranges funding, with a target of USD 300,000 per year based on workplan and hudget. It is not anticipated that work should extend beyond two years and a firm rule of one report to Council will be followed. Written progress reports, however, may be submitted to Council. The number of task forces reporting each year is likely to be five or fewer.

ver the past nine months, 17 proposals were considered by the lead experts and based on their advice, 9 were approved by the Bureau. It is anticipated that over the Third Phase about 42 to 44 task force support-years may be arranged based on an estimate of USD 12 million in total. Some funding may be drawn from a specific donor source, but a pool of funds is being established to which several countries are expected to contribute.

Council, members will have more time to discuss the results of the task forces, and it has been requested that task forces prepare their reports in a fashion that permits three options to be identified, and after discussions in Council, one option will be forwarded to the Government. In the past individual working groups had Council members who would take a particular responsibility for monitoring progress and who could act as advocates during Council meeting. This system will not continue, since it is assumed that a number of Council members are likely to have interest in the activities of each new task force.

Task Force Progress

There ate four task forces reporting at the 2002 CCICED AGM.

Forests and Grasslands TF

This task force provided a preliminary report last year and winds up its work. The results show that China's forest policy is in need of major improvement and lags behind reform in other sectors, such as agriculture. There are long-term needs as well as immediate, urgent concerns such a re-thinking the logging ban. And there is a major issue of capacity-building. This task force has ideas that could lead to a new

proposal for work either within or outside the framework the CCICED.

Enironmental Economics

This year's report recaps work over the first 2 phases and helps to set the stage for future work needed on environmental economics. Future proposals may focus on strategic environmental assessment, green accounting and general equilibrium effects of green taxation. A critical issue to be addressed is the environmental aspects of income distribution and links to poverty reduction. Most imp econ issue in China is distribution of income and in addressing green taxation, may want to look first at incidence of cost of degradation, impacts on poor, and then basis for doing green taxation on economy-wide basis-general equilibrium effects of green taxation. Impacts: fiscal, growth, employment and income distribution (poverty alleviation). Need signal from Bureau that this is of interest and then can do detailed proposal after. Link with Runnals and WT .

WTO and Environment

The work being presented is based on the start-up of new activities that began in June 2002. The work has focused on the impact or WT entry on social, economic and environmental conditions. The report is a preliminary one and backstopped by a book based on current and previous analysis. The future work is supportive of the legislative initiatives, including strategic environmenta1 assessment of the NPC, and of government, which has a major capacity building need in this new field.

Biosecurity

The title of this task force is still open for discussion. The focus of work is on ecosystem protection and biosecurity. The work being reported on this year concerns a national strategy for Alien Invasive Species (AIS). The issues were discussed at a workshop held recently by the task force. The future work of the task force may take different directions, for example a focus on western region development and on genetically-modificed organisms. There is an urgent need for addressing issues of wetland management, and a question of whether this should be done though the proposed water basin management, task force or through this one.

The remaining five task force reports will be made at the 2003 CCICED AGM. Their progress was reported as follows.

Energy

Work will start shortly. The focus of effort is on polygeneration in order to reduce the environmental impacts of coal burning. This will include a modeling effort designed to examine the role of polygeneration within in the broader framework of sustainable

energy use, and to look at cost implications.

Cleaner Production and Circular Economy

No meeting of the full working group has been convened yet. The first full meeting with both international and Chinese members will take place in Liaoning this December. A meeting of Chinese members occurred in the summer. It is proposed that a previous focus on cleaner production be expanded to the broader concept of a circular economy. This is in line with Chinese priorities for l0 model cities and 5 model industries using this approach. However, the NPC has enacted legislation for cleaner production and it is therefore important to examine urgent implementation needs.

Financial Mechanisms for Environment Protection

Activities are progressing well with this task force. It is focusing on a range of mechanisms that could be used to expand funding during the Tenth Five Year Plan for environmental initiatives, especially for investing in urban environmental infrastructure.
A particular effort will be made to address needs for small and medium sized enterprises (SMEs), and to encourage the engagement of the private sector. Innovative mechanisms such as procurement via municipal bonds will be examined.

Development of an Environmental Protection Industry

Work started in April with a meeting in Beijing and a further meeting has taken place in Germany with EU experts to discuss results of EU environmental industry development. The task force is defining environmental protection industry in workable manner; deciding how much effort to focus on air, water, waste, renewable energy, and service sector; and determining what lessons can be learned in Europe; and what part of EU experience can be transferred to China.

Industry and Sustainable Development

The effort is focusing on policy advice to bring Chinese industry to a world standard on sustainable development. Four sectors have been selected to illustrate and address the issues: paper, cement, sugar, petrochemicals (likely focused mainly on refineries).

Coordination Needs Among Task Forces

Several coordination needs were identified. These include the long -standing issue of ensuring that environmental economics informs the work of most task forces; the need for linkages between trade and the issue of alien invasive species; how work on water resources might be coordinated among several task forces including some currently

being proposed; and the linkages of results from the Forests and Grasslands Task Force to initiatives such as work on AIS and on economic approaches to poverty reduction. The theme of strategic environmental assessment is of interest to several of the task forces, although each is examining the topic from a specific approach.

Next year's presentations to the AGM provide an excellent opportunity for a well-coordinated approach and for early identification of policy recommendation across the full range of five task forces. All have a theme that relates to the private sector, pollution reduction, eco-efficiency and other industrial and built environment concerns.

The point was also made that coordination should be carried out in a fashion that does not reduce the richness and diversity of the results arising from individual task forces.

Recommendations

The draft recommendations introduced for discussion were based on an approach of selecting key items only, and of interest to senior levels of government. There are other more technical materials that can be submitted to individual departments of government. And, of course, there are many publications arising from the CCICED's work that will be valuable to academics, researchers and others.

It was agreed that more work is needed on the recommendations to accurately reflect statements in the individual task force reports. Also that additional text will be required to incorporate ideas arising from Council debate, especially on the directions needed in this period after the WSSD and other meetings such as D HA. It may be desirable to provide observations on China's progress in environment and development during recent years.

Issue Papers

There is general agreement that having general issue papers is a useful approach. It is of potential value to the Council in helping to sharpen discussion on the "Big Picture" and may help to inform some of the directions of working groups. There was extensive discussion about particular issues raised in the papers, including the role of the private sector, which has not been adequately addressed in the Chinese issue paper, which has focused on government rather than governance. The international issues paper addresses leadership in sustainable development. This raises a number of points about what is the actual meaning of global sustainable dev elopement leadership, how much can be expected from any single country, and what China's position might be a few years from now and a decade from now. and interest on the part.

In both papers it is hard to avoid the connections between economic growth and environmental protection. Perhaps this would be a central theme in future papers. The

issue of consumerism as it exists in richer countries today, and in China in the future probably needs more attention.

Closing Discussion

This part of the meeting was joined by Xie Zhenhua and Len Good.
Task force co-chairs expressed an interest in continuing to focus effort on western development in China, with an emphasis on poverty reduction, income disparities, environmental effects of infrastructure development, industrial development, and ecological security. More work is needed on transportation and on topics such as ecotourism. ne area could be selected as a site for an integrated approach by several task forces.

There is an urgent need to place more effort on effective participation by Chinese business interests in the work of the CCICED. Some of this should happen during the coming year, with its task force focus on business and industry. But there is not a strong representation of business among Chinese members of Council.

The dramatic shifts arising from both rapid economic growth and from membership in the WT will have major impacts on environment and options for environmental management over the next several years. Strategic environmental assessment is one of the tools to address this need, and we need to understand at a much more fundamental level how to use this tool well, especially in relation to policy analysis. The issue of appropriate indicators and criteria is an urgent one.

The role of economics and environment is beginning to prove itself. Benefits such as the increased value of real estate in urban sites that have been cleaned up is an example. So we can start thinking about new investment, not simply addressing environmental protection as a cost. We need to consider how to apply environmental economics more broadly and creatively, for example via green tax reform.

Both Minister Xie and Len Good commented that the work of the task forces is indicative of a good start to Phase 3 of CCICED and anticipate further improvements in the years ahead.

Annex I

A Summary on Implementation of the *Recommendations to the Chinese Government from the Fifth Meeting of CCICED Phase II* by the Relevant Ministries and Departments of State Council and Some Provinces, Autonomous Regions and Municipalities Directly under the Central Government

The recommendations to the Chinese Government from the fifth meeting of CCICED Phase II, held in October 2001 covered eight areas. Since February 2002, CCICED Secretariat has received feedbacks and reports in response to these recommendations from 16 ministries and departments of the State Council and their affiliated institutions, namely, State Development and Planning Commission (SDPC), State Economic and Trade Commission (SETC), Ministry of Science and Technology (MOST), Ministry of Finance (MOF), Ministry of Land Resources (MOLR), Ministry of Construction (MOC), Ministry of Transportation (MOT), Ministry of Water Resources (MOWR), Ministry of Agriculture (MOA), Ministry of Foreign Trade and Economic Cooperation (MOFTEC), State Environmental Protection Administration (SEPA), State Forestry Administration (SFA), Chinese Academy of Sciences (CAS), State Meteorological Administration (SMA), State Oceanic Administration (SOA) and State Power Corporation), and 15 provinces, autonomous regions and municipalities directly under the Central government, namely, Beijing, Tianjin, Hebei, Inner Mongolia, Liaoning, Shanghai, Jiangsu, Jiangxi, Shandong, Hainan, Chongqing, Guizhou, Tibet Autonomous Region, Shaanxi and Qinghai. These feedbacks and reports will be summarized in the following eight areas.

1. Environmental Economics

The State Development Planning Commission (SDPC) is collecting comments from related institutions and local governments on the draft notification for implementing the Standards for Collecting Pollution Levies as well as on the proposed standards and methods of calculation of pollution levies. These documents were formulated in accordance with the relevant provisions in the *Regulation Concerning Collection and Use of Pollution Levies*, which have been endorsed in principle by the State Council. In preparing these documents, SDPC collaborated with MOF, SEPA and SETC. All these documents will be presented to the State Council for approval after they are further improved and finalized. SDPC is also organizing studies on some economic policies for collecting fees for desulfurization, treatment of municipal wastewater and disposal of municipal wastes. In cooperation with MOF, MOC, MOWR and SEPA, SDPC has issued a *Notification for Collecting Fees for Disposal of Municipal Wastes and Promoting Industrialization of Waste Disposal*, and a *Notification for Further Reforming Water Prices in Cities*.

The Ministry of Finance (MOF) has formulated the *Regulations Concerning Use of Pollution Levies* (to be promulgated) in consultation with relevant departments of the State Council. MOF is working on the rules to implement this regulation, such as *Rules for Use and Management of Pollution Levies, Rules for Tax Exemption from Pollution Levies as well as Standard for Collecting Pollution Levies*. MOF has allocated funds for

strengthening environmental enforcement in Western China, which will be used to improve enforcement equipment and efficiency in that region. MOF plans to increase environmental expenditure in the public fiscal budget year by year. In collaboration with SEPA, MOF is reforming the use of pollution levies, with a view to increase funds for capacity building for environmental monitoring at the national level. MOF is also working with SEPA on the taxation policy for environmental treatment.

The Ministry of Construction (MOC), together with SDPC, MOWR and SEPA, has issued the *Notification for Further Reforming Water Prices in Cities*. MOC is organizing studies on the methods for collecting fees for treatment of municipal wastewater and disposal of municipal wastes. In addition, together with SDPC, MOF and SEPA, MOC issued the *Notification for Collecting Fees for Disposal of Municipal Wastes and Promoting its Commercialization*.

The Ministry of Water Resources (MOWR) is of the view that the overall concepts of the recommendations are of high value for enhancing water resources management in China.

In formulating its policies, the Ministry of Foreign Trade and Economic Cooperation has taken full account of their impacts on environment. A mechanism of assessment of key commodities has been established to minimize their impacts on environment. The companies engaged in international trade are encouraged to protect endangered and rare species. To this end, necessary financial resources are provided to farming and breeding of these specie. Financial resources are also mobilized through international markets to those small and medium-sized enterprises that have been accredited with EMS.

The State Oceanic Administration (SOA) has reformed the rules for collecting fees for waste dumping in seas and oceans, through improving the provisions in the *Law of Marine Environmental Protection*. SOA has also strengthened the capacity of executive law enforcement and the efforts to supervise law enforcement.

Tianjin has undertaken an assessment of environmental benefits of urban gardens and forest, and established models and methods of calculation for assessing and analyzing ecological/environmental benefits of urban greened areas. Tianjin has also studied how to reform the rule of pollution levies. Further efforts are made to establish and improve the mechanism for decision-making for integrating environment with development, and to explore the operational models, technical specifications and operational methods for undertaking environmental impact assessments on major economic development policies and plans. Strategic environmental assessments will be gradually promoted. Strict approval procedures have been adopted for those projects that do not comply with the national industrial development policy and do not fit in the overall municipal master planning. A rule of environmental veto has been adopted in approving those projects. Tianjin is disseminating the *Notification for Establishing National Environmental Model Cities* with the aim to turn the city into such a model, through implementing the strategy of sustainable development and strengthening environmental protection and ecological conservation.

Hebei Province has incorporated sustainable development into its tenth five-year plan for social and economic development as well as its tenth five-year plan for environmental protection and ecological conservation. The province has been making persistent efforts to integrate environmental protection with economic development. Environmental education is provided to the departments at all levels in order to raise and strengthen their awareness of environment and sustainable development. The environmental performance examination is undertaken annually in 11 cities and all counties in the province to make sure that all the environmental targets are fulfilled. In addition, this constitutes an important part in evaluating the performance of administrative and party officials. In Hebei Province, a steering group for environmental protection has been established to take charge of the environmental performance examination, coordinate among departments, supervise the implementation of environmental targets, propose major environment-related decisions and policies and address major issues and policies in the field of environment and economy. Thus, a mechanism for decision making to integrate environment with economic development has basically been established in this province.

Inner Mongolia is of the view that the economic policies of the governments at all levels should be established on the basis of their own environmental plans and programmes.

Liaoning Province has incorporated sustainable development into its 10^{th} five-year plan for social and economic development and its 14 sub-programmes. The province has also formulated its 10th five-year-plan for environmental technology and industry development as well as its 10th five-year-plan for environmental science and technology development, with a view to increase scientific and technological investment in the environment. The province is organizing activities in the field of cleaner production and the studies on technologies for desulfurization, denitrification and safe disposal of hazardous wastes. Great efforts are being made in the development of environmental industry. Since March 1, 2002, fees for wastewater treatment has been raise in the province and the policy is being formulated for collecting fees for disposing of municipal wastes.

Shanghai has adopted a three-year action plan for environment for 2003-2005. Incentives and other policies have been used to encourage cleaner production and consumption behaviors favorable to the environment. A proper adjustment has been made to the standard and scope of collecting fees for pollutant discharging in order to control the total amount of pollutants. The municipality has been increasing its investment in the environment, making sure that its total environmental investment will exceed 3% of its GDP. Meanwhile, the environment management of its relevant government departments is upgraded by establishing a new and effective system for environmental protection and management.

Jiangxi Province has incorporated sustainable development into its 10^{th} five-year-plan for social and economic development. In addition, the province has adopted its own five-year plan for environmental protection.

Hainan Province is strengthening its environmental legislation and making sure that a democratic process is followed to formulate environment-related policies. The private sector and individuals are encouraged to participate in environment management. Non-governmental environmental organizations and consulting institutions are also encouraged.

Chongqing has begun to collect fees for mineral resources development compensation, wastewater discharging and treatment, sulfur dioxide emission and disposal of municipal wastes. The policy of gradual implementation is adopted to make sure that the actual environmental costs are eventually internalized in the various pricing systems. Full consideration is given to the environment in the process of formulating the municipal master plan, land-use plan, migration and relocation plan, readjusting the municipal industrial structure and productivity layout, reforming road-use tariff, pricing land-use and land-rental. Some regional environmental impact assessments have been made in the municipality. The environmental performance examination is conducted to those heads of party and governments at the district and county levels. A responsibility system is adopted for the implementation of environmental targets by various departments within the municipality. Rewards and penalties are put in place according to their environmental performance.

Guizhou Province has incorporated sustainable development into its strategic plan for sustainable development, which is a part of its 10th five-year-plan for social and economic development. The province has also adopted its 10th five-year plan for environmental protection. The mechanism to integrate environment with economic development has been established in the province. Environmental impact assessment is undertaken to those proposed development zones and projects. A rule is being gradually established for coordination among environmental departments and examining their performance. A system has been established for monitoring and managing development activities in the important ecological functioning areas and resources development zones. The province has adopted a responsibility system for achieving environmental targets. The improvement of environmental quality has been included as an important agenda of the governments at all levels and a part of the examination of their performance. The province has also drafted provisional regulations concerning administrative penalties for violating environmental regulations. Gradual efforts are made to strengthen the environmental awareness and education.

Tibet Autonomous Region will establish a mechanism for integrating environmental and economic policies and decisions. Environmental impact assessments are to be undertaken on its economic plans and programmes as well ad development plans for some regions, river basins and agricultural development, with a view to considering fully the environmental factors in the early stage of policy development.

Shaanxi Province is organizing the implementation of its 10th five-year plan for environmental protection. The province has also formulated the *Plan for Pollution Prevention and Control in Wei River Basin*, *the Plan for Environmental Protection of Key Energy and Chemical Industry Bases in Yulin*, the *Plan for Pollution Prevention and*

Control in Handanjiang River and *the Programme for Qingling Ecological Function Areas.* In addition, the province has formulated its *Programme for Mineral Resources Development* as well as its *Programme for Preventing Geological Disasters*. The province has issued and is implementing the *Regulation Concerning Geological Environmental Management.* A responsibility system is adopted to hold administrative heads of each administrative unit responsible for the environmental quality within their administration. A mechanism has been adopted for integrated decision making in the field of environment and economy. The improvement of environmental quality has been selected as an indicator to examine the political and administrative performance of the government heads and the officials in charge of environmental protection. The responsibilities of each related department are further defined to make sure that those responsible for major environmental accidents will be held accountable. A mechanism for administrative monitoring and supervision is established for this purpose. Environmental education is organized for all the departments at the provincial levels. Efforts are also made to increase the environmental awareness and the sense of responsibility for environment of the public.

Qinghai Province has incorporated ecological conservation as part of its medium and long-term plans for social and economic development as well as its annual plan for implementing the medium and long-term plans. The governments at all levels are required to include investment in ecological conservation in their budgets. Constant efforts are made to coordinate among various departments in terms of their environmental policies and regulations. Meanwhile, the environmental regulations and administrative rules for environmental protection are constantly improved and the law enforcement is strengthened through strengthening the enforcement institutions and their capacities.

2 Sustainable Agriculture

In connection with agricultural restructuring, State Development and Planning Commission has allocated special funding in its infrastructure investment plan to support the establishment of some base farms for the production of non-GMO food .

State Economic and Trade Commission, together with seven other ministries and departments, has issued the Proposal for Further Improving “Trio Green Projects”, which are intended to establish green food markets, promote environmentally sound consumption and establish corridors for environmentally friendly products. Quality control in the entire process from fields to dinner tables is practiced. This is done in order to adjust agricultural structure and increase the income of farmers as well as agricultural outputs. SETC has also issued the Proposal for Further Implementing Pilot Projects for Establishing “Green Corridors”, in collaboration with seven other departments. In this proposal, emphasis is given to improving the transportation of fresh and perishable food and increasing facilities to keep food fresh. Inter-module transportation model is use and various forms of systems are established for food delivery and deployment. It is also proposed that a source monitoring system will be established or improved for transportation of fresh and perishable food to ensure the high quality of food transportation.

Ministry of Science and Technology has organized and implemented eco-farming technological research activities and demonstration projects, which are a part of national programme for science and technology development. Efforts are made to explore a model of sustainable agricultural development in China through technological integration and demonstration.

Ministry of Finance has provided funding to MOA to support its efforts in revising some laws, such as the *Law of Agriculture*, *Law of Grasslands* and the *Regulations Concerning Fertilizer Management*, as well as its activities to publicize these laws and monitor their enforcement. MOF continues its efforts in collaboration with relevant departments to address the problems with production and sales of agricultural chemicals and fertilizers. Specialized funds are arranged to continue support of agricultural infrastructure construction, environmental/ecological conservation of grasslands, promotion of agricultural technologies, training of farmers, agricultural restructuring, quality assurance of agricultural products and related services system establishment. All these are intended to improve the agricultural infrastructure, ecology and environment, upgrade the competitiveness of agricultural products, promote scientific and technological progress in agriculture and increase the income of farmers.

Ministry of Land Resources has allocated funding to support a survey of geological environment for eco-farming in Zhejiang Province. It has also organized a national workshop on agricultural land-use in 2002, which is aimed at exploring how to integrate agricultural geological research with social and economic development and how it will contribute to socially and economically sustainable development. Exchange of relevant information was undertaken through this workshop.

Ministry of Agriculture has initiated an important research project on eco-farming technological system and demonstration projects. Research activities were also organized on some key technical issues, such as controlling pollution from use of agricultural chemicals and fertilizers, reasonable use of agricultural wastes, agricultural environment protection and monitoring of quality and safety of agricultural products. As a result of project implementation, the eco-farming technological system has been improved. Eight demonstration zones for eco-farming and industrialization and two run-off pollution control demonstration zones have been established in order to create new operational mechanisms for eco-farming industry. MOA has also initiated the *Action Plan for Green Food*.

MOFTEC worked with relevant departments of the State Council to address some pressing issues, such as excessive residues of agricultural chemicals in agricultural products, food security and genetically modified food. Some success has been achieved in managing and controlling the problems above.

Chinese Academy of Science has established an important research project, which is entitled “nitrogen, phosphorous and potassium management in major agricultural ecosystems in China”. This research project approaches the policy issues in the field of

production, circulation and use of fertilizers, with adequate attention given to the circulation process and environmental impacts of the nutrients in agricultural fields. The project provides technical support to increasing the efficiency of the use of agricultural chemicals, lowering production costs and reducing pollution from run-offs.

SOA has intensified the monitoring and warning of disasters resulting from red tides through undertaking the monitoring of red tides in all marine areas and predicting the conditions and environmental elements for possible occurrence of red tides. Ten red tide monitoring zones have been established in the key mariculture areas to ensure sustainable agricultural development in the marine and coastal regions.

Tianjin continues to readjust its agricultural structure, through vigorously developing eco-farming. Tianjin continues to implement its regulation for protecting agricultural environment. Great efforts are made to develop water-conservation agriculture, green agricultural products, use rationally agricultural chemicals and reduce pollution from run-offs. The agriculture and environment departments of Tianjin plan to promote jointly the development of organic food industry. The use of agricultural chemicals and highly poisonous chemicals is reduced in the seedling nurseries and production of fresh flowers and other gardening products. Comprehensive efforts are made to prevent and control pollution from animals' manures and increase the comprehensive use of these manures. The system for monitoring agricultural environment and ecology has been further improved.

Liaoning Province has established five province-level pilot projects for eco-farming in five counties. It has also started the implementation of its action plan for development of green food, with a view to promote sound and orderly development of green food. The province has established a Steering Group for Biosafety Management of Agricultural Genetic Engineering to strengthen the management in this area. The province is also promoting technologies for producing green food such as biological control of pests. Meanwhile Liaoning has formulated the local standard and technical specifications for controlling pests and ensuring vegetable safety. A list of highly poisonous chemicals has been proposed for ban in the province.

Shanghai is increasing the environmental awareness of farmers through strengthening publicity and education. The municipality continues promoting the application of agricultural standards. A census was made on the soil and environmental quality of the main food production areas within the municipality. In this process, great attention is paid to monitoring of product quality and the application of technical specifications in the production processes. The use of agricultural chemicals and fertilizers is reduced and instead the use of those agricultural chemicals with high effectiveness, low poison and low residual leftovers are being promoted. The municipality is actively promoting the production of safe, healthy and high-quality agricultural products and green food, as well as proper development of organic food.

Jiangxi Province has incorporated eco-agricultural development into its 10^{th} five-year plan for social and economic development. They focus efforts on a number of pilot

projects in this field in several countries. Meanwhile they are taking active measures to promote eco-farming. They are promoting agricultural technologies, practical biotechnologies, water conservation and irrigation techniques and organic/eco-farming technologies, through demonstration projects in the field of eco-farming in some zones designated for agricultural science and technology development.

Hainan Province is trying to regulate and standardize the development of environmental-friendly agriculture. The province has formulated and issued eight local standards in this field, such as the Standard for Environmental Quality of Environmentally Sound Vegetables and Fruits Production Bases and the Environmental Quality Standard for such products. In addition, the province has also formulated and issued four local regulations for this purpose, such as the *Regulations Concerning Management of Environmentally Friendly Vegetables and Fruits*. In implementing the projects designed to control chemical residues and protect soil fertility, an overall ban is adopted for the use of highly poisonous and high residual agricultural chemicals in the production of vegetables and fruits. A group of alternatives have been recommended for replacing these agricultural chemicals. In sum, all these are implemented to build more ecologically sound communities for the well-being of people.

Chongqing has proposed four major strategies aimed to increase agricultural efficiency, namely, revitalizing agriculture with science and technology, adopting various forms and scales of development, promoting agricultural development through proper township development and sustainable development. Key efforts are made in the development of green food and the industries with particular local characteristics. A new agricultural structure is being established, which is characterized by high quality, high output and low consumption. Meanwhile the plantation structure is also optimized. Great efforts are made to enhance the industrialization of agriculture. A preliminary system of monitoring of agricultural environment has been established and will be further improved during the tenth five-year plan period.

Guizhou Province has established ecological demonstration zones and eco-farming as ways to promote agricultural sustainable development. 55 projects in 31 counties of the province have been included in the national programme for integrated agricultural development. The fuel wood forest is grown to address rural energy issues. Concentrated animal farms are developed at the regional level. The pollution has been effectively controlled from the use of agricultural chemicals, fertilizers and membranes. Great efforts are made to promote the scientific use of fertilizers, use of biological fertilizers, low or no poison chemicals and the biological methods and techniques to prevent and control pests. The awareness of the public, particularly farmers, of the agricultural management and consequent environmental impacts is gradually increased.

Tibet Autonomous Region has adopted promoting progress in agricultural sciences and technologies as the guiding principle for agricultural development.

Shaanxi Province has divided land-use into four categories: protected land-use area, land restoration area, sustainable land-use area and intensive land-use area. The research and

development activities undertaken in this field focus on key and major issues such as preventing soil erosion and increasing water-use efficiency in the Loess Plateau. A ban is adopted for claiming lakes for agricultural use or encroaching river beaches and marshland. A plan is being implemented to return to forest, grassland and lake those land areas that have been excessively exploited and affected local ecology. The province plans to set up a new system to predict and warn natural disasters.

3 Forest and Grassland

The State Development and Planning Commission, as a leading agency for a joint ministerial committee for national environment protection and ecology conservation, worked with other departments and proposed a basic framework concept of "*streamlining and integrating relevant projects, strengthening coordination, decentralization and strengthening supervision*". The joint ministerial meeting served as the mechanism for coordinating key priority projects in the annual plan of each respective department, and making sure that local governments and other stakeholders actively participate in and are responsible for the investment and management of projects for environment protection and ecological conservation .

The Ministry of Finance, in collaboration with the State Forestry Administration, conducted a research project on "Investment and Cost and Benefit Analysis of Forestry", which was a comprehensive and in-depth study on the costs and benefits of various types of investment of varying scales and characteristics on forest industry, including natural forest conservation and returning farmland to forest. This important study provides valuable information for fiscal policies on forestry and for establishing a forest investment mechanism that meet the needs of socialist market economy. A special funding was earmarked for the monitoring and evaluation of environmentally friendly food, agricultural resources, forest industry, wetland, rare and endangered plant species and desertification.

The Ministry of Water Resources is working on a *Plan on Ecological Conservation by Replacing Fuels with Small Hydro Power Plants*. The plan aims to develop a number of small hydro power projects in reclaimed farming areas, nature conservation zones, natural forest conservation areas and major areas with serious soil erosion problems. These non-commercial projects will replace the use of traditional fuel to promote public well-being and will complement other matching efforts in reclaiming farmland to forest and closing the mountains for forest conservation.

The State Environmental Protection Administration and the State Tourism Administration jointly convened a meeting on Tourism and Ecological Conservation to strengthen environment protection and ecological conservation in tourism. SEPA has also started, in collaboration with Ministry of Land Resources, State Statistics Bureau and surveying and mapping departments, a study on the present status of ecology and environment in the middle and eastern parts of China and on the division of different ecological functional zones in western China.

The State Forestry Administration worked out a standard for classifying the economic forest and the ecological forest to serve the purpose of returning arable land to forest land-use, the *Technical Guides for Design and Operation of Reclamation Projects at County Level*, *the Regulations on Management of Seedlings for Reclamation Projects*, and *Regulations on Examination and Acceptance of Reclamation Projects*. It has organized evaluation of reclamation projects from ecological, economic and social perspectives. It has started the implementation of "Six Major Projects" – six major forest projects as pilot projects and is working out an overall plan for integrated monitoring of forest resources and ecological environment. The studies on banning logging of natural forests are also under way.

The State Meteorological Administration of China has used its technological advantages to provide data for reclamation projects, such as remote sensing, GIS and GPS.

Tianjin has approved *The Plan for Conservation of Eco-sphere around Tianjin*, which is a blueprint for ecological conservation in the 3100 square kilometers of areas around Tianjin. It aims to build the city and its adjacent areas into an ecosystem suitable for the sustainable development of the city. Tianjin has also conducted overall cost-and-benefit analysis for reclamation and natural forest conservation projects, and is developing a method for their long-term monitoring and evaluation. It has adopted appropriate technologies to maximize their ecological benefits and economic returns. It has conducted follow-up studies on the effectiveness of current logging ban, and adjusted the banning areas according to the findings. Tianjin has also strengthened the protection of wetland as well as of the shell dams within the planned conservation zones through identification of special ecological zones along its coastal areas.

Following the *Suggestions of the State Council on Further Improving Policies and Measures for Returning Farmland to Forest*, Hebei Province has worked out its own province-specific plans and corresponding measures to ensure reclamation of farmland to forests. It has developed local forest resources monitoring systems and strengthened monitoring of land degradation and desertification.

Liaoning Province has worked out its tenth five-year plan for economic and social development, which includes developing five shelter forests, four commercial forests, and seven projects for county-level ecological and environmental conservation. The plan also includes sections on reclamation projects, identifying 13 cities and 49 countries/districts as major target areas. Logging of natural forests will be banned in 8 cities and 34 counties, with subsidies and management measures provided for natural forests and man-made forest. Forest monitoring systems are being developed and administered. The province has started experimenting with registration of forest ownership in Liaoyang and will extend the practice to the province in general.

Inner Mongolia Autonomous Region has stepped up its investment in ecological and environmental conservation. It is implementing projects in 8 major areas: conservation of natural forest, shelter-forest development in the "three north" area (the northwest, the northeast, and north China), eco-conservation of the grassland, reclamation of farmland

to forest and grassland, integration of eco-conservation and environmental protection, prevention and control of desertification, green passageways and water and soil conservation. In addition, 5 key regional projects and a series of eco-conservation are under way.

Shanghai is implementing its integrated greening project for the urban and suburban areas, which aims to improve the environmental benefits of existing green spaces in the city and improve eco-environment on the outskirts of the city. It has established an indicator system for long-term monitoring and evaluation of forest in the city. Priority is given to forest coverage and biodiversity conservation, water and soil conservation and integrated management, production capacity, health and vitality of forest eco-systems, and maintenance of the contribution of forest to global carbon circulation.

Jiangxi Province continues its efforts in closing the mountain for afforestation, reclaiming farmland to forest, conservation of natural broad-leaf forests and reformation of man-made coniferous forest. It has speeded up its development of shelter forest in the Boyang Lake basin, along Yangtze River and the section of Pearl River within Jiangxi. All sloped land with more than 25 degrees will be returned to forest and grassland, and those less than 25 degrees will be gradually reformed to high-standard terraces. In implementing reclamation projects, those who returned the farmland will be responsible for afforestation and those who operate the management of the forest will reap the benefit. The ownership of forests will be identified by issuing an ownership certificate to the forest operators to protect their interest. The Province has formulated the *Provisional Regulation on Protection and Management of Key State Shelter-belts and Forest for Special Purposes*, banning logging in these forests and building a monitoring system for their protection.

Hainan Province has strengthened conservation of natural forest and implemented reclamation of farmland to forest projects. It has developed a plan for reclamation projects and for natural forest conservation, established and continues to improve its forest resources monitoring and evaluation systems.

In accordance with its *Regulations on Conservation and Management of Forest Resources in Natural Forest Conservation Projects*, Chongqing has adopted a responsibility system for forest resource management, and has experimented with overall cost and benefit analysis for reclamation and natural forest conservation projects.

Guizhou Province has implemented a series of projects aimed at ecological conservation. It has actively carried out reclamation and natural forest conservation projects and has made overall cost and benefit analysis in the implementation process, taking into consideration the ecological, social and economic costs and benefits at different levels.

The Tibet Autonomous Region has strengthened the conservation of forest and grassland. It has adopted effective measures to conserve natural forests by closing the mountains for afferestation, growing more trees, reclaiming farmland to forest, and developing cash crop forest and fuel forests. It has developed measures to reclaim farmland to grassland,

improve existing grasslands, and control desertification, salinization and soil degradation. It has also identified farming-forbidden areas, grazing-forbidden areas, grazing-forbidden periods and grazing-rotation areas.

Qinghai Province has controlled the grazing load so as to conserve natural grassland. With the practice of signing individual contracts, the effort to reclaiming farmland to forest is carried out at household level with each household responsible for certain piece of forest and grassland. High-efficiency man-made grasslands have been developed to better serve the needs of animal husbandry while conserving eco-environment. It has also stepped up efforts in monitoring and protecting existing vegetation and forests, ensuring that practical steps are taken to close the mountains for affestation and that projects for reclamation of farmland to forest and grassland are a success.

4 Biodiversity

MOST, jointly with SEPA and CAS, has initiated the National Programme for Ecosystem Assessment and Research, and participated in relevant work in the Millennium Ecosystem Assessment. Priority is given to evaluation of eco-systems in western China.

Following the strategy of sustainable development and the principle of "conservation in the process of development and development in the process of conservation", MLR has approved the establishment of 44 national geological parks. Progress has also been made in establishing nature reserves with special geological features. The State Council has approved the establishment of a number of national-level geological heritage reserves, including Nihewan.

MOA has taken the lead in drafting *Regulation on Protecting Wild Plants* and has built up a national germplasm bank, one duplicate germplasm bank and 32 perennial and asexual propagation crop germplasm nursery. Expert panels have been organized to carry out studies on the evaluation, utilization of current germplasm resources in stock and other basic research projects. Basic survey and research have started on the compilation of *List of Key State-Protected Wild Plants* (Agricultural Section) and *Action Plan for Key State-protected Wild Plants*, which will serve as the guideline for the protection, management and reasonable utilization of wild agricultural resources in the country. A special project on protecting wild plants has been started and pilot projects on protecting wild beans, wild rice and close relatives of wheat have been experimented in Yunnan and other provinces. These demonstration projects for protection of natural habitat are aimed for better protection of wild species.

The State Forestry Administration has worked out *National Plan for Protection of Wild Flora and Fauna and Their Habitats 2000-2050* as a guideline for biodiversity and natural eco-system protection. Its short-term goal is to build up an institutional framework for wildlife conservation and administration at the central and provincial government level. The mid-term goal is to strengthen capacity building in the administrative department at central, provincial and regional and municipal level, build up a network for wildlife protection and management, including investigation, statistics,

monitoring and implementation, and improve scientific research and import and export mechanism. The long-term goal is to legalize and standardize wildlife protection and management and bring scientific research on wildlife to a new level so as to ensure a sound cycle of wildlife resources. Another goal is to establish a comprehensive legal, policy and monitoring system for wetland protection, management and reasonable utilization.

The Chinese Academy of Science, in cooperation with UNEP and other international organizations, has made significant progress in the implementation of the project on the Eco-system Assessment in western China. A large amount of work has been done on biodiversity protection, sustainable use and the construction of a support platform. It has undertaken a number of projects entitled "The Changes in Biodiversity in Yangtze River Basin, Its Sustainable Utilization and Regional Eco-safety" (one of key state-sponsored fundamental research projects), "Conservation of Biodiversity in Key Regions in China and Annals of Flora in China", "Annals of Fauna in China and Annals of Cryptogams in China" (key projects supported by National Natural Sciences Foundation), and "Research and Demonstration on Key Technology in Desertification Management and Sandstorm Prevention and Control around Beijing" (a key state project for science and technology development). It has invested 200 million RMB in a network of eco-system research in China, greatly strengthening its capacity in monitoring, research, demonstration and information retrieval.

The State Ocean Administration has strengthened protection of marine nature reserves and special conservation zones. It has established a number of new marine nature reserves in the coastal regions of China, the first marine special conservation zone in Ningde, Fujian Province, two marine eco-monitoring stations in Changli, Hebei Province in the north and Weizhou Island, Guangxi Autonomous Region in the south. It has started a survey on the typical off-shore marine ecosystems in China which will improve understanding of their current status.

Tianjin has collaborated with relevant departments to protect the nature reserves and restore damaged natural resources. It has made efforts to conserve natural ecosystems and natural vegetation in the parks and gardens in the urban areas, experimented with growing a variety of plant groups in gardening, and done its utmost to conserve water resources. It has compiled a Guide to Application and Protection of Biodiversity in Parks in Tianjin, and has acted strictly in compliance with the Biodiversity Convention. It has studied the negative impact of invasive plant species and its degree of damage to endemic plant species, evaluated the biosafety of GMOs and imported plant species, compiled a list of wildlife resources in Tianjin. It has strictly implemented regulations on quarantine of plants so as to prevent the invasion of alien pests.

Liaoning Province has incorporated biodiversity protection into its 10^{th} Five-year-plan for economic and social development. By implementing the *Development Plan for Nature Reserves in Liaoning* and *Notice on Strengthening Wildlife Conservation*, it has strengthened wildlife management and protection of nature reserves. By the end of 2000, there are 60 nature reserves in Liaoning, making up 9.7% of total land areas in the

province and forming a network of nature reserves. It has also compiled a *List of Protected Wild Flora in Liaoning.*

Inner Mongolia Autonomous Region has strengthened its conservation of nature reserves. It has developed a local standard, specifying *The Requirements on The Environmental Quality of the Production Site of Environmental-friendly Agricultural and Husbandry Products*. A new *Regulation on The Management of the Production Site of Environmental-friendly Agricultural and Husbandry Products* will be issued soon.

Jiangxi Province has made efforts to rescue some ecologically vulnerable zones in the entire Boyang Lake region and the upper reaches of the five major rivers. It has built the Boyang Lake National Eco-conservation Zone and provincial eco-conservation zones in the source of Dongjiang River, Ganjiang River and Xiannu Lake. Emphasis has also been given to the breeding of rare and endangered species. The *Guideline for Conservation of Boyang Lake National Eco-conservation Zone* has been developed.

Hainan Province has developed the *Master Plan for Conservation of Wildlife and Nature Reserves in Hainan* to step up efforts in biodiversity conservation. Emphasis has been given to eco-conservation in the middle part of the province by carrying out poverty-relief projects in the mountainous regions in the middle of the province, guiding various institutions, including some companies, to give funding support to local residents to develop the economy. By developing a series of plans on eco-conservation, including the *Guidelines for Building Hainan into an Eco-province*, the *10th five-year-plan and the Long-term Plan for 2015 on Environmental Protection in Hainan*, and the *10th five-year-plan and the Long-term Plan for 2015 on Eco-conservation in Hainan*, the province has incorporated environmental protection and ecological conservation into the 10th five-year-plan for economic and social development in Hainan. A study on strategies for sustainable development has been carried out. The province has established a joint committee on building an eco-province and an office for this purpose. An annual work scheme on building Hainan into an eco-province has been developed. It has a number of pilot cities and counties serving as example of ecological soundness. It has encouraged the development of eco-industry, strengthened eco-environment conservation, strictly controlled pollution sources, and promoted some exemplary eco-villages. The various departments and functions of the provincial governments are doing their own parts in building Hainan into an eco-province.

Chongqing City has formulated *Regulations on the Management of Nature Reserves in Chongqing*, bringing nature conservation into a legal framework. It has established a steering group on eco-environment conservation, a municipal committee on environmental protection and an evaluation and review panel on nature reserves. These organizations are responsible for coordinating relevant issues related to eco-system conservation and restoration.

Guizhou Province has protected biodiversity by establishing nature reserves. Currently there are 79 nature reserves and 53 scenic areas.

Tibet Autonomous regions has developed *Division of Eco-functional Zones and Plan for Conservation of Eco-functions*, establishing conservation zones for various types of biodiversity resources that need to be protected. This is the basis for overall eco-environment protection. It has issued *On the Implementation of Regulation of People's Republic of China on Nature Reserves in Tibet Autonomous Region*.

Shaanxi Province has made efforts to rescue the eco-environment in the Qinling Mountain National Eco-conservation Zone. It has made it compulsory to conserve eco-environment in the key resource development areas, encouraged eco-environment protection in ecologically sound regions, and built in a creative manner some demonstration eco-zones at the municipal, county, district and village levels. It has promoted the development of eco-agriculture, green industry and organic food.

Qinghai Province has completed division of its eco-functional zoning and is carrying out dynamic monitoring of the eco-systems while improving its monitoring and management institutions. It is building a number of nature reserves typical of their eco-systems, working out specific measures to protect rare and endangered wildlife, and developing an eco-environmental quality indicator system to better protect biodiversity. The regulation on the use of herbal plants as medicine has been developed and is being implemented.

5 Cleaner Production and Pollution Control

The State Economic and Trade Commission has issued the 10th five-year-plan for 14 industries including machinery, automobiles, metallurgy, non-ferrous metal, petroleum, petrochemical industry, chemical industry, medicine, coal, building materials, light industry, textile, power and gold, as well as the Guideline for Planned Industrial Restructure in the 10th Five-year-plan Period. With the approval of State Council, it has made the third List of Industries to be Phased Out, which will eliminate backward production capacity, technology and products. It continues to promote cleaner production demonstration projects. It has initiated drafting of *Rules for Accrediting Cleaner Production*, *List of Future Cleaner Production Technologies in Key Industries*, and *List of Products and Packages for Compulsory Recycling*. With the implementation of *Voluntary Action Plan for Cleaner production*, enterprises and industries are encouraged to carry out cleaner production. In accordance with SETC recommendation on the use of tax mechanism (reductions and exemptions), MOF and State Tax Administration have jointly issued *Notice on Policy Issues concerning the Value-added Tax for the Comprehensive Utilization of Certain Resources and other Products*, giving VAD refund to some products which are the result of comprehensive utilization or recycling of certain resources, and preferential tax rate (half the collectible VAD) to power generation using gangue, peat, shale oil and wind as well as some new wall material.

The Ministry of Science and Technology has selected metallurgy, chemical industry and light industry as major targets for promoting cleaner production. With its support to research and development in original technical process and technology and demonstration projects, pollution emission has been reduced and the approach has changed from end-of-

pipe treatment to prevention and control at the source. The investment in environmental research has increased tremendously; it is estimated that input in environmental research in the 10th five-year-plan will increase by 5 times in comparison with that in the 9th five-year-plan. The funding will be used to support a number of pollution prevention and control projects and basic research in the environmental field.

The Ministry of Finance will continue to expand cooperation between China and Japan on cleaner production projects.

The Ministry of Construction has promoted construction of municipal wastewater treatment facilities throughout China and this has been included as an important part in river basin management plan.

The Ministry of Water Resources has taken the lead in working out a plan for the conservation of water resources and an overall plan for water resources management in China and has issued *The Functional Divisions of Water in China*. It has identified the overall target for water resources conservation in China – in the short term, water quality in concentrated drinking water sources shall meet national standard and eco-environment in the rivers and lakes is gradually improved; in the long term, there shall be the sound cycle of water resources and aquatic eco-system so as to ensure the sustainable utilization of water resources and the sustainable economic and social development in the river basin and nearby regions. It has carried out monitoring of environmental quality in the farmlands and promoted comprehensive utilization of crop stalks. Two meetings have been convened on prevention and control of non-point source pollution in the Taihu Lake basin.

The State Environmental Protection Administration has called the 2nd meeting of the steering committee on prevention and control of water pollution in the Three Gorges Reservoir area to step up the construction of sewage treatment plant and waste treatment plant in the area as well as plan the management of pollution from ships and cruiser, cleaning of wastes at the bottom of the reservoir and control of industrial pollution. It has convened teleconferences concerning the operation to curb an upsurge of serious pollution in violation of environmental laws and regulation. It has sent 6 inspection teams and 3 secret inspection teams to check out on 16 provinces, autonomous regions and municipalities. It has, jointly with MOC, convened a national meeting on municipal waste and sewage treatment to work out better treatment of municipal waste and sewage throughout the country and to explore ways to commercialize the construction and operation of municipal environmental infrastructure. It is planned that in 2002, it will collaborate with SETC to convene the 3rd national meeting on prevention and control of industrial pollution so as to speed up prevention and control of industrial pollution and promote cleaner production. It has established Environmental Emergency Response and Accident Investigation Center and two environmental monitoring centers in East China and South China, which will enhance its ability for the monitoring and management of major environmental issues that cut across provincial border or a certain basin. It has taken the lead in working out environmental plans for some key basins and regions as

well as the *Plan for Prevention and Control of Water Pollution in the Yangtze River Basin, Yellow River and Songhuajiang River*.

The Chinese Academy of Sciences has collaborated with the business sector in completing the experimental project on cleaner production of chromite in Luoyang, Henan Province. It currently has a production capacity of 10,000 tons and is planning to expand to 100,000 tons.

The State Meteorological Administration is working on some policy issues, planning to utilize its existing meteorological monitoring stations and network to give dynamic monitoring of the functions and interaction of China's terrestrial ecosystem as well as aquatic ecosystem so as to provide valuable information to governments at various levels and basic data for relevant scientific research. It also aims to provide information about the floods in 7 major rivers and forecast and monitoring of sandstorms for disaster relief and reduction.

The State Ocean Administration has focused on the monitoring and surveillance on the management of waste dumping into the oceans. It has built up a monitoring mechanism on the sensitive issues concerning waste dumping, e.g. monitoring and evaluation of wastes, selection of dumping areas, and issuance of dumping license. It has also made it compulsory to register cases for approval so as to ensure there will not be serious pollution of the ocean environment. Concerning the monitoring and management of construction projects in the ocean, it has developed the *Regulations on Environmental Management of Oil Exploration in the Oceans*, *Technical Standards on the Dismantling of Oil Exploration Platforms in the Oceans*, and the *Regulations concerning the Examination and Acceptance of Environmental Facilities for Oil Exploration in the Oceans*. The completion of the project on Construction of Monitoring System for Marine Environment has greatly improved the basic infrastructure and working conditions of China's marine environment monitoring stations, upgraded the technology used in monitoring marine environment as well as the competency of the work force. SOA has been able to give continuous, accurate and long-term dynamic monitoring and real-time data transmission of specific point in the marine environment. Each year it carries out monitoring on the oceanic trends, quality of aquatic life, red tide and pollution contingency in the off-coast, offshore and deep sea areas.

The State Power Corporation has worked out *Plan on Prevention and Control of SO2 Pollution in the Acid Rain Control Regions and SO2 Emission Control Regions*, taking a comprehensive approach in reducing SO2 emission by thermal power plants in the control regions. By the end of 2001, total SO2 emission by SPC has been reduced by about 700,000 tons; SO2 emission per unit electricity generated has been reduced by over 20%; SO2 emission by thermal power plant in the Corporation has basically been brought under control. SPC has actively promoted domestic de-sulfurization technology and has built up more de-sulfur demonstration projects. It has developed Work Scheme for De-sulfurization in 18,000 Megawatt, planning that by 2005, SO2 emission per unit electricity generated will be further reduced by 25% in comparison with 2000, so as to

fulfill the target laid out in the 10th Five-year-plan for Environmental Protection in China of reducing total SO2 emission in the power sector by over 10%.

Beijing has developed *The Target and Action Plans for Prevention and Control of Environmental Pollution in Beijing*, giving priority to stage-by-stage control of air pollution. Pollutant reduction in the 10th five-year-plan is expected to surpass that of national standard; total environmental investment is expected to reach 52 billion yuan.

Tianjin has carried out cleaner production on all new projects. The Tianjin Economic and Technology Development Zone has experimented with the strategy of coordinating economic and environmental development by building eco-industry parks. It has improved the awareness of the industrial sector on cleaner production and environmental protection and encouraged them to invest in cleaner production. Enterprises are guided to reuse and recycle materials as much as possible and strive to achieve "zero pollutant discharging". Enterprises are encouraged to undertake demonstration projects in cleaner production and promote the development of cleaner production. Tianjin has implemented *Law of People's Republic of China on Promoting Cleaner Production* and incorporated it into relevant regulations of Tianjin. Priority projects include a number of municipal wastewater treatment plants, recycling of water, management of secondary rivers and tributaries, renovation of pipelines in old city districts and construction of facilities in new areas of the city.

Hebei Province has issued a notice from provincial government, forbidding the sale and use of phosphorous detergents throughout the province. It has exercised total emission control on pollutants in major basins. Pilot projects on auditing of cleaner production has started and a number of seriously-polluting enterprises which have high resource- and energy-consuming and low energy use rate have been selected as pilot projects for cleaner production. Environmental protection and conservation of resources have been included in the 10th five-year-plan for development of township and village enterprises in Hebei Province.

Liaoning Province has developed *The Plan for Pilot Projects on Developing Recycled Economy in Liaoning*, identifying the guiding principle and goal of promoting recycling in the province. By implementing *The 10th Five-year-plan on Management of Liaohe River* and the *Action Plan for Blue Sea in Liaoning*, it has strengthened pollution control in selected regions and basins and management various environmental functional zones in the offshore areas. It has reforms in some industrial sector by promoting the use of "cleaner vehicles" and has extended the use of LPG and CNG buses and taxicabs.

Shanghai has started to formulate it municipal regulations on cleaner production in the city so that cleaner production can be implemented and managed in accordance with law. A cleaner production demonstration project has been built at the Fifth Company of Baoshan Iron and Steel Corporation. It has also trained staff in charge of cleaner production so as to carry out auditing on cleaner production in the enterprises. Based on this fundamental work, it has started a review and evaluation of cleaner production plans for the metallurgy sector.

Jiangsu Province takes pollution control in Taihu Lake as an important part of its effort to create an ecologically friendly province. It has started the implementation of the Programme for Improvement of Water Environment in Meilianghu Area of Taihu Lake. Up to now, more than wastewater treatment plants have been established. The construction of river protective belts and the drainage of sewage in river-beds are under way.

In the prevention and control of industrial pollution, Jiangxi Province has given priority to reducing total industrial pollutant emission. It has implemented projects on industrial restructuring and upgrading to ensure that all emission of industrial pollutant meet the standard. It has started auditing on cleaner production and selected some sectors and cities as demonstration sites. It has started the ISO 14000 environmental management system and certification of environmental products. It has promoted the model of recycling economy, and supported the industrial sector to carry out the life-cycle pollution control in the entire industrial process by upgrading technology, reduce energy consumption and full utilization of materials.

Shangdong Province has started to implement its stage-by-stage program on water pollution, hoping to reverse the trend of degradation first, then basically solve the problem, and finally completely solve the problem and reach a satisfactory standard. It will take advantage of the pollution control plans for the eastern part of the project on Diverting Water from the South to the North and control water pollution in the small basins so as to improve the overall water quality in the whole province.

Hainan Province has given priority to ensuring eco-safety and ecological conservation. It has carried out division of eco-functional zones in the mountainous regions in the middle part of the province. It has issued *Notice on Strengthening Prevention and Control of Pollution from Medical Wastes*. Environmental management of construction projects has also been enhanced, making sure that they do no damage to the surrounding environment. It has issued an *Emergency Notice on Environmental Management of Aquaculturing Projects in the Coastal Areas* to ensure safety and health of eco-environment in the province. *Human Habitat and Settlement* activities have been actively carried out. Water resources for municipal use are protected; in particular sites that are sources for drinking water are identified, protected and the water quality monitored. The price of water is adjusted to meet the needs of market mechanism. The province has gradually built up a monitoring network for soil and water conservation. In controlling soil erosion, the measures are evolving from simple afforestation to fostering biodiversity.

Chongqing City has made efforts to recycle materials and feedstock, by making comprehensive utilization of mineral intergrowth and associated minerals in the mining process, recycling and reusing waste water and residues in the production process, and recycling all kinds of used materials and wastes. Priority has been given to comprehensive utilization of gangue, coal ash and slag. A number of demonstration projects have been started in selected sectors and cities. A Guideline for Cleaner Production is being worked out, which will establish indicators for evaluation of cleaner

production and further promote awareness of cleaner production. It is planned that building materials and power sectors will be the next pilot projects on cleaner production.

Guizhou Province has included cleaner production into the 10th Five-year-plan on Environmental Protection in Guizhou. It supports collectively-owned and share-holding companies in the environmental sector, gives guidance to and encourage the integration of environmental research and commercialization. It has actively implemented the Guide to Cleaner Production Technologies in Major Industries in China.

Tibet Autonomous Region regards cleaner production and pollution control as an important component of developing modern industry. It has closed 15 types of serious polluting enterprises and banned the construction of 5 new types of similar enterprises. It has emphasized the integration of economic and social development with plans for environmental protection and ecological conservation.

Shaanxi Province has strengthened protection of the urban environment and has a number of model cities for their clean environment and sound ecosystem. It has strictly controlled pollution from vehicle exhaust, protected the sources of municipal drinking water and increased the green coverage in the cities. It has carried out EIA and the integration of environmental concerns in construction projects. It has encouraged the development of environmental industry and promoted cleaner production and environmental certification. It is determined to eliminate outdated technology and products that cause serious pollution so that industrial pollutant discharging will meet the standard.

Qinghai Province has made a great deal of effort in helping seriously polluting enterprises to phase out backward equipment and technology and promote cleaner production technology. Control of old pollution sources is combined with technology upgrading and innovation; promotion of cleaner technology is combined with concentrated pollution control. It has encouraged and promoted water conservation, recycle of wastewater and cleaner production technologies. Comprehensive utilization of resources is emphasized, aiming at waste reduction, reutilization and environmental-friendly end-of-pipe discharging. It has encouraged the exchange of wastes. Cleaner production technologies are studies and enterprises are guided to implement cleaner production.

6 Energy

The State Economic and Trade Commission has worked out plans concerning sustainable development with 8 sub-plans on energy conservation and comprehensive utilization of resources, industrial water conservation, fuel oil conservation and alternatives fuels, development of environmental industries, new energy and sustainable energy industry development, innovations in wall materials, development of loose cement and recycling and reuse of renewable resources. Emphasis is put on conservation of industrial water usage and fuels. Jointly with the State Tax Administration, it has publicized the first *List of Water Conservation Equipment/Products Encouraged by the State*, completed *The*

Report on Industrial Water Price, Water Resource Fees and Water Discharge Fees, studied and made recommendations on conservation of fuel oils and alternative fuels. It has promoted energy conservation and development of new energy industry by working out *Regulation on Conservation of Oil; Regulations on Energy Efficiency Labels*, and *Regulation on Publicizing Energy Use of Major Enterprises*. It has started certification of energy-efficient products and promoted the implementation of energy efficiency standard and labeling, establishing a preliminary framework for the implementation of energy efficiency labeling system in China. It has advocated for energy efficiency in the government and issued annual report on the solar energy industry. It is making preparations for issuing *Regulations on Renewable Energy and Regulations on Management of Wind Energy*. It has started over 100 energy conservation projects in metallurgy, non-ferrous metals, building materials, chemical engineering, power and paper-making industries.

The Ministry of Science and Technology has included clean coal technology and its follow-up technology as part of the energy technology in the State Plan for Hi-tech Research and Development and has given it priority in support.

The Ministry of Finance has used foreign loans for investment in energy, transportation and environmental protection. Since 1996, it has used loans in Japanese Yen for investment in environmental projects. At present most projects are proceedings smoothly; some have been completed and are achieving desired result.

The Ministry of Land Resources is going to, jointly with Geothermal Energy Committee, convene in Beijing an international conference on geothermal resources to discuss issues on sustainable development of geothermal resources in the 21st century, promote development and conservation of geothermal energy and enhance international cooperation in this field.

The Ministry of Water Resources has started small hydro-power projects in 400 rural counties in China in 2001 as part of the plan for alternative power generation in rural areas in the 10^{th} five-year-plan period. In 2002, total planned capacity of the small hydro-power plants reached 3500 megawatt, of which 1500 megawatt have been generated. It is estimated that during the 10^{th} five-year-plan period, a total capacity of 7500 megawatt will be installed in these hydro-power projects.

The Ministry of Agriculture has started the Small Energy Project in Rural Regions, investing 100 million per year on energy development in rural regions in China, promoting the use of high-efficiency stoves, biogas and solar energy. In 2001 and 2002, an annual investment of 99.5 million Yuan has been made on these projects, which cover 2036 villages in 369 counties, benefiting 480,000 rural households. In total the projects have resulted in 300,00 biogas pits, 177 small biogas projects, 112 stalk gasification projects, 4727 small wind power systems, 70,000 solar stoves and 100 solar energy houses.

In addition to continuing with its research on clean coal technology, The Chinese Academy of Science has done research on solar energy and tidal energy development and has made some progress.

Tianjin City will continue to adjust its gas consumption mix so as to significantly improve air quality in the city. It will increase the use of natural gas for both industrial sector and in the residence and public buildings. Heating will mainly be provided by cogeneration, supplemented by large-scale boiler units so that gradually there will be no coal burning in the downtown area of the city. It gives priority to the use of wind power, solar energy and bio-energy and efforts have been made to promote biogas in the rural areas. It has given subsidies and funding support to rural environmentally-friendly energy construction projects, and continued to expand its demonstration projects on biogas utilization in large and medium-sized animal and poultry farms. It has conducted activities on energy efficiency and conservation in all relevant sectors.

Hebei Province has integrated environmental protection with industrial and energy restructuring, phasing out outdated production equipment not in line with state industrial policy, and restructuring energy use in the cities to reduce environmental pollution. It has encouraged the use of clean energy and the use of natural gas.

Liaoning Province has adjusted energy structure by using clean energy, developing non-coal-using industry and deep processing of coal and doing its best to close small coal mines which cause waste of resources and environmental damage. It promotes the use of renewable energy such as wind power, hydro-power and solar energy, and the application clean energy, such as stalk gasification and biogas in rural areas. It has extended the use of clean coal technology such as gasification and circular fluid bed. *The Regulation on Energy Conservation in Liaoning Province* as well as *Plan on Industrial Water Conservation in Liaoning, Policies on Support to Wind Power Generation in Liaoning,* has been issued. It is now in the process of working out the *Regulation concerning Rural Energy Development in Liaoning*. Rural energy projects have been carried out in 10 counties, which have provided training to about 2000 farmers and technical people for the management, extension and construction of these projects.

Shanghai City has adjusted its energy consumption and increased the use of clean energy. Coal burning has basically disappeared in the central part of the city inside the Inner Ring Road. It will import a moderate amount of LPG and support the development and utilization of new and renewable energy such as wind power, solar energy, tidal energy and biogas. It has also worked out energy conservation measure so as to improve energy efficiency. *The Regulation on Auditing of Energy Use in Shanghai* has been issued, which will require the inclusion of evaluation on energy efficiency in the feasibility study of projects.

Jiangxi Province has developed its *10^{th} Five-year-plan on Energy Conservation and Comprehensive Utilization of Resources*, giving priority to energy conserving technologies, such as the use of clean coal, and the use of natural gas as a substitute for fuel oil, advanced coal washing, selection and deep processing, large circular fluidized

bed, high-efficiency generators, heat and power cogeneration, centralized heating and heat and energy cascading. In the 10th Five-year-plan, it will limit the construction of new thermal power plants. It has promoted the utilization of coal bed gas, extended the technology of coal liquefaction and gasification, and applied the use of biogas, stalk gasification, solar energy and wind power in appropriate rural regions.

Hainan Province has strived to build itself into a CFC-free Province, further promoting the use of environmental-friendly refrigerants. It has proceeding with cleaner production in the industries in the province, extended the use of solar energy and wind power, speeded up the retrofitting of vehicles for environmental-friend fuels. It has adjusted fuel consumption in the cities and towns and increased the use of LPG to replace the use of firewood as fuel.

Chongqing City has formulated its regulations on energy conservation, using clean energy as fuel to replace coal burning in 1153 boilers and 1500 hot-water heaters in the city. It has continued to encourage the development of new and renewable energy sources such as hydro-power and has used price policy to support the extension and use of clean energy.

Guizhou Province has reformed its energy structure to use more clean energy. It has implemented *Some Proposals of the State Council on Relevant Issues in the Acid Rain and SO2 Control Regions*, increasing the production of low-sulfur content coal, making use of coal bed gas, gradually increasing the use of clean energy and reform or eliminate small and medium-sized coal-burning boilers.

Tibet Autonomous Region has regarded the use of hydro-power, wind power and solar energy as important measures in restructuring energy consumption, protecting eco-environment and improving environmental quality and has strived to extend their use.

Shaanxi Province has given support to research and development in biological coal blocks, alcohol fuels and film technology. The use of biogas and stalk gasification is priority projects in the rural areas; the use of wind power in the windy north part of the province is experimented. The practice of paying for mine ownership and mining right has been practiced. The use of water conservation facilities has been encouraged. Concerning the development and use of clean energy, the province plans to materialize natural gas, centralized heating and clean energy projects in the 10th five-year-plan period and start natural gas power project so as to increase the proportion of electricity generated by natural gas.

Qinghai Province has combined energy conservation with the use of clean energy and is phasing out backward equipment and technology and improving energy efficiency and structure. It is using coal, electricity and gas to replace wood and grass which are traditionally used as fuel in the rural and husbandry areas. It is also starting natural gas and centralized heating projects. Solar energy, wind power, and briquette technology are also being developed.

7 Transportation

The Ministry of Transportation agrees to make comprehensive plan for transportation development and encourage the development of public transportation and clean fuels used in vehicles.

Tianjin City will gradually build up a well-planned modern, multi-level urban transportation network including main thoroughfares and secondary roads with overpasses at major artery crossings to ensure smooth traffic. Pollution from vehicles will be strictly controlled, with periodic checks on automobile manufacturers, and strict monitoring on vehicles on the road, so as to control vehicle pollution from the source.

Hebei Province has given more funding to the basic research on transportation technology to ensure its development does not pose a threat to the environment. It has carried out EIA, particularly eco-environment impact assessment, on all new or expansion projects. It has paid attention to using new, environmental-friendly materials, new technologies and recycling of solid wastes. Cares have also been taken to minimize the use of land.

Liaoning Province has given priority to developing public transportation system in the cities. Urban rail systems have been built in Shenyang and Dalian.

Shanghai City has given priority to public transportation and aims to build a modern transportation hub that is in line with Shanghai's overall goal in urban development. The system will integrate cargo and passenger transportation, use clean fuel as much as possible. The city has started retrofitting taxicabs with LPG and developing CNG buses. Meanwhile, the government has developed policies encouraging the use of clean fuels on public transportation enterprises.

Jiangxi Province has developed its special plan on transportation development in the 10^{th} five-year-plan period. Transportation systems must be planned and constructed according to the principle that they are conducive to economic development, energy-efficient while at the same time being environmentally and human friendly. Priority has been given to developing public transportation. Old and dilapidated buses are being replaced and eliminated. It is being considered that clean fuel buses and taxicabs will be used in Nanchang City and the Mount Lu Scenic Area.

Chongqing City has worked out its plan for comprehensive transportation development in the city, requiring all transportation projects to carry out EIA. Environmental management of transportation is strictly exercised. Use of unleaded gasoline and natural gas vehicles are encouraged. Seriously polluting diesel mini-buses have been forbidden in the downtown area, through monitoring on the road. In addition, the road sections have been designated where the use of car sirens is banned. Strict requirements have been put forth for classification, packaging, loading, unloading and storing those hazardous goods and materials. Strict criteria have been applied to those companies engaged in the

transportation of hazardous goods and materials. Chonqing has also issued a municipal regulation concerning the prevention and control of pollutants from vehicle exhausts.

8 Trade and Environment

SDPC is formulating the rules for managing the projects for implementing the Clean Development Mechanism (CDM) under the Kyoto Protocol. China will undertake the cooperation with developed countries in the field of energy through implementing CDM projects.

The Ministry of Construction has worked together with SDPC and SEPA on the relevant policies for industrializing wastewater treatment and disposal of municipal wastes. The proposed policies have been submitted to the State Council for approval.

MOFTEC is playing an active role in the international negotiations concerning climate change and sustainable development issues. MOFTEC is also promoting the ratification of the Cartagena Protocol on Biosafety and preparing to participate in CDM projects for the implementation of the Kyoto Protocol.

The State Forestry Administration is organizing studies on the policies and measures for implementing CDM projects and biosafety management related to forest.

The Chinese Academy of Sciences has established a key research project on WTO and the medium and long term strategy for agricultural development in China. This project aims to explore how China will restructure its agriculture, prioritize its agricultural layouts, increase the competitiveness of agricultural products, ensure the food security as well as increase the farmers' income, within the context of WTO. The results of this project will provide a basis for formulating a long or medium term development of agriculture in China. Meanwhile, this project will provide data and a technical platform for similar studies in China.

The State Meteorological Administration has been participating actively in the negotiations concerning climate change and sustainable development. SMA has organized a careful analysis of the Third Assessment Report of IPCC by bringing together relevant departments, research institutions and scientists working on climate change. Meanwhile, SMA is contributing to the compilation of the Fourth Assessment Report. SMA has drafted a plan for systematic climatic observation and monitoring in China.

Chongqing has organized studies on the impacts on its industry, agriculture, foreign trade and environment brought about by the entry of WTO. A number of measures have been proposed based on the studies.

Guizhou Province gives priority to the import of those equipments used for environmental protection. In attracting foreign investment and speeding up technology transfer, the province is exploring CDM model.

Tibet Autonomous Region has formulated the policies and measures compatible with the WTO rules, through revising and streamlining some administrative rules and procedures. The region has revised its regulation for environmental protection to make it more geared to the environmental situation in the region.

Exit

Annex II

Report on Finances November 2002

Introduction

As in the past, income and disbursement forecasts are reported on a calendar year basis. They are reported in American dollars because that is the unit of account for the Council, even though most contributions are made in a variety of other currencies.

The year 2002 has been a transition period between Phases II and III and therefore this report covers contributions to both Phases. The attached table tries to distinguish between the two Phases wherever possible. In general, one can say that wherever the text refers to a Working Group (WG) that indicates a Phase II activity and where it mentions a Task Force (TF) it usually means a Phase III activity except in the case of the Forest and Grassland TF where it bridges both Phases.

The other unusual aspect of this report is that, at the time of writing, we have yet to hear from several traditional supporters of CCICED about future commitments to Phase III.

Income

There is no annual assessment or burden-sharing formula applied to Members of the Council. All contributions are voluntary.

Phase II Contributions

The following list covers the approximate US$ value of year 2002 contributions to winding up activities funded in Phase II:
Canada - $71,000 for Energy WG; $126,000 for Trade WG; $109,000 for Agriculture WG; $2,000 for Pollution Control WG; $100,000 for Canadian Secretariat
UK - $214,000 for Economics WG
Norway - $81,000 for Economics, Biodiversity and Trade Working Groups
Netherlands - $29,000 for CO2 Mitigation Group
Ford Foundation, World Bank, World Wildlife Fund, Australia and others $500,000 for Forest and Grassland TF

Phase III Pledges

To date, Canada, China, Germany, Japan and Netherlands have committed funds to Phase III but others have expressed positive interest in contributing and it is anticipated that some pledges may be made during the Annual Meeting.

Canada and China have signed a formal Memorandum of Understanding Concerning CCICED for Phase III specifying that the Canadian contribution will not exceed Cdn$ 8,000,000 and the Chinese contribution will amount to RMB 10,000,000 in addition to the provision of staff, facilities and local costs estimated at RMB 22,000,000. The annual Chinese cash contribution will equal approximately US$ 245,000. The Canadian contributions were not earmarked in advance for any specific Task Forces but will be used to support whatever core activities require funds to meet the priority needs determined by the Council and its Bureau. To date some initial Canadian allocations have been made for the Eco-Security TF, Energy TF, Trade TF, Council meeting, Lead Experts and Secretariat costs for Phase III. China has also provided initial funds for 9 TFs, Council Meeting, Lead Experts and the Secretariat.

The following pledges have been made by other donors:

- The total German contribution for phase III amounts to 1,022 million EURO, out of which 190,000 will be provided as financial contribution to CCICED Secretariat for covering costs of annual meetings and other activities.
- In the case of Japan, GISPRI has pledged 5,000,000 yen to support the Task Force on Promotion of Circular Economy and Cleaner Production and OECC has pledged US$300,000 to the TF on Urban Environmental Infrastructure Financing Mechanism and RMB 100,000 to the Secretariat.
- The Netherlands Government pledged 600,000 Euro to the TF on Enterprises Development and the Environment.
- Although no formal announcement had been made by the time this report was prepared, we understand that Norwegian NORAD will shortly make a substantial 5-year pledge. Sweden, UK, Switzerland and Shell Company have also indicated their interest. It is expected that their pledges will be announced shortly.

A table combining Phase II and III contributions by purpose and by donor is appended. It lists the approximate value in US$ of all cash contributions made during calendar year 2002 with footnotes on total Phase III pledges to date. Please refer to the attachment for China's in-kind contributions. The financial support from all sources is of great value and much appreciated, as are the many in-kind contributions made not only by China but also by NGO's, firms and many experts and institutions. The latter are too numerous to mention here but are usually acknowledged in the Working Group and Task Force Reports.

Task Forces

There are currently nine Task Forces (TF) approved to report to the Council this year and next year. For the first Meeting of Phase III, the following TFs will report to the Council: "Forest and Grassland"; "China's Accession to the World Trade Organization: Environmental Impacts & Strategies"; "Environmental Economics"; and "Eco-security".

The following five TFs will report to the 2003 AGM: "Strategy and Mechanism Study for Promotion of Circular Economy and Cleaner Production"; "Development of Environmental Protection Industry"; "Urban Environmental Infrastructure Financing Mechanism"; "Enterprises Development and the Environment"; "Energy Strategies and Technologies".

The amount of future Task Force activity will be limited by two main considerations: time and money. At each Annual Meeting during Phase III, it is planned that the Council will receive and discuss only 4-6 TF final reports. By dropping the requirement to hear many TF reports annually, the Council should be able to optimize the time available for discussion of urgent issues. The other complicating factor in this Phase is the new rule that normally each TF will have no more than two years to complete its work program. In a few cases however, the Bureau may decide to extend the work period of a TF if Council Members recommend this because it would meet a priority need for China.

The other limitation will be financial resources to support Task Forces that are budgeted at approximately US$300,000 each annually. Even the latter figure is a very tentative until we have more experience in operating short-term Task Forces and it may have to be adjusted by next year.

Although several key donors have still not made any firm commitment to Phase III, we are hoping that eventually CCICED should be able to support a five-year budget of at least $12 million for this purpose i.e. approximately 40 years of Task Force activity.

Other Expenses

Most other costs are easier to estimate. The following annual costs which are forecast for this year should continue to be about the same in future years:

Council meetings (including travel costs) = $250,000

Secretariat = $210,000

(about $100,000 are operational cost for the Secretariat)

Canadian Office = $200,000

Future Outlook

It is not possible to make a valid 5-year income and disbursements projection at this early stage because several key donors that have been generous supporters in the past have held back on new commitments. It seems that they are waiting until they have a clear picture of how Phase III will be structured and operated. That picture took longer than anticipated to take shape. However, as more information becomes available after the initial Council meeting of Phase III, several substantial donors seem likely to make multi-year pledges - and that should make it possible to present a more satisfactory financial report next year.

CCICED 2002 Budge (US$K)

CCICED 2002 Budget Report	Approximate expenditures during calendar year 2002 in US$000									
Purpose/Donor	**1) CIDA**	**2) UK**	**3) NORAD**	**4) GTZ**	**5) Neth**	**6) Japan**	**7) others**	**8) China**	**Total**	
Forestry/Grasslands TF							500	11	511	
Env. Economics WG/TF		214	15					11	240	
Eco-security TF	100		22					11	133	
Trade/ WTO TF	226		44					11	281	
Energy TF	171							11	182	
Circ Econ & Cleaner Prodn TF						45		11	56	
Urban Env Financing TF						150		11	161	
Enterprise Deve & Env TF					175			10	185	
Environmental Industry TF				137				10	147	
Agriculture WG	109								109	
Pollution & CO2 WGs	2				29				31	
TF sub-total	**608**	**214**	**81**	**137**	**204**	**195**	**500**	**97**	**2036**	
Council Meetings	193			38		12		12	255	
Lead Experts & consultants	100							12	112	
Secretariat	48							162	210	
Secretariat Canadian Office	200								200	
Other activities							31		31	
Total	**1149**	**214**	**81**	**175**	**204**	**207**	**531**	**245**	**2844**	

1) Canadian CIDA pledged CDN$ 8.0 million over 5 years in Phase III.

2) Final portion of UK DFID grant to Economics WG in Phase II. No announcement yet on Phase III.

3) Final portion of Norwegian NORAD grant in Phase II. NORAD is also likely to make a 5-year pledge for Phase III.

4) German GTZ pledged 1.022 M Euro over 5 years in Phase III of which 190K will be financial contribution to AGM etc.

5) Netherlands Government gave $29K to CO2 study in Phase II and pledged 600K Euro to TF on Industry & Sust. Dev. in Phase III。

6) Japan: GISPRI pledged 19.9 M Yen to TF on Clean Prodn; OECC pledged $300K to TF on Financing Env prot & 100K RMB to the Secretariat.

7) In 2001/02, following pledges were made to Forest/Grass TF: 600K-Ford Fdtn; 320K-WB; 25K-WWF; 62K-Australia; 18K-others.

7) 5 year pledges have been made by ADB for $85K and by Shell Company for $73 K.

8) China pledged RMB10M in cash and RMB 22M in-kind contribution over the 5 year period of Phase III (please refer to the attachment for details).

Rates used for US$: Cdn$ = 1.55; Nor K = 7.63; Euro = 1.03; Japan Yen = 125.5; China Yuan = 8.28; UK£ = .65

Breakdown of In-kind Support from Chinese Side

for CCICED Phase III (on an annual basis)

The grant total is RMB 5,300,000 Yuan. The detailed breakdowns are as follows:

A. Secretariat: RMB 750,000 Yuan, including salary and insurance for Secretary- General and operational costs for his office; rental for the office for the Secretariat, expenditure for water, electricity, daily communication, transportation, office facilities and other supporting logistic back ups;
B. Task Forces: RMB 3,150,000 Yuan for 9 task forces for 2002-2003, including office rental, office facilities, water and electricity, daily communication, transportation, cost for supporting research fellows and logistic back ups;
C. Lead Expert and assistants (5 persons): RMB 200,000 Yuan, including office and meeting rental, water and electricity, daily communication, transportation, depreciation of office facilities and logistic back ups;
D. Preparation for AGM: RMB 350,000 Yuan, including the personnel input from parties related;
E. Supporting cost for the Secretariat, TFs and Lead Expert and his assistants from local governments, enterprises, research institutes, universities and colleges for the following activities: side visits, investigations, meetings, demonstration projects and etc, which adds up to RMB 800,000 Yuan.

Please be kindly noted that the actual supporting costs from some local governments are much more than the estimated figure than RMB800,000 Yuan in Item E.

Exit

CV of International Members

Michael B. McElroy
(Member)

Director, Harvard University Center on the Environment, USA
Michael B. McElroy received his elementary and graduate education from Queen's University in Belfast, Northern Ireland. After spending a postdoctoral year in the Chemistry Department at the University of Wisconsin, he was appointed staff scientist in 1963 at Kitt Peak National Observatory in Tueson, Arizona.
In 1970, he was named Abbott Lawrence Rotch Professor of Atmospheric Sciences at Harvard University and in 1975 was appointed Director of the Centre for Earth and Planetary Physics. Since 1986 he has been Chairman of the Department of Earth and Planetary Sciences. Since 1992 he has been Chairman of the University Committee on Environment at Harvard where he leads an interdisciplinary study on the implications of China's rapid industrial development for the local, regional and global environment.
In 1997, he was named the Gilbert Butler Professor of Environment Studies.
McElroy's research interests range from studies on the origin and evolution of t he Planets to, more recently, an emphasis on effects of human activity on the global environment of the Earth. He is the author of more than 200 technical paper s contributing to our understanding of human induced changes in stratospheric oz one; and to the potential for serious to global and regional climate due to anthropogenically related emission of greenhouse gases.
He is a Fellow of the American Academy of Arts and Science, the International Academy of Aeronautics, the American Geophysical Union and the American Association for the Advancement of Science. He was the recipient of the Macelwane Award of the American Geophysical Union in 1968, the NASA Public Service Medal in 1978 an d the Eire Society Gold Medal in 1987. In1989 he was awarded the George Ledlie Prize at Harvard University for the person who "since the last award of said prize, has by research, discovery, or otherwise made the most valuable contribution to science, or in any way for the benefit of mainland" and received the Research and Development Award from the person "since the last award of said prize, has by research, discovery, or otherwise most valuable contribution to science, or any way for the benefit of mainland" and received the Research and Development A ward from the National Energy Resources Organization. He was honoured with award of an honorary degree of Doctor of Science by Queen's University of Belfast in 1 991

Masami Ishizaka
(Member)

Executive Vice President of Japan National Oil Corporation
Dec.5, 1939 Born in Tokyo
Mar.1963 Graduated from Faculty of Law, University of Tokyo
Apr.1963 Entered Ministry of Finance (MOF)
Jun.1982 Director of the Research Division, Budget Bureau, MOF
Jun.1988 Director of the Nagoyo Regional Taxation Bureau
Jun.1989 Director of the Nagoyo Regional Taxation Bureau
Jun.1989 Deputy Director-General of Tax Bureau, MOF
Jul.1992 Secretary-General of Executive Bureau, Securities and Exchange Surveillance Commission

Jun.1993 Director-General of the Financial Bureau, MOF
Jun.1994 Director-General of the Planning and coordination Bureau, Environment Agency
Jun.1995 Administrative Vice Minister of Environment Agency
Jun.1996 Vice Chairman of Automobile Insurance Rating Organization of Japan
Jul.1998 Executive Vice President of Japan National Oil Corporation

Joseph Eichenberger
(Member)

The ADB Board of Directors, acting on the recommendation of ADB President Tadao Chino appointed Mr. Joseph B. Eichenberger as Vice-President --- East.
Mr Eichenberger, who succeeded Peter Sullivan, assumed office on 15 December 2000.
As former Director of the Office of Mulallteral Development Banks in the United States Treasury Department, he handled a range of policy and operational issues for all the multilateral development banks as well as the Global Environmental Facility and International Fund for Agricultural Development. From 1993 to 1994, he also served as Acting US Executive Director for the World Bank, prior to which, from 1991 to 1993, he had been Senior Advisor to the US Executive Director at the World Bank. Earlier in his career, Mr. Eichenberger had served as International Economist, Office of International Monetary Affairs, US Treasury Department; Assistant Financial Attach at the United States Embassy in Bonn, Germany; and International Economist at the Office of Industrial Nations in the US Treasury Department.
Mr Joseph B.Eichenberger is a native of the United States. He was born on 21 July 1957, and is married. Mr. Eichenberger holds a master's degree in economics from the University of Maryland, having obtained his Bachelor of Arts degree in Economics and Environmental Science from the State University of New York.

Måns Lönnroth
(Member)

born 1941
Jan 1st, 2000 Managing Director, MISTRA (foundation for strategic environment research)
Oct 1994- december 1999: state secretary at the Ministry of Environment, Sweden
Dec 1993- October 1994: project director for co-operation with central and eastern Europe, Environment Protection Agency
Jan 1992-November 1993: environmental Councillor, Swedish embassies in Germany, Poland and the Czech Republic
1984-1991: political advisor, Prime Minister's Office
1985-1991: member of the Medical research Council
1982-1991: member of the board, Karolinska Hospital (dep. Chairman for six years)
1979-1994: member, Stockholm County Council
1980 docent, department for technology and social change, University of Linköping.
Graduate studies in applied mathematics, Royal Institute of Technology Sweden.

Arthur Hanson
(Member)

Art Hanson is Distinguished Fellow and Senior Scientist at the International Institute for Sustainable Development in Winnipeg, Canada. From 1992 to 1998 he served as President and CEO of IISD. Currently he also serves as Ministerial Ocean Ambassador for Canada's Minister of Fisheries and Oceans, as a Core Faculty Member of the Sustainable Enterprise Academy in the Schulich School of Business at York University, Chair of the Technical Advisory Committee of the UN *Equator Initiative*, as a Member of the Canada Foundation for Innovation, the Canadian Biotechnology Advisory Committee, The International Oceans Institute of Canada Board, the China Council for International Cooperation on Environment and Development (Beijing), and as a Trustee of the Indonesian Biodiversity Foundation (KEHATI). He is an advisor to various other Canadian and international bodies.

Dr. Hanson has served on Canada's National Round Table on Environment and Economy, which provides advice to the Prime Minister, and in the mid-1980s, chaired the Canadian Environmental Assessment Research Council. He is an international consultant and has served as project director with organizations such as the World Bank, CIDA and UNDP and, in Canada, as consultant with government departments and private sector organizations. He was Professor and founding Director of the School for Resource and Environmental Studies, and a Research Director of the Dalhousie Ocean Studies Programme at Dalhousie University in Nova Scotia, and has served on the faculty of other universities, including the University of Michigan and the Bogor Agricultural University in Indonesia. He pioneered the development of environmental management programs in Indonesia and elsewhere in Asia while working with the Ford Foundation and other international organizations.

His research interests include sustainable development policy and practices in Canada and developing countries; integrated marine and coastal resource use; environmental planning, management and governance; sustainable natural resource management, including agriculture, fisheries and forestry; nature and biodiversity protection. He holds a PhD in ecology from the University of Michigan School of Natural Resources and a BSc and MSc in Zoology from the University of British Columbia.

Ian Johnson
(Member)

Vice President & Head of Network
Environmentally and Socially Sustainable Development (ESSD)
The World Bank Group
Chairman
Consultative Group on International Agricultural Research (CGIAR)

Ian Johnson, a British national, was appointed as the World Bank's Vice President for the Environmentally and Socially Sustainable Development Network (ESSD) in 1998 – in which he oversees the Bank's work on environmentally and socially sustainable development which includes the areas of natural resource management, rural development, post-conflict and culture – and as Chairman of the Consultative Group on International Agricultural Research (CGIAR) in July 2000.

Mr. Johnson joined the Bank in April 1980 as a Young Professional. A year later he joined the Europe, Middle East and North Africa (EMENA) Projects Department, Power and Energy Division, as an Energy Economist and was subsequently promoted to Senior Economist. In July 1987, he transferred to the EMENA Regional Office of the Vice President. In April 1990, he was promoted to Principal Sector Economist in the Policy, Research, and External Affairs Department. In April 1991 he was promoted to the position of Administrator, Global Environment Facility (GEF)—an institution in the Bank that finances global environmental projects—where he played a key role in the restructuring and first replenishment of the GEF. In September 1995 he was promoted to the position of Assistant Chief Executive Officer in the GEF Secretariat. In 1997, he became Senior Manager of the Bank's Environment Department, the position he held prior to his current position.

Prior to joining the Bank, Mr. Johnson spent five years in Bangladesh as a Program Officer for UNICEF working on rural development issues, and one year as an economist in the British Government.

Mr. Johnson attained his BSc from the University of Wales. He holds his masters in economics, education, and health planning from Harvard University, and his masters in economic development and agricultural economics from Sussex University.

Kåre Willoch
(Member)

Born 1928.10.03. Son of manager Haakon Isaachsen Willoch and wife Agnes Christine, nèe Saure. Married 1954 to Anne-Marie Jørgensen, born 1929.03.09. Two daughters, one son.

Education : 1953 M.Sc. in Economics, University of Oslo

Employment

1999 - 2001 Director, The Fridtjof Nansen Institute
1989 - 1998 County Governor of Oslo and Akershus
1953 - 1965 Federation of Norwegian Industries
1951 - 1952 Norwegian Shipowners' Association

Political Experience

1986 - 1989 Chairman of the Com.on Foreign and Const.Affairs of the Storting (Parl.)
1981 - 1986 Prime Minister

1970 - 1981 Parliamentary leader of the Conservative Party
1970 - 1974 Chairman of the Conservative Party
1963 and 1965 -1970 Minister of Trade and Shipping
1963 - 1965 Secretary General of the Conservative Party
1958 - 1989 Member of the Storting (Parliament) for the Conservative Party

International Positions

1987 - 1989 Chairman of the International Democratic Union
1959 - 1986 Member of the Nordic Council, President 1973.
1967 Chairman of the World Bank
1961 Delegate to UN General Assembly

Other recent major responsibilities

1990 - 1996 Chairman of the supervisory Board, Den norske Bank (The Norwegian Bank)
1990 - 1992 Chairman of the Defence Commission of 1990
1998 – 2000 Chairman of the board of the Norwegian Broadcasting Corporation (NRK).
1999 - 2000 Chairman of The Commission to Investigate Emergency Preparedness.

Honours and Awards

Dr. at Laws, h.c., St. Olav College, Minnesota, 1984.
"Opinion-maker of the year" 1996, by the Association of Norwegian Newspaper Editors.
"Fritt Ords pris" 1997, by the Norwegian Institution for Free Speech.
C.J. Hambro's price for conservative writers 2000.

List of Books, with translation of titles:

Prispolitikken i Norge, *(Price Policy in Norway)* with L.B. Bachke, Dreyers 1959.
Minner og Meninger, Schibsted 1988. *(Memories, autobiography).*
Statsminister, Schibsted 1990. *(Prime Minister, autobiography)*
Krisetid, Schibsted 1992.*(Crisis)*
En ny miljøpolitikk, Gyldendal 1996 *(A new Policy for the Environment).*
Tanker i Tiden, Cappelen 1999 *(Ideas)*
Myter og virkelighet , Cappelen 2002.*(Myths and Reality)*
Måns Lönnroth, born 1941
Jan 1st, 2000 Managing Director, MISTRA (foundation for strategic environment research)
Oct 1994- december 1999: state secretary at the Ministry of Environment, Sweden
Dec 1993- October 1994: project director for co-operation with central and eastern Europe, Environment Protection Agency
Jan 1992-November 1993: environmental Councillor, Swedish embassies in Germany, Poland and the Czech Republic
1984-1991: political advisor, Prime Minister's Office
1985-1991: member of the Medical research Council
1982-1991: member of the board, Karolinska Hospital (dep. Chairman for six years)
1979-1994: member, Stockholm County Council
1980 docent, department for technology and social change, University of Linköping.

Graduate studies in applied mathematics, Royal Institute of Technology Sweden.

Yvo de Boer
(Member)

Ministry of Housing, Spatial Planning and the Environment (VROM)
Directorate for International Environmental Affairs

Present position
Director for International Environmental Affairs (since October 1999)
Deputy director-general for Environmental Protection (since January 2002)
Head of the Netherlands delegation to the Conference of Parties to the Framework Convention on Climate Change
Sparring partner Minister to World Summit on Sustainable Development

Previous positions

1994-1999
Deputy Director Air and Energy Department, Ministry of Housing, Spatial Planning and the Environment
Head, Climate Change Department, Ministry of Housing, Spatial Planning and the Environment
1991-1994
Deputy Head/Acting Head, Department of Housing Policy Co-ordination, Ministry of Housing, Spatial Planning and the Environment
1988-1991
Chief, Information Office for North America and the Caribbean, United Nations Centre for human Settlements (Habitat), Ottawa, Canada
1984-1991
Human Settlements Adviser, United Nations Centre for Human Settlements (Habitat), Nairobi, Kenya
1981-1984
staff member, Information and International Relations Department, Ministry of Housing, Spatial Planning and Environment

Educational background
Technical college degree in social sciences

Other activities
trainer in consensus building and conflict management
qualified mediator

Crispin Tickell

(Member)

GCMG KCVO

Chancellor of the University of Kent at Canterbury; Chairman of the Climate Institute of Washington D.C., Chairman of the Advisory Committee on the Environment (ACE) of the International Council for Science, Director of the Green College Centre for Environmental Policy and Understanding, Chairman of the Advisory Board of the Earth Centre in South Yorkshire. Sir Crispin spent most of his life in the Diplomatic Service; as Chef de Cabinet to the President of the European Commission (1977-80), Ambassador to Mexico (1981-83), Permanent Secretary of the Overseas Development Administration (1984-87), and British Permanent Representative to the United Nations (1987-90). He was Warden of Green College, Oxford (1990-1997) and President of the Royal Geographical Society (1990-1993), and Chairman of the British Government Panel on Sustainable Development (1994-2000) Retired as a Trustee of the Royal Botanical Garden of Edinburgh, and the Natural History Museum in 2001. Born in 1930. Appointed as a Trustee of the incorporated Reuters Foundation on 1 January 2001.

Achim Steiner

(Member)

Director General of IUCN - The World Conservation Union.

He has worked both at grassroots level and at the highest levels of international policy making to address the interface between environmental sustainability, social equity and economic development.

In recent years, his professional focus has been on developing both conceptual and institutional bridges among very diverse interests and agendas. In Washington, where he was Senior Policy Advisor of IUCN's Global Policy Unit, he developed new partnerships between the conservation community and the World Bank and United Nations system. In South-East Asia where he worked as chief technical advisor on a programme for sustainable management of Mekong River watersheds, he contributed to a new dialogue and policy process with governments and local communities to introduce political reforms for community-based natural resources management. In his most recent assignment - Secretary General of the World Commission on Dams, based in South Africa - he brought together the public sector, civil society, and the private sector in a global policy process on dams and development.

Achim Steiner's professional career has taken him from working:

- at the grassroots level with a community-based organisation in India
- through advisory positions on sustainable development policy with public sector and inter-governmental agencies in Oman, Pakistan, Germany and Vietnam
- short-term assignments in Africa, Asia, Latin America and the South Pacific
- to managing a regional conservation programme for IUCN in Southern Africa
- leading a global environmental policy initiative in the US, aimed at multilateral agencies, and most recently

- to managing the international Secretariat and work programme of the World Commission on Dams based in South Africa

His long standing commitment to conservation and sustainable use of natural resources, as well as cross-cultural experience, put him in an ideal position to carry out the mission and mandate of IUCN.

Achim Steiner is 41 years old. Mr Steiner - a German national - was born in Brazil where he lived for ten years. His educational background includes a BA at the University of Oxford (Philosophy, Politics and Economics) as well as a MA at the University of London (Economics and Regional Planning). He also studied at the German Development Institute in Berlin (Development Economics and Policy) as well as the Harvard Business School.

Björn Stigson

(Member and Task Force Co-Chair)

Björn Stigson has had extensive experience in international business. He began his career as financial analyst with the Swedish Kockums Group. From 1971-82 he worked for ESAB, the international supplier of equipment for welding, in different positions responsible for Finance, Operations and Marketing. In 1983 he became President and CEO of the Fläkt Group, a company listed on the Stockholm stock exchange and the world leader in environmental control technology. Following the acquisition of Fläkt by ABB, in 1991 he became Executive Vice President and a member of ABB Asea Brown Boveri's Executive Management Group. From 1993-94 he ran his own management consultancy. On January 1, 1995 he was appointed President of the World Business Council for Sustainable Development (WBCSD) in Geneva, which is a coalition of some 150 leading international corporations. Since the formation of this organization in 1990, Mr Stigson has been actively involved with the business response to the sustainable development challenge.

Björn Stigson has served on the board of a variety of international companies. He is presently a member of advisory councils to, among others, Unilever, OECD and the Government of China. Björn Stigson is a member of the newly established board of GRI (Global Reporting Initiative) and the IRGC (International Risk Governance Council).

Claude Martin

(Member)

Director General of WWF International

Claude Martin was appointed Director General of WWF International in October 1993. Prior to this he served as Deputy Director General from 1990 to 1993, overseeing the field, policy, education and communications programmes of WWF

International. In this capacity, he led an organization-wide effort to focus WWF's worldwide programmes by establishing global priorities and strategies.
Before joining WWF International, Claude Martin was Director and Chief Executive of WWF-Switzerland from 1980 to 1990. Under his leadership WWF-Switzerland emerged as one of the strongest of the national organizations within the WWF network – both in terms of achieving conservation objectives and generating membership and financial support.
Claude Martin's career with WWF started in the early 1970s, when he lived in Central India, studying the ecology of the barasingha deer in Kanha National Park. While fewer than 100 animals of this threatened deer survived at the end of the 1960s, his findings led to a revision of habitat management and a subsequent increase in the population size and range of the barasingha deer.
He was educated in Zurich and holds an MSc in biology from the University of Zurich, and in 1975 he graduated with a Ph.D. in wildlife biology from the University of Zurich. The status and ecology of the barasingha deer in Central India was the subject of this thesis.
From 1975 to 1978 Claude Martin worked for the Wildlife Department of Ghana and served as Director of the Bia National Park and other tropical rainforest areas in the Western Region of Ghana. In addition to his planning and administrative duties as parks manager, he was also responsible for research programmes on primates and the forest elephant.
Over the years, he has carried out numerous field missions on behalf of WWF and IUCN – The World Conservation Union, primarily on forest conservation issues in African countries, and published large numbers of articles on conservation.
Since becoming Director General of WWF International, Claude Martin has initiated several new approaches in conservation such as the WWF Target Driven Programmes, as well as partnerships, for example with the World Bank and business/industry groups. He is a member of the China Council for International Cooperation on Environment and Development (CCICED) – a high level advisory body to the Chinese Government, a Board member of the Ghana Heritage Conservation Trust (GHCT), a member of the Advisory Board of the Swiss Federal Institute for Environmental Science & Technology, and other environmental bodies.
A Swiss, Claude Martin was born in Zurich in 1945. He is married with four children and is fluent in English, German and French.

Eileen Claussen
(Member)

Eileen Claussen is the President of the Pew Center on Global Climate Change. She is also the President and Chairman of the Board of Strategies for the Global Environment. Ms. Claussen is the former Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. In that capacity, she was responsible for developing and implementing policy on behalf of the United States on major international issues, including climate change; ozone depletion; chemicals; natural resource issues, including forests, biodiversity, oceans, fisheries and wildlife

conservation; and the sustainable development efforts of the multilateral development banks and the United Nations.

Prior to joining the Department of State, Ms. Claussen served for three years as a Special Assistant to the President and Senior Director for Global Environmental Affairs at the National Security Council. In this role, she was responsible for policy development on a wide range of global environment and population issues. During this time, she also served as Chairman of the United Nations Multilateral Montreal Protocol Fund.

From 1987 to 1993, Ms. Claussen was Director of Atmospheric Programs at the U.S. Environmental Protection Agency. There, she directed international and domestic activities related to the depletion of the ozone layer; developed the acid rain program under Title IV of the Clean Air Act; negotiated the Clean Air Accord with Canada; and directed the development of the EPA's energy efficiency programs, including the Green Lights program and the Energy Star program. Ms. Claussen also served from 1990 to 1991 as the Deputy Assistant Administrator for the Office of Air and Radiation. Between 1972 and 1987, she directed various programs at the U.S. Environmental Protection Agency, including those dealing with the land disposal of hazardous waste.

Ms. Claussen is the recipient of the Department of State's Career Achievement Award, the Meritorious Executive Award for Sustained Superior Accomplishment, the Distinguished Executive Award for Sustained Extraordinary Accomplishment, and the Fitzhugh Green Award for Outstanding Contributions to International Environmental Protection. At the conclusion of her government career, she served as the Timothy Atkeson Scholar in Residence at Yale University. She received a Master of Arts degree from the University of Virginia, and a Bachelor of Arts degree from George Washington University. Ms. Claussen is a member of the Board of Directors of the Environmental Law Institute, and currently serves as a Commissioner on the Pew Oceans Commission as well as The Council on Foreign Relations.

Laurence Tubiana
(Member)

French Nationality, married with one child.
Education:
Institute of Political Studies(Paris), diplome University of Paris, BSc(economics), University of Paris, PhD
Languages:
English: speaks, reads and writes
Spanish: speaks, reads and writes
Professional Activities:
Director, Institute of Sustainable Development and International Relation
Environment Advisor, Office of Former Prime Minister of France

Klaus Töfer
(Member)

United Nations Under-secretary-General
Director-General of the United Nations Office at Nairobi
Executive-Director of the United Nations Environment Programme

Executive-Director of the United Nations Centre for Human Settlements (Habitat)29 July 1938 Born in Waldenburg / Silesia, married with three chileren

1959 Abitur(school-leaving certificate)from the Konig-Wilhelm-Gymnasium in Hoxter, Weser

1959-1960 Military service. Second Liertenant(Reserve officer)

1964 Graduated from the University of Munster, Diploma in Economics

1965-1971 Assistant to Professor Hans-Karl Schnerder, Director of economic research at the Central Institute for Regional Planning , University of Munster. Also, lecturer at the Economic Academy in Hagen and at the University of Bielefeld

1968 Obtained doctorate of philosophy

1970-1971 Head of the Economics Department of the Central Institute for Regional Planning in Munster

1971-1978 Head of the Department for Planning and Information in the State Chancellery of the Saarland
Lecturer at the college of Administrative Sciences in Speyer
Consultant in the field of development policy in Egypt, Malawi, Brazil and Jordan

1972 Joined the Christian Democratic Union of Germany (CDU)

1977-1979 District chairman of the CDU in Saarbucken: member of the State Executive Committee of the CDU in the Saarland

1978-1979 Full professor at the University of Hanover, Director of the Institute for Regional Research and Development
Member of the Council of Experts for Environmental Questions

1978-1985 State Secretary at the Ministry for Social Affairs, Health and Environment of Rhineland-Palatinate

1983-1987 Vice-chairman of the Federal Committee on Environmental questions of the CDU

1985-1986 Associate lecturer in environmental and resource economics at the University of Mainz

23 May 1985 to 06 May 1987
Minister for Environment and Health of Rhineland-Palatinat

7 May 1987 to November 1994
Federal Minister for the Environment, Nature Conservation and Nuclear Safety

1987-1989 District chairman of the CDU in Rhine-Hunsruck 19 May 1990 to 18 November 1995
State chairman of the CDU in the Saarland
December 1990 to February 1998
Member of the German Bundestag

26 October 1992
Member of the Presiding Committee of the Christian Democratic Union of Germany (CDU)

May 1994 to May 1995
Chairman of the United Nations Commission on Sustainable Development (CSD)

17 November 1994 to
Federal Minister for Regional Planning, Building and Urban Development and Coordinator for the Transfer of the Parliament and

14 January 1998
Federal Government to Berlin and Compensation for the Bonn Region
1 February 1998
United Nations Under-Secretary-General and Executive Director of the United Nations Environment Programme(UNEP)
9 February 1998
Director-General of the United Nations Office at Nairobi(UNON)
13 July 1998
Acting Executive-Director of the United Nations Centre for Human Settlements(Habitat)
Honours
22 August 1996
Order of Merit of the Federal Republic of Germany
23 May 1989
Commander's cross of the Order of Merit of the Federal Republic of Germany
3 July 1997
Honorary professor of Tongji University ,Shanghai
25 July 1997
Grand Gross of the Order of Merit of the Federal Republic of Germany
21 October 1998
Honorary doctor of Brandenburg Technical University, Cottbus Germany
16 June 2000T
TUV Rheinland Pfalz Environment Award

Rajendra K Pachauri
(Member)

Dr R K Pachauri is an Indian national and has wide-ranging expertise in the critical facets of sustainable development. Recently, to acknowledge his immense contribution to the field of environment, he has been awarded the Padma Bhushan-one of India's highest civilian awards that recognizes distinguished service of a high order to the nation in any field.
Dr Pachauri became the Director of TERL in 1981 and has guided its growth into a premier research institute. TERI provides support in energy, environment, forestry, biotechnology, and resource conservation to governments, institutions, and corporates worldwide. On sabbatical from TERI in Fall 2000,he taught as the MeCluskey Fellow, School of Forestry & Environmental Studies, Yale University, USA.
Commencing his career at the Diesel Locomotive Works, Varanasi, he went on to obtain two doctorates in industrial Engineering and Economics from the North Carolina State University, USA. He served as Director, Consulting and Applied Research, Administrative Stall College of India (1979-1981). He has been a Visiting Professor at the College of Mineral and Energy Resources. West Virginia University and a Research Fellow at the Resource Systems Institute.
East-West Center and The World Bank. He served as the UNDP Administrator's Part-time Adviser for Energy and Sustainable Management of Natural Resources (1994-99).

Dr Pachauri is currently Vice-Chairman, intergovernmental Panel on Climate Change; Director, Indian Oil Corporation Limited (a Fortune 500 company); and Member, Board of Directors, Institute for Global Environmental Strategies, Japan. He has been President (1998) and Chairman (1989-90)of the International Association for Energy Economics and continues to hold Presidency of the Asian Energy Institute since 1992. He has participated in numerous committees and boards including those of the International Solar Energy Society; World Resources Institute; World Energy Council; Ministry of Power, .Government of India; and Advisory Board on Energy, Government of India reporting directly to the Prime Minister. Dr Pachauri has also served for academic/research Institutions and published 22 books and several papers and articles.

Michael Bohnet
(Member)

Present Position: Deputy State Secretary,
Director General for Bilateral Co-operation,
Federal Ministry for Economic Co-operation and Development (BMZ)
Germany, Professor for Economics

Past Positions: Deputy Director General
Department for Sectoral and Cross-Sectoral Policy, Ministry for Economic Co-operation and Development (1991-30.09.1998)
Chief negotiator of the BMZ at the last 7 World Conferences (Rio, Cairo, Beijing, Barbados, Copenhagen, Istanbul, Rome)
Director, Evaluation Department, Ministry for Economic Co-operation and Development (1986-1990)
Director of the UN-Division, Ministry for Economic Co-operation and Development (1983-1985)
Head of the Division for General Policy, Planning and Research, Ministry for Economic Co-operation (1978-1982)
Head of the Department for Development Studies, IFO Institute for Economic Research, Munich, Germany (1974-1977)
Kocks Consulting Engineers, Düsseldorf,1973

Publications (books): Nord-Süd-Konflikt (North-South Conflict), 5 editions
Applied Research and its impact on Economic Development, The East African Case
Einkommensverteilung in Entwicklungsländern (Income Distribution in Developing Countries)
External Economies
Umschuldungen öffentlicher und privater Forderungen an Entwicklungsländer (Rescheduling of private and public debts of developing countries)
Dr. Bohnet has published close to 60 articles on topics related to economic development

Memberships: German Society for Economic and Social Sciences
European Association of Development Research Institutes

Appointment to the Scientific Advisory Board, Ministry for Economic Co-operation
Appointment to the Board of Trustees of the German Africa Institute, Hamburg
Appointment to the EKD (Evangelical Church of Germany) Committee"Church Funds for Development Services", Hanover
Appointment to the Committee for international Partnerships of the German Agricultural Society, Frankfurt
Appointment to the Board of Trustees of the Society for the Promotion of Research and Training in the field of international Technical and Economic Co-operation of the University of Aachen, College of Advanced Technology, Aachen
Appointment to the Board of Trustees of the Fraunhofer Institute for Solar Energy Systems, Freiburg
Appointment to the Commission for international Population issues of the German Society for the United Nations, Bonn
Appointment to the Founding Committee of the Centre for Development Research (ZEF)at the University of Bonn, Member of the ZEF Appointments Board ,Bonn

Malcolm Brinded
(Member)

Malcolm Brinded is a Managing Director of Royal Dutch Petroleum Company and Managing Director of the Royal Dutch/Shell Group of Companies.
Responsibilities

Gas and Power
IT
East Asia and Australasia

Background

Malcolm was born in the UK in 1953. He graduated in Engineering from Cambridge University in 1974 and joined Shell in The Hague. He has worked for the Shell Group for most of his career – in Brunei, the Netherlands, Oman and the UK.

From 1993 Malcolm worked in Shell Expro in Aberdeen in several roles, ultimately as Managing Director, responsible for 20% of the UK's offshore oil and gas business. He was also Shell's Country Chairman for the UK from 1999 until March 2002. He was Shell's Director for Strategy, Environment, and External Affairs from May 2001 until becoming a Group Managing Director in July 2002.

Malcolm is a Fellow of the Institution of Civil Engineers. From 1998 to 2001 he was on the UK Government/Industry Oil and Gas Task Force, serving as co-Chair of the Industry leadership team. Malcolm was awarded the CBE in the New Years Honours List 2002 for services to the UK oil and gas industry.

Personal

Malcolm Brinded was born in the UK in 1953, is married to Carola and has three sons. His personal interests include cycling,, sailing and music.

Svend Auken
(Member)

Present Position : First Vice Chairman of the Danish Parliament and Chairman for the Environment, Denmark

1971- Member of the Danish Parliament

1993.1- Minister for Environment

1994.9- Minister for Environment and Energy

Exit

CVs of International Members to CCICED Phase III

Michael B. McElroy
(Member)

Director, Harvard University Center on the Environment, USA
Michael B. McElroy received his elementary and graduate education from Queen's University in Belfast, Northern Ireland. After spending a postdoctoral year in the Chemistry Department at the University of Wisconsin, he was appointed staff scientist in 1963 at Kitt Peak National Observatory in Tueson, Arizona.
In 1970, he was named Abbott Lawrence Rotch Professor of Atmospheric Sciences at Harvard University and in 1975 was appointed Director of the Centre for Earth and Planetary Physics. Since 1986 he has been Chairman of the Department of Earth and Planetary Sciences. Since 1992 he has been Chairman of the University Committee on Environment at Harvard where he leads an interdisciplinary study on the implications of China's rapid industrial development for the local, regional and global environment.
In 1997, he was named the Gilbert Butler Professor of Environment Studies.
McElroy's research interests range from studies on the origin and evolution of t he Planets to, more recently, an emphasis on effects of human activity on the global environment of the Earth. He is the author of more than 200 technical paper s contributing to our understanding of human induced changes in stratospheric oz one; and to the potential for serious to global and regional climate due to anthropogenically related emission of greenhouse gases.
He is a Fellow of the American Academy of Arts and Science, the International Academy of Aeronautics, the American Geophysical Union and the American Association for the Advancement of Science. He was the recipient of the Macelwane Award of the American Geophysical Union in 1968, the NASA Public Service Medal in 1978 an d the Eire Society Gold Medal in 1987. In1989 he was awarded the George Ledlie Prize at Harvard University for the person who "since the last award of said prize, has by research, discovery, or otherwise made the most valuable contribution to science, or in any way for the benefit of mainland" and received the Research and Development Award from the person "since the last award of said prize, has by research, discovery, or otherwise most valuable contribution to science, or any way for the benefit of mainland" and received the Research and Development A ward from the National Energy Resources Organization. He was honoured with award of an honorary degree of Doctor of Science by Queen's University of Belfast in 1 991

Masami Ishizaka
(Member)

Executive Vice President of Japan National Oil Corporation
Dec.5, 1939 Born in Tokyo
Mar.1963 Graduated from Faculty of Law, University of Tokyo
Apr.1963 Entered Ministry of Finance (MOF)
Jun.1982 Director of the Research Division, Budget Bureau, MOF
Jun.1988 Director of the Nagoyo Regional Taxation Bureau
Jun.1989 Director of the Nagoyo Regional Taxation Bureau
Jun.1989 Deputy Director-General of Tax Bureau, MOF
Jul.1992 Secretary-General of Executive Bureau, Securities and Exchange

Surveillance Commission
Jun.1993 Director-General of the Financial Bureau, MOF
Jun.1994 Director-General of the Planning and coordination Bureau, Environment Agency
Jun.1995 Administrative Vice Minister of Environment Agency
Jun.1996 Vice Chairman of Automobile Insurance Rating Organization of Japan
Jul.1998 Executive Vice President of Japan National Oil Corporation

Joseph Eichenberger
(Member)

The ADB Board of Directors, acting on the recommendation of ADB President Tadao Chino appointed Mr. Joseph B. Eichenberger as Vice-President --- East.
Mr Eichenberger, who succeeded Peter Sullivan, assumed office on 15 December 2000.
As former Director of the Office of Mulallteral Development Banks in the United States Treasury Department, he handled a range of policy and operational issues for all the multilateral development banks as well as the Global Environmental Facility and International Fund for Agricultural Development. From 1993 to 1994, he also served as Acting US Executive Director for the World Bank, prior to which, from 1991 to 1993, he had been Senior Advisor to the US Executive Director at the World Bank. Earlier in his career, Mr. Eichenberger had served as International Economist, Office of International Monetary Affairs, US Treasury Department; Assistant Financial Attach at the United States Embassy in Bonn, Germany; and International Economist at the Office of Industrial Nations in the US Treasury Department.
Mr Joseph B.Eichenberger is a native of the United States. He was born on 21 July 1957, and is married. Mr. Eichenberger holds a master's degree in economics from the University of Maryland, having obtained his Bachelor of Arts degree in Economics and Environmental Science from the State University of New York.

Måns Lönnroth
(Member)

born 1941
Jan 1st, 2000 Managing Director, MISTRA (foundation for strategic environment research)
Oct 1994- december 1999: state secretary at the Ministry of Environment, Sweden
Dec 1993- October 1994: project director for co-operation with central and eastern Europe, Environment Protection Agency
Jan 1992-November 1993: environmental Councillor, Swedish embassies in Germany, Poland and the Czech Republic
1984-1991: political advisor, Prime Minister's Office
1985-1991: member of the Medical research Council
1982-1991: member of the board, Karolinska Hospital (dep. Chairman for six years)
1979-1994: member, Stockholm County Council
1980 docent, department for technology and social change, University of Linköping.
Graduate studies in applied mathematics, Royal Institute of Technology Sweden.

Arthur Hanson
(Member)

Art Hanson is Distinguished Fellow and Senior Scientist at the International Institute for Sustainable Development in Winnipeg, Canada. From 1992 to 1998 he served as President and CEO of IISD. Currently he also serves as Ministerial Ocean Ambassador for Canada's Minister of Fisheries and Oceans, as a Core Faculty Member of the Sustainable Enterprise Academy in the Schulich School of Business at York University, Chair of the Technical Advisory Committee of the UN *Equator Initiative*, as a Member of the Canada Foundation for Innovation, the Canadian Biotechnology Advisory Committee, The International Oceans Institute of Canada Board, the China Council for International Cooperation on Environment and Development (Beijing), and as a Trustee of the Indonesian Biodiversity Foundation (KEHATI). He is an advisor to various other Canadian and international bodies.

Dr. Hanson has served on Canada's National Round Table on Environment and Economy, which provides advice to the Prime Minister, and in the mid-1980s, chaired the Canadian Environmental Assessment Research Council. He is an international consultant and has served as project director with organizations such as the World Bank, CIDA and UNDP and, in Canada, as consultant with government departments and private sector organizations. He was Professor and founding Director of the School for Resource and Environmental Studies, and a Research Director of the Dalhousie Ocean Studies Programme at Dalhousie University in Nova Scotia, and has served on the faculty of other universities, including the University of Michigan and the Bogor Agricultural University in Indonesia. He pioneered the development of environmental management programs in Indonesia and elsewhere in Asia while working with the Ford Foundation and other international organizations.

His research interests include sustainable development policy and practices in Canada and developing countries; integrated marine and coastal resource use; environmental planning, management and governance; sustainable natural resource management, including agriculture, fisheries and forestry; nature and biodiversity protection. He holds a PhD in ecology from the University of Michigan School of Natural Resources and a BSc and MSc in Zoology from the University of British Columbia.

Ian Johnson
(Member)

Vice President & Head of Network
Environmentally and Socially Sustainable Development (ESSD)
The World Bank Group
Chairman
Consultative Group on International Agricultural Research (CGIAR)

Ian Johnson, a British national, was appointed as the World Bank's Vice President for the Environmentally and Socially Sustainable Development Network (ESSD) in 1998 – in which he oversees the Bank's work on environmentally and socially sustainable development which includes the areas of natural resource management, rural development, post-conflict and culture – and as Chairman of the Consultative Group on International Agricultural Research (CGIAR) in July 2000.

Mr. Johnson joined the Bank in April 1980 as a Young Professional. A year later he joined the Europe, Middle East and North Africa (EMENA) Projects Department, Power and Energy Division, as an Energy Economist and was subsequently promoted to Senior Economist. In July 1987, he transferred to the EMENA Regional Office of the Vice President. In April 1990, he was promoted to Principal Sector Economist in the Policy, Research, and External Affairs Department. In April 1991 he was promoted to the position of Administrator, Global Environment Facility (GEF)—an institution in the Bank that finances global environmental projects—where he played a key role in the restructuring and first replenishment of the GEF. In September 1995 he was promoted to the position of Assistant Chief Executive Officer in the GEF Secretariat. In 1997, he became Senior Manager of the Bank's Environment Department, the position he held prior to his current position.

Prior to joining the Bank, Mr. Johnson spent five years in Bangladesh as a Program Officer for UNICEF working on rural development issues, and one year as an economist in the British Government.

Mr. Johnson attained his BSc from the University of Wales. He holds his masters in economics, education, and health planning from Harvard University, and his masters in economic development and agricultural economics from Sussex University.

Kåre Willoch
(Member)

Born 1928.10.03. Son of manager Haakon Isaachsen Willoch and wife Agnes Christine, nèe Saure. Married 1954 to Anne-Marie Jørgensen, born 1929.03.09. Two daughters, one son.

Education : 1953 M.Sc. in Economics, University of Oslo

Employment

1999 – 2001 Director, The Fridtjof Nansen Institute
1989 - 1998 County Governor of Oslo and Akershus
1953 - 1965 Federation of Norwegian Industries
1951 - 1952 Norwegian Shipowners' Association

Political Experience

1986 - 1989 Chairman of the Com.on Foreign and Const.Affairs of the Storting (Parl.)

1981 - 1986 Prime Minister
1970 - 1981 Parliamentary leader of the Conservative Party
1970 - 1974 Chairman of the Conservative Party
1963 and 1965 -1970 Minister of Trade and Shipping
1963 - 1965 Secretary General of the Conservative Party
1958 - 1989 Member of the Storting (Parliament) for the Conservative Party

International Positions

1987 - 1989 Chairman of the International Democratic Union
1959 - 1986 Member of the Nordic Council, President 1973.
1967 Chairman of the World Bank
1961 Delegate to UN General Assembly

Other recent major responsibilities

1990 - 1996 Chairman of the supervisory Board, Den norske Bank (The Norwegian Bank)
1990 - 1992 Chairman of the Defence Commission of 1990
1998 – 2000 Chairman of the board of the Norwegian Broadcasting Corporation (NRK).
1999 - 2000 Chairman of The Commission to Investigate Emergency Preparedness.

Honours and Awards

Dr. at Laws, h.c., St. Olav College, Minnesota, 1984.
"Opinion-maker of the year" 1996, by the Association of Norwegian Newspaper Editors.
"Fritt Ords pris" 1997, by the Norwegian Institution for Free Speech.
C.J. Hambro's price for conservative writers 2000.

List of Books, with translation of titles:

Prispolitikken i Norge, *(Price Policy in Norway)* with L.B. Bachke, Dreyers 1959.
Minner og Meninger, Schibsted 1988. *(Memories, autobiography).*
Statsminister, Schibsted 1990. *(Prime Minister, autobiography)*
Krisetid, Schibsted 1992.*(Crisis)*
En ny miljøpolitikk, Gyldendal 1996 *(A new Policy for the Environment).*
Tanker i Tiden, Cappelen 1999 *(Ideas)*
Myter og virkelighet , Cappelen 2002.*(Myths and Reality)*

Måns Lönnroth, born 1941
Jan 1st, 2000 Managing Director, MISTRA (foundation for strategic environment research)
Oct 1994- december 1999: state secretary at the Ministry of Environment, Sweden
Dec 1993- October 1994: project director for co-operation with central and eastern Europe, Environment Protection Agency
Jan 1992-November 1993: environmental Councillor, Swedish embassies in Germany, Poland and the Czech Republic
1984-1991: political advisor, Prime Minister's Office
1985-1991: member of the Medical research Council
1982-1991: member of the board, Karolinska Hospital (dep. Chairman for six years)
1979-1994: member, Stockholm County Council

1980 docent, department for technology and social change, University of Linköping.
Graduate studies in applied mathematics, Royal Institute of Technology Sweden.

Yvo de Boer
(Member)

Ministry of Housing, Spatial Planning and the Environment (VROM)
Directorate for International Environmental Affairs

Present position
Director for International Environmental Affairs (since October 1999)
Deputy director-general for Environmental Protection (since January 2002)
Head of the Netherlands delegation to the Conference of Parties to the Framework Convention on Climate Change
Sparring partner Minister to World Summit on Sustainable Development

Previous positions

1994-1999
Deputy Director Air and Energy Department, Ministry of Housing, Spatial Planning and the Environment
Head, Climate Change Department, Ministry of Housing, Spatial Planning and the Environment
1991-1994
Deputy Head/Acting Head, Department of Housing Policy Co-ordination, Ministry of Housing, Spatial Planning and the Environment
1988-1991
Chief, Information Office for North America and the Caribbean, United Nations Centre for human Settlements (Habitat), Ottawa, Canada
1984-1991
Human Settlements Adviser, United Nations Centre for Human Settlements (Habitat), Nairobi, Kenya
1981-1984
staff member, Information and International Relations Department, Ministry of Housing, Spatial Planning and Environment

Educational background
Technical college degree in social sciences

Other activities
trainer in consensus building and conflict management
qualified mediator

Crispin Tickell

(Member)

GCMG KCVO

Chancellor of the University of Kent at Canterbury; Chairman of the Climate Institute of Washington D.C., Chairman of the Advisory Committee on the Environment (ACE) of the International Council for Science, Director of the Green College Centre for Environmental Policy and Understanding, Chairman of the Advisory Board of the Earth Centre in South Yorkshire. Sir Crispin spent most of his life in the Diplomatic Service; as Chef de Cabinet to the President of the European Commission (1977-80), Ambassador to Mexico (1981-83), Permanent Secretary of the Overseas Development Administration (1984-87), and British Permanent Representative to the United Nations (1987-90). He was Warden of Green College, Oxford (1990-1997) and President of the Royal Geographical Society (1990-1993), and Chairman of the British Government Panel on Sustainable Development (1994-2000) Retired as a Trustee of the Royal Botanical Garden of Edinburgh, and the Natural History Museum in 2001. Born in 1930. Appointed as a Trustee of the incorporated Reuters Foundation on 1 January 2001.

Achim Steiner

(Member)

Director General of IUCN - The World Conservation Union.

He has worked both at grassroots level and at the highest levels of international policy making to address the interface between environmental sustainability, social equity and economic development.

In recent years, his professional focus has been on developing both conceptual and institutional bridges among very diverse interests and agendas. In Washington, where he was Senior Policy Advisor of IUCN's Global Policy Unit, he developed new partnerships between the conservation community and the World Bank and United Nations system. In South-East Asia where he worked as chief technical advisor on a programme for sustainable management of Mekong River watersheds, he contributed to a new dialogue and policy process with governments and local communities to introduce political reforms for community-based natural resources management. In his most recent assignment - Secretary General of the World Commission on Dams, based in South Africa - he brought together the public sector, civil society, and the private sector in a global policy process on dams and development.

Achim Steiner's professional career has taken him from working:

- at the grassroots level with a community-based organisation in India
- through advisory positions on sustainable development policy with public sector and inter-governmental agencies in Oman, Pakistan, Germany and Vietnam
- short-term assignments in Africa, Asia, Latin America and the South Pacific
- to managing a regional conservation programme for IUCN in Southern Africa

- leading a global environmental policy initiative in the US, aimed at multilateral agencies, and most recently
- to managing the international Secretariat and work programme of the World Commission on Dams based in South Africa

His long standing commitment to conservation and sustainable use of natural resources, as well as cross-cultural experience, put him in an ideal position to carry out the mission and mandate of IUCN.

Achim Steiner is 41 years old. Mr Steiner - a German national - was born in Brazil where he lived for ten years. His educational background includes a BA at the University of Oxford (Philosophy, Politics and Economics) as well as a MA at the University of London (Economics and Regional Planning). He also studied at the German Development Institute in Berlin (Development Economics and Policy) as well as the Harvard Business School.

Björn Stigson

(Member and Task Force Co-Chair)

Björn Stigson has had extensive experience in international business. He began his career as financial analyst with the Swedish Kockums Group. From 1971-82 he worked for ESAB, the international supplier of equipment for welding, in different positions responsible for Finance, Operations and Marketing. In 1983 he became President and CEO of the Fläkt Group, a company listed on the Stockholm stock exchange and the world leader in environmental control technology. Following the acquisition of Fläkt by ABB, in 1991 he became Executive Vice President and a member of ABB Asea Brown Boveri's Executive Management Group. From 1993-94 he ran his own management consultancy. On January 1, 1995 he was appointed President of the World Business Council for Sustainable Development (WBCSD) in Geneva, which is a coalition of some 150 leading international corporations. Since the formation of this organization in 1990, Mr Stigson has been actively involved with the business response to the sustainable development challenge.

Björn Stigson has served on the board of a variety of international companies. He is presently a member of advisory councils to, among others, Unilever, OECD and the Government of China. Björn Stigson is a member of the newly established board of GRI (Global Reporting Initiative) and the IRGC (International Risk Governance Council).

Claude Martin

(Member)

Director General of WWF International

Claude Martin was appointed Director General of WWF International in October 1993. Prior to this he served as Deputy Director General from 1990 to 1993,

overseeing the field, policy, education and communications programmes of WWF International. In this capacity, he led an organization-wide effort to focus WWF's worldwide programmes by establishing global priorities and strategies.
Before joining WWF International, Claude Martin was Director and Chief Executive of WWF-Switzerland from 1980 to 1990. Under his leadership WWF-Switzerland emerged as one of the strongest of the national organizations within the WWF network – both in terms of achieving conservation objectives and generating membership and financial support.
Claude Martin's career with WWF started in the early 1970s, when he lived in Central India, studying the ecology of the barasingha deer in Kanha National Park. While fewer than 100 animals of this threatened deer survived at the end of the 1960s, his findings led to a revision of habitat management and a subsequent increase in the population size and range of the barasingha deer.
He was educated in Zurich and holds an MSc in biology from the University of Zurich, and in 1975 he graduated with a Ph.D. in wildlife biology from the University of Zurich. The status and ecology of the barasingha deer in Central India was the subject of this thesis.
From 1975 to 1978 Claude Martin worked for the Wildlife Department of Ghana and served as Director of the Bia National Park and other tropical rainforest areas in the Western Region of Ghana. In addition to his planning and administrative duties as parks manager, he was also responsible for research programmes on primates and the forest elephant.
Over the years, he has carried out numerous field missions on behalf of WWF and IUCN – The World Conservation Union, primarily on forest conservation issues in African countries, and published large numbers of articles on conservation.
Since becoming Director General of WWF International, Claude Martin has initiated several new approaches in conservation such as the WWF Target Driven Programmes, as well as partnerships, for example with the World Bank and business/industry groups. He is a member of the China Council for International Cooperation on Environment and Development (CCICED) – a high level advisory body to the Chinese Government, a Board member of the Ghana Heritage Conservation Trust (GHCT), a member of the Advisory Board of the Swiss Federal Institute for Environmental Science & Technology, and other environmental bodies.
A Swiss, Claude Martin was born in Zurich in 1945. He is married with four children and is fluent in English, German and French.

Eileen Claussen
(Member)

Eileen Claussen is the President of the Pew Center on Global Climate Change. She is also the President and Chairman of the Board of Strategies for the Global Environment. Ms. Claussen is the former Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. In that capacity, she was responsible for developing and implementing policy on behalf of the United States on major international issues, including climate change; ozone depletion; chemicals;

natural resource issues, including forests, biodiversity, oceans, fisheries and wildlife conservation; and the sustainable development efforts of the multilateral development banks and the United Nations.

Prior to joining the Department of State, Ms. Claussen served for three years as a Special Assistant to the President and Senior Director for Global Environmental Affairs at the National Security Council. In this role, she was responsible for policy development on a wide range of global environment and population issues. During this time, she also served as Chairman of the United Nations Multilateral Montreal Protocol Fund.

From 1987 to 1993, Ms. Claussen was Director of Atmospheric Programs at the U.S. Environmental Protection Agency. There, she directed international and domestic activities related to the depletion of the ozone layer; developed the acid rain program under Title IV of the Clean Air Act; negotiated the Clean Air Accord with Canada; and directed the development of the EPA's energy efficiency programs, including the Green Lights program and the Energy Star program. Ms. Claussen also served from 1990 to 1991 as the Deputy Assistant Administrator for the Office of Air and Radiation. Between 1972 and 1987, she directed various programs at the U.S. Environmental Protection Agency, including those dealing with the land disposal of hazardous waste.

Ms. Claussen is the recipient of the Department of State's Career Achievement Award, the Meritorious Executive Award for Sustained Superior Accomplishment, the Distinguished Executive Award for Sustained Extraordinary Accomplishment, and the Fitzhugh Green Award for Outstanding Contributions to International Environmental Protection. At the conclusion of her government career, she served as the Timothy Atkeson Scholar in Residence at Yale University. She received a Master of Arts degree from the University of Virginia, and a Bachelor of Arts degree from George Washington University. Ms. Claussen is a member of the Board of Directors of the Environmental Law Institute, and currently serves as a Commissioner on the Pew Oceans Commission as well as The Council on Foreign Relations.

Laurence Tubiana
(Member)

French Nationality, married with one child.
Education:
Institute of Political Studies(Paris), diplome University of Paris, BSc(economics), University of Paris, PhD
Languages:
English: speaks, reads and writes
Spanish: speaks, reads and writes
Professional Activities:
Director, Institute of Sustainable Development and International Relation
Environment Advisor, Office of Former Prime Minister of France

Klaus Töfer
(Member)

United Nations Under-secretary-General
Director-General of the United Nations Office at Nairobi
Executive-Director of the United Nations Environment Programme

Executive-Director of the United Nations Centre for Human Settlements (Habitat)29 July 1938 Born in Waldenburg / Silesia, married with three chileren

1959 Abitur(school-leaving certificate)from the Konig-Wilhelm-Gymnasium in Hoxter, Weser

1959-1960 Military service. Second Liertenant(Reserve officer)

1964 Graduated from the University of Munster, Diploma in Economics

1965-1971 Assistant to Professor Hans-Karl Schnerder, Director of economic research at the Central Institute for Regional Planning , University of Munster. Also, lecturer at the Economic Academy in Hagen and at the University of Bielefeld

1968 Obtained doctorate of philosophy

1970-1971 Head of the Economics Department of the Central Institute for Regional Planning in Munster

1971-1978 Head of the Department for Planning and Information in the State Chancellery of the Saarland
Lecturer at the college of Administrative Sciences in Speyer
Consultant in the field of development policy in Egypt, Malawi, Brazil and Jordan

1972 Joined the Christian Democratic Union of Germany (CDU)

1977-1979 District chairman of the CDU in Saarbucken: member of the State Executive Committee of the CDU in the Saarland

1978-1979 Full professor at the University of Hanover, Director of the Institute for Regional Research and Development
Member of the Council of Experts for Environmental Questions

1978-1985 State Secretary at the Ministry for Social Affairs, Health and Environment of Rhineland-Palatinate

1983-1987 Vice-chairman of the Federal Committee on Environmental questions of the CDU

1985-1986 Associate lecturer in environmental and resource economics at the University of Mainz

23 May 1985 to 06 May 1987
Minister for Environment and Health of Rhineland-Palatinat

7 May 1987 to November 1994
Federal Minister for the Environment, Nature Conservation and Nuclear Safety

1987-1989 District chairman of the CDU in Rhine-Hunsruck 19 May 1990 to 18 November 1995
State chairman of the CDU in the Saarland
December 1990 to February 1998
Member of the German Bundestag

26 October 1992
Member of the Presiding Committee of the Christian Democratic Union of Germany (CDU)

May 1994 to May 1995
Chairman of the United Nations Commission on Sustainable Development (CSD)

17 November 1994 to
Federal Minister for Regional Planning, Building and Urban Development and Coordinator for the Transfer of the Parliament and

14 January 1998
Federal Government to Berlin and Compensation for the Bonn Region
1 February 1998
United Nations Under-Secretary-General and Executive Director of the United Nations Environment Programme(UNEP)
9 February 1998
Director-General of the United Nations Office at Nairobi(UNON)
13 July 1998
Acting Executive-Director of the United Nations Centre for Human Settlements(Habitat)
Honours
22 August 1996
Order of Merit of the Federal Republic of Germany
23 May 1989
Commander's cross of the Order of Merit of the Federal Republic of Germany
3 July 1997
Honorary professor of Tongji University ,Shanghai
25 July 1997
Grand Gross of the Order of Merit of the Federal Republic of Germany
21 October 1998
Honorary doctor of Brandenburg Technical University, Cottbus Germany
16 June 2000T
TUV Rheinland Pfalz Environment Award

Rajendra K Pachauri
(Member)

Dr R K Pachauri is an Indian national and has wide-ranging expertise in the critical facets of sustainable development. Recently, to acknowledge his immense contribution to the field of environment, he has been awarded the Padma Bhushan-one of India's highest civilian awards that recognizes distinguished service of a high order to the nation in any field.
Dr Pachauri became the Director of TERL in 1981 and has guided its growth into a premier research institute. TERI provides support in energy, environment, forestry, biotechnology, and resource conservation to governments, institutions, and corporates worldwide. On sabbatical from TERI in Fall 2000,he taught as the MeCluskey Fellow, School of Forestry & Environmental Studies, Yale University, USA.
Commencing his career at the Diesel Locomotive Works, Varanasi, he went on to obtain two doctorates in industrial Engineering and Economics from the North Carolina State University, USA. He served as Director, Consulting and Applied Research, Administrative Stall College of India (1979-1981). He has been a Visiting Professor at the College of Mineral and Energy Resources. West Virginia University and a Research Fellow at the Resource Systems Institute.

East-West Center and The World Bank. He served as the UNDP Administrator's Part-time Adviser for Energy and Sustainable Management of Natural Resources (1994-99).
Dr Pachauri is currently Vice-Chairman, intergovernmental Panel on Climate Change; Director, Indian Oil Corporation Limited (a Fortune 500 company); and Member, Board of Directors, Institute for Global Environmental Strategies, Japan. He has been President (1998) and Chairman (1989-90)of the International Association for Energy Economics and continues to hold Presidency of the Asian Energy Institute since 1992. He has participated in numerous committees and boards including those of the International Solar Energy Society; World Resources Institute; World Energy Council; Ministry of Power, .Government of India; and Advisory Board on Energy, Government of India reporting directly to the Prime Minister. Dr Pachauri has also served for academic/research Institutions and published 22 books and several papers and articles.

Michael Bohnet
(Member)

Present Position: Deputy State Secretary,
Director General for Bilateral Co-operation,
Federal Ministry for Economic Co-operation and Development (BMZ) Germany, Professor for Economics

Past Positions: Deputy Director General
Department for Sectoral and Cross-Sectoral Policy, Ministry for Economic Co-operation and Development (1991-30.09.1998)
Chief negotiator of the BMZ at the last 7 World Conferences (Rio, Cairo, Beijing, Barbados, Copenhagen, Istanbul, Rome)
Director, Evaluation Department, Ministry for Economic Co-operation and Development (1986-1990) Director of the UN-Division, Ministry for Economic Co-operation and Development (1983-1985)
Head of the Division for General Policy, Planning and Research, Ministry for Economic Co-operation (1978-1982)
Head of the Department for Development Studies, IFO Institute for Economic Research, Munich, Germany (1974-1977)
Kocks Consulting Engineers, Düsseldorf,1973 Publications (books): Nord-Süd-Konflikt (North-South Conflict), 5 editions
Applied Research and its impact on Economic Development, The East African Case
Einkommensverteilung in Entwicklungsländern (Income Distribution in Developing Countries)
External Economies
Umschuldungen öffentlicher und privater Forderungen an Entwicklungsländer (Rescheduling of private and public debts of developing countries)
Dr. Bohnet has published close to 60 articles on topics related to economic development

Memberships: German Society for Economic and Social Sciences
European Association of Development Research Institutes

Appointment to the Scientific Advisory Board, Ministry for Economic Co-operation Appointment to the Board of Trustees of the German Africa Institute, Hamburg Appointment to the EKD (Evangelical Church of Germany) Committee"Church Funds for Development Services", Hanover Appointment to the Committee for international Partnerships of the German Agricultural Society, Frankfurt
Appointment to the Board of Trustees of the Society for the Promotion of Research and Training in the field of international Technical and Economic Co-operation of the University of Aachen, College of Advanced Technology, Aachen Appointment to the Board of Trustees of the Fraunhofer Institute for Solar Energy Systems, Freiburg
Appointment to the Commission for international Population issues of the German Society for the United Nations, Bonn
Appointment to the Founding Committee of the Centre for Development Research (ZEF)at the University of Bonn, Member of the ZEF Appointments Board ,Bonn

Malcolm Brinded
(Member)

Malcolm Brinded is a Managing Director of Royal Dutch Petroleum Company and Managing Director of the Royal Dutch/Shell Group of Companies.
Responsibilities

Gas and Power
IT
East Asia and Australasia

Background

Malcolm was born in the UK in 1953. He graduated in Engineering from Cambridge University in 1974 and joined Shell in The Hague. He has worked for the Shell Group for most of his career – in Brunei, the Netherlands, Oman and the UK.

From 1993 Malcolm worked in Shell Expro in Aberdeen in several roles, ultimately as Managing Director, responsible for 20% of the UK's offshore oil and gas business. He was also Shell's Country Chairman for the UK from 1999 until March 2002. He was Shell's Director for Strategy, Environment, and External Affairs from May 2001 until becoming a Group Managing Director in July 2002.

Malcolm is a Fellow of the Institution of Civil Engineers. From 1998 to 2001 he was on the UK Government/Industry Oil and Gas Task Force, serving as co-Chair of the Industry leadership team. Malcolm was awarded the CBE in the New Years Honours List 2002 for services to the UK oil and gas industry.
Personal

Malcolm Brinded was born in the UK in 1953**,** is married to Carola and has three sons**.** His personal interests include cycling**,,** sailing and music**.**

Svend Auken
(Member)

Present Position : First Vice Chairman of the Danish Parliament and Chairman for the Environment**,** Denmark
1971- Member of the Danish Parliament
1993**.**1- Minister for Environment
1994**.**9- Minister for Environment and Energy

Martin Lees

(Member)

Martin Lees took up his functions as Rector on 1st January 2001. He is a graduate in Mechanical Sciences from Cambridge University with a post-graduate Diploma in European Studies from the College of Europe in Bruges, Belgium. After some years as a manager in industry, he started his thirty-year international career at OECD where he was responsible for programmes on Cooperation in Science and Technology, on the Procedures and Structures of Government and also for the design and launching of the "InterFutures Project" on the long-term future of the world economy. He then served at the United Nations in several capacities and in 1982, he was appointed Assistant Secretary General for Science and Technology for Development. He has also been responsible for several high level programmes of International Cooperation with China, including the establishment of the China Council for International Cooperation on Environment and Development. From 1991-1996, he developed and implemented programmes of cooperation with the Newly Independent States of the Former Soviet Union, as Director General of the International Committee for Economic Reform and Cooperation. From November 1998 to December 2000, he assisted in the revitalization of the University for Peace, as Director for Programme Development, leading to his appointment as Rector.

Exit

CVs of Co-Chairs of Task Forces to CCICED Phase III

Li Yining

Professor Li is appointed or conferred the following titles:

Dean of Guanghua School of Management, Beijing University

Supervisor of Ph. D. Candidate

Direct of Management Science Center of Beijing University

Member of Standing Committee of National People's Congress (NPC)

Deputy Director of Finance & Economy Commission of NPC

Vice President of Central Committee of China Democratic League

Vice President of China International Exchange Association

Member of Economics Appraisal Group of Degree Commission of State Council

President of Historical Science Association for Sino-Japan Relationship Study

Jeremy Warford

He is a British citizen, with a PhD in economics from the University of Manchester. He taught at that University for a number of years prior to becoming a Research Associate at the Brookings Institution, Washington DC. He then joined the World Bank, where, apart from a two year secondment at the Asian Development Bank. In these institutions he specialized primarily in natural resources, energy and environmental economics issues. Since leaving the World Bank in 1995 he has continued to work primarily in the area of environmental economics and policy.

Shen Guofang

Professor of silviculture in Beijing Forestry University, Member and Vice-president of Chinese Academy of Engineering. He graduated from Leningrad Forest-Technical Academy of Former Soviet Union in 1956. After graduation, he came to join Beijing Forestry University for teaching and research activities and became President of Beijing Forestry University during the period of 1986-1993 and Chairman of Chinese Society of Forestry in 1993-1997. He is an expert on silviculture, forest ecology and sustainable development of forestry.

Uma Lele

She is currently Adviser in the World Bank and is responsible for the Operations Evaluation Department (OED) Review of the World Bank's 1991 Forest Strategy and its Implementation. From May, 1995 through June, 1998 she served as Adviser in the Environmentally Sustainable Vice Presidency within the World Bank. From 1991 to 1995, Ms. Lele was Graduate Research Professor at the University of Florida's Food and Resource Economics Department. She established the University's Office of International Studies and Programs and served as its first Director.

Ms. Lele was also the first Director of President Carter's Global Development Initiative which she established in Guyana in 1993 and 1994. She has served as a member of the Global 2000 Advisory Panel from 1991 to 1993, Board of Directors of the Center for International Forestry Research Institute (CIFOR) from 1993 to 1994, and the Technical Advisory Committee (TAC) of the CGIAR from 1994 to 1995.

Ye Ruqiu

He holds the positions as follows: Counselor of the State Council of the People's Republic of China; Advisor, State Environmental Protection Administration; President, Chinese Society of Environmental Sciences; Board Member, Sixth Session, National Committee, China Science and Technology Association; Senior Research Fellow.

From 1991 to 1997: Deputy Administrator, China National Environmental Protection Agency

From 1995: Co-Chairman, Working Group on Trade and Environment, China Council for International Cooperation on Environment and Development; Vice President and President (2001—), Chinese Society of Environmental Sciences

From 1996, Member, Expert Panel on Trade and Sustainable Development; Board Member, Fifth and Sixth (2002—) Session, National Committee, China Science and Technology Association; Member, Advisory Board, Joint Implementation Quarterly

From 1998, Advisor, State Environmental Protection Administration；Counselor of the State Council of the People's Republic of China; Member, Scientific Advisory Panel, UNEP Collaborating Centre on Energy and Environment

From 1999， Trustee, Institute for Global Environmental Strategies

John David Runnalls

1981-1988, Director, North American Office, International Institute for Environment and Development.

1988-1990, Associate Director, Environment and Sustainable Development Program, IRPP.

1990-1993, Director, Environment and Sustainable Development Program, Institute for Research on Public Policy (IRPP).

1993 – 1999, Interim President of the International Institute for Sustainable Development(IISD); President, Runnalls Research Associates and Senior Fellow, IISD; Senior Advisor to the President, IDRC; Senior Advisor to the Administrator, UNDP; Chairman, CHREOD Inc.

1999 – present, President and CEO International Institute for Sustainable Development (IISD)

Wang Song

Executive Vice Chairman and Advisor, Endangered Species Scientific Commission, P.R.C. 1983 – 2000

Member of Animals Committee & Nomenclature Committee of CITES, 1989-1994

Member and Advisor, CAS' Biodiversity Committee, 1993-present

Councillor, IUCN-The World Conservation Union and Member, Species Survival Commission and World Commission of Protected Areas (1990s) Advisor, IUCN's S. & S.E. Asia Biodiversity Programme, 1999-2000

Advisor, China State Council Environment Protection Commission (1990s, 2 Terms)

Peter Johan SCHEI

Various positions in nature conservation, Ministry of Environment (1973-85)

Deputy Director General, Directorate for Nature Management (1985-89)

Director General, Directorate for Nature Management (1989-95)

International Negotiations Director, Directorate for Nature Management (1995 ->)

Co-chair, Biodiversity Working Group/CCICED (1999 - 2002)

Ni Weidou

Vice President of Tsinghua University Council, Academician of China Engineering Academy

1963-1987, Associate Professor, Professor, Chairman of the Department of Thermal Engineering, Chairman of the Department of Automobile Engineering

1988-1994, Vice President of Tsinghua University

From 1995, Vice President of Tsinghua University Council

From 1999, Academician of China Engineering Academy

Thomas B Johansson

From 1986 to 2001, Professor of Energy System Analysis, Lund Institute of Technology

From 1994 to 2001, Director, Energy and Atmosphere Programme, UNDP

Since 2001, Senior Advisor to UNDP on Energy and Climate Change

Since 2001, Professor and Director, International Institute for Industrial Environmental Economics, University of Lund, Sweden

Qian Yi

Oct.1959-Otc.1979, Assistant, Lecturer, Dept. of Civil Eng., Tsinghua University, China

Otc.1979-present, Associate Professor, Professor, Dept. of Environmental Eng., Tsinghua University, China

Since 1991, Vice President, Committee of Engineering and Environment, World Federation of Engineering Organization(CEE, WFEO),

Since 1993, Member, Committee of Environment and Resource, the National People's Congress, the People's Republic of China,

Since 1994, Academician of China Engineering Academy

Since 1996, Member, Executive Board, International Council of Scientific Unions(ICSU)

Tsugio Ide

1983-1984, First Secretary, then Councilor, Delegation of Japan to OECD (in Paris, France)

1992-1993, Director General Small Business Department SME Agency MITI

1995-1996, Member of the Policy Board, Bank of Japan (Representative from EPA)

1996-1998, Director General, Social Policy Bureau, EPA

1998-1999, Vice-Minister for International Economic Affairs, Economic Planning Agency (EPA) Government of Japan

1999, the professor of Keio University

Zhang Kun

Prof. Zhang Kun was born in 1944. He studied with specialty of mining in Dongbei University during September 1963 to August 1968. After graduated he worked as an

engineer in Jinchuan Nonferrous Metal Company until October 1984. From then to February 1993, he served as the vice-secretary of the Party Committee and the chairman of city Council of People's Congress of Jinchang City, Gansu Province. In the next three years, he was the director general and senior engineer of Environmental Protection Bureau of Gansu Province. Since April 1996 he has worked as the director general of Sino-Japan friendship Environmental Protection Center in Beijing. Prof. Zhang Kun has been a member of the Board of Directors of the Institute for Global Environmental Strategies (IGES) since 1998.

Hidefumi IMURA

Prof. Imura is professor for environmental systems analysis and planning in the Graduate School of Environmental Studies at Nagoya University. He has held positions in the Japan Environment Agency, Ministry of Foreign Affairs, and Kyushu University. Prof. Imura is a member of the Board of Directors of the Institute for Global Environmental Strategies (IGES), and the project leader of the IGES project on Urban Environmental Management.

Wang Yangzu

He holds the positions as follows: Advisor of Minister of China State Environmental Protection Administration (SEPA); President of China Association of Environmental Protection Industry (CAEPI); Deputy Chairman of Water Supply and Drainage Division of China Society of Civil Engineering; Deputy Chairman of China Research Institute of Urban Science.

1960s**:**Worked in former Beijing Design Institute for Industrial Construction under the Ministry of Construction

1970s～1985**:**Worked in China Research Institute for Construction Technology under the Ministry of Construction as division Chief, Vice Deputy Director General and Director General successively

1986～1998**:**Vice Minister of National Environmental Protection Administration (NEPA), responsible for pollution control and supervisory management

Rudi Kurz

He achieved Doctor Degree in Tübingen University with the major of National Economics

1978: Worked in Research Institute of Applied Economics as researcher

1988: Professor with Environmental Economics as focus research field

Previously as Advisor of Federal Ministry of Economics and Environmental Transportation Ministry of Bavaria

Present: Economics professor in Fachhochschule Pforzheim University of Applied Sciences

Zhang Yanning

Since July 1975, Vice Directorate in Production Office and Economy and Trade Office of the Stat Council assisting major state leader daily work;

Since 1978, Delegate and member of the Chairmen's Board of the 8 th people's Congress and member of the standing committee of the people Congress

Since 1988, Secretary General, Vice President of Chinese Enterprises Management Association

Björn Stigson

From 1971-1982 he worked for ESAB. In 1983 he became President and CEO of the Flakt Group. Following the acquisition of Flakt by ABB in 1991, he became Executive Vice President and a member of ABB's Executive Management Group.

From 1993-94 he ran his own management consultancy. Mr. Stigson was actively involved with the Business Council for Sustainable Development from its Formation in 1990. In January 1995 he was appointed Executive Director of the WBCSD, based in Geneva. He is currently President of the WBCSD. Mr. Stigson has also served on the board of a variety of international companies, and is presently a member of advisory councils to, among others, ABB, Unilever, EBRD.

Exit

Name List of Task Force Co-Chairs to CCICED Phase III

1 **Forests and Grasslands in Western China Task Force**

Shen Guofang	Academician, Chinese Academy of Engineering, China
Uma Lele	Advisor, Operations Evaluation Department, the World Bank

2 **Environmental Economics Task Force**

Li Yining	Chairman, Guanghua School of Economics, Peking University, China
Jeremy Warford	Professor, Center for Social and Economic Research on the Global Environment, University College London, USA

3 **China's Accession to WTO：Environmental Impacts and Strategies Task Force**

Ye Ruqiu	Former Deputy Administrator of National Environmental Protection Agency, China
David Runnalls	President, International Institute for Sustainable Development, Canada

4 **Bio-security in Great Western Development of China Task Force**

Wang Song	Vice-Chairman, National Science Committee of Endangered Species, China
Peter Johan Schei	International Negotiations Director, Norwegian Directorate for Nature Management, Norway

5 **Energy Strategies and Technologies Task Force**

Ni Weidou	Academician, Chinese Academy of Engineering; Vice-Chairman, Committee of Administrative Affairs, Tsinghua University, China
Thomas Johansson	Professor, University of Lund, Sweden

6 **Strategy and Mechanism study for Promoting of Circular Economy and Cleaner Production in China Task Force**

Qian Yi	Academician, Chinese Academy of Engineering, Tsinghua University, China
Tsugio Ide	Former Vice-Director for International Economic Affairs, Economic Planning Agency; Professor, Keio University, Japan

7 **Financing Mechanism for Environmental Protection Task Force**

Zhang Kun	Director General, Sino-Japan friendship Environment Protection Center
Hidefumi Imura	Professor, Graduate School of Environmental Studies, Nagoya University; Director, Kitakyushu Office of Institute for Global Environmental Strategies, Japan

8 **Development of Environmental Protection Industry Task Force**

Wang Yangzu	Former Deputy Administrator of National Environmental Protection Agency, China
Rudi Kurz	Professor, Fachhochschule Pforzheim

9 **Enterprises' Development and Environment Task Force**

Zhang Yanning	Managing Vice President of China Enterprises Confederation(CEC), China
Björn Stigson	Executive Director, World Business Council for Sustainable Development

Exit

List of Participants

Chairman:

Wen Jiabao	Vice Premier of the State Council, China (on business leave)

Vice Chairs:

1.Leonard M.Good	President, Canadian International Development Agency, Canada
2.Qu Geping	Chairman, Committee of Environmental and Resources Protection, National People's Congress, China
3.Liu Jiang	Vice Chairman, State Development Planning Commission, China (Guo Peizhang attended the meeting on his behalf)
4.Xie Zhenhua	Minister, State Environmental Protection Administration, China
5.Måns Lönnroth	Former State Secretary, Ministry of the Environment, Sweden

Secretary-General:

Zhang Kunmin	Secretary-General of CCICED, Former Deputy Administrator of National Environmental Protection Agency, China

Deputy Secretary-General:

Wang Zhijia	Director General, Department of International Cooperation, State Environmental Protection Administration, China
Peng Jinxin	Director General, Department of Policies, laws and regulations, State Environmental Protection Administration, China

Chinese Members:

1. Wang Guangya	Vice Minister, Ministry of Foreign Affairs (Zhang Jun attended the meeting on his behalf)
2. Xie Xuren	Vice Chairman, State Economic and Trade Commission
3. Zhang Xinsheng	Vice Minister, Ministry of Education
4. Li Xueyong	Vice Minister, Ministry of Science and Technology
5. Zhu Zhigang	Vice Minister, Ministry of Finance (You Yanxin attended the meeting on his behalf)
6. Shou Jiahua	Vice Minister, Ministry of Territory and Resources
7. Qiu Baoxing	Vice Minister, Ministry of Construction (Chen Xiaoli attended the meeting on his behalf)
8. Hong Shanxiang	Vice Minister, Ministry of Communications (Guo Xin attended the meeting on his behalf)
9. Suo Lisheng	Vice Minister, Ministry of Water Resources
10. Zhang Baowen	Vice Minister, Ministry of Agriculture (on business leave)
11. Wei Jianguo	Vice Minister, Ministry of Foreign Trade and Economic Cooperation
12. Li Yucai	Deputy Administrator, State Forestry Agency
13. Ma Shengrong	Deputy Director and Standing Vice Chief Editor, Xinhua News

	Agency
14. Chen Yiyu	Vice President, Academician, Chinese Academy of Science
15. Sun Honglie	Academician, Chinese Academy of Science
16. Chen Shupeng	Academician, Chinese Academy of Science
17. Li Yining	Chairman, Guanghua School of Economics, Peking University (Zhang Zheng attended the meeting on his behalf)
18. Tang Xiaoyan	Academician, Peking University
19. Ni Weidou	Academician, Tsinghua University
20. Lu Zhongwu	Academician, Northeast University
21. Ding Yihui	Special Consultant on Climate Change, Research Fellow, China Meteorological Administration
22. Zhang Jinqiu	Academician and Great Architect, China Northwest Institute of Design and Architecture

International Members:

1.Svend Auken	First Vice Chairman of the Danish Parliament and Chairman for the Environment (on leave)
2.Michael Bohnet	Deputy State Secretary, Director General for Bilateral Co-operation, Federal Ministry for Economic Co-operation and Development (BMZ), Germany
3.Yve De Boer	Deputy Director General for Environmental Protection, Ministry of Housing, Spatial Planning and the Environment
4.Kåre Willoch	Former Prime Minister, Norway
5.R. Martin Lees	Rector, United Nations University for Peace
6.Klaus Töpfer	Executive Director, United Nations Environment Program
7.Crispin Tickell	Trustee of the Royal Botanical Garden of Edinburgh, the Natural History Museum and the Incorporated Reuters Foundation
8.Claude Martin	Director General, World Wide Fund for Nature, Switzerland
9.Björn Stigson	President, World Business Council For Sustainable Development, Switzerland
10.Achim Steiner	Director General, The World Conservation Union, IUCN
11.Ian Johnson	Vice President, World Bank & Head, Environmentally and Socially Sustainable Development Network
12.Joseph Eichenberger	Vice-President-East, Asian Development Bank
13.Michael B. McElroy	Director, Harvard University Center on the Environment, USA
14.Arthur Hanson	Former Director, International Institute for Sustainable Development, Canada
15.Laurence Tubiana	Environment Advisor, Office of Former Prime Minister of France Director, Institute of Sustainable Development and International Relation
16.Eileen Claussen	President, Pew Center on Global Climate Change
17.R K Pachauri	Director General, TATA Energy Research Institute, India (on leave)
18.Masami Ishizaka	Executive Vice President, Japan National Oil Corporation
19.Malcolm Brinded	Managing Director, Shell Companies

Task Force Co-Chairs:

1. Forests and Grasslands in Western China Task Force

Shen Guofang	Academician, Chinese Academy of Engineering, China
Uma Lele	Advisor, Operations Evaluation Department, the World Bank

2. Environmental Economics Working Group

Li Yining	Chairman, Guanghua School of Economics, Peking University, China (on leave)
Jeremy Warford	Professor, Center for Social and Economic Research on the Global Environment, University College London, USA

3. China's Accession to WTO：Environmental Impacts and Strategies Task Force

Ye Ruqiu	Former Deputy Administrator of National Environmental Protection Agency, China
David Runnalls	President, International Institute for Sustainable Development, Canada

4. Bio-security in Great Western Development of China Task Force

Wang Song	Vice-Chairman, National Science Committee of Endangered Species, China
Peter Johan Schei	International Negotiations Director, Norwegian Directorate for Nature Management, Norway (John MacKinnon attended the meeting on his behalf)

5. Energy Strategies and Technologies Task Force

Ni Weidou	Academician, Chinese Academy of Engineering; Vice-Chairman, Committee of Administrative Affairs, Tsinghua University, China
Thomas Johansson	Professor, University of Lund, Sweden

6. Strategy and Mechanism study for Promoting of Circular Economy and Cleaner Production in China Task Force

Qian Yi	Academician, Chinese Academy of Engineering, Tsinghua University, China
Tsugio Ide	Former Vice-Director for International Economic Affairs, Economic Planning Agency; Professor, Keio University, Japan

7. Financing Mechanism for Environmental Protection Task Force

Zhang Kun	Director General, Sino-Japan friendship Environment Protection Center
Hidefumi Imura	Professor, Graduate School of Environmental Studies, Nagoya University; Director, Kitakyushu Office of Institute for Global Environmental Strategies, Japan

8. Development of Environmental Protection Industry Task Force

Wang Yangzu	Former Deputy Administrator of National Environmental Protection Agency, China
Rudi Kurz	Professor, Fachhochschule Pforzheim

9. Enterprises' Development and Environment Task Force

Zhang Yanning	Managing Vice President of China Enterprises Confederation(CEC), China (Pan Chenglie attended the meeting on his behalf)
Björn Stigson	Executive Director, World Business Council for Sustainable

Development

Special Guests:

Zhao Xinliang	Vice Governor of Liaoning Province
Zhou Weide	Vice Chairman of Inner Mongolia Autonomous Region
Huang Xiaojing	Vice Governor of Fujian Province
Yuan Fenglan	Vice Governor of Guangxi Zhuang Autonomous Region
Maurice F. Strong	Secretary-General, the Rio United Nations Conference on Environment and Development in 1992
Hau-sing Tse	Vice President,CIDA,Canada
Kerstin Leitner	UN Resident Coordinator and UNDP Resident Representative

Observers:

Zhang Shigang	Deputy Director, Department of International Cooperation, State Environmental Protection Administration, China
Cheng Weixue	Deputy Representative at Chinese Mission to UNEP
Joseph Caron	Ambassador, Canadian Embassy to China
David Spring	Director General, China Program, Asia Branch, Canadian International Development Agency
Kent Smith	Chief Operations, China Program, Asia Branch, Canadian International Development Agency
Jeff Nankivell	Counsellor, Head of Development Section, Canadian Embassy to China
Cecilia Leung	Counsellor, Development Section, Canadian Embassy to China
Gerald Chauvet	First Secretary, Canadian Embassy to China
Zhizhong Si	Environment Canada and Canadian Project Manager for a CIDA Climate Change Project
Borje Ljunggren	Ambassador, Embassy of Sweden to China
Asa Heden	First Secretary, Development Cooperation Section, Sweden Embassy to China
Jorgen Eriksson	Environment Attaché, Embassy of Sweden in Beijing
Haakon B. Hjelde	Ambassador, Embassy of Norway
Leiv Landro	Counsellor, Embassy of Norway
Gérard Burgermeister	Counsellor, Environmental, Economic and Scientific Cooperation, Embassy of Switzerland
Siobhan Peters	First Secretary, Development Section of British Embassy
Penny De Waal	First Secretary of British Embassy and Environment Advisor of Department for International Development
Dick C. de Bruijn	Directorate-General for Environmental Protection, Ministry of Housing, Spatial Planning and the Environment
Bas Berends	Second Secretary, Royal Netherlands Embassy in Beijing
Robert Haas	Counsellor, Head of Dept. of Economic Cooperation and Development, Embassy of Germany
Heckmann	Counsellor, Embassy of Germany

Endrukaitis	GTZ-Office in Beijing
Doerken	Director of GTZ-Office Beijing
Hidehiro KIKUCHI	First Secretary, Embassy of Japan in Beijing
Akinori OGAWA	Director, Environmental Cooperation Office, Global Environment Bureau
Takahiko Miyao	Representative of the Representative Office in Beijing, New Energy and Industrial Technology Development Organization
KYOSUKE INADA	Representative, Representative Office in Beijing, Japan Bank for International Cooperation
Susan Shen	Lead Ecologist of World Bank
Sven Ernedal	First Secretary, Development and Cooperation, Delegation of EC in Beijing
Bruce Carrad	Senior Project Specialist, ADB
Yu Xiubo	Projector Coordinator of River Basin Programme, WWF China Program Office
Surendra Shrestha	Director, Environment Assessment Programme for Asia and Pacific, UNEP
Chen Yijia	Chairman, East and North Asia Section of Shell Limited
Frederick Dubee	Secretary-General, Global Compact Executive Office of UN
Stefan Agne	Administrator, EuropeAid Co-operation Office of European Commission

Secretariat:

Li Yong	Deputy Director, CCICED Secretariat Head Office
Wang Kezhong	Project Officer, CCICED Secretariat Head Office
Zhu Yun	Project Officer, CCICED Secretariat Head Office
Lu Xueyun	Project Officer, CCICED Secretariat Head Office
Peng Liying	Project Officer, CCICED Secretariat Head Office

Canadian Office:

Earl Drake	Member of the Bureau of CCICED, Director of Canadian Office
Dai Yichun	Project Officer, CCICED Secretariat Canadian Office

Assistants:

Wu Guozeng	Secretary to Xie Zhenhua, SEPA
Xu Guang	Secretary to Qu Geping, SEPA
Jean Duva	Interpreter of Mr. Good
Yang Baozhen	Project Officer, Development Section, Canadian Embassy to China
Lucie McNeill	Consultant, CCICED secretariat Canadian Office
Huang Huijuan	Shell (China) Limited
Zhao Yuebei	Shell (China) Limited

Exit

Name List of International Members

to CCICED Phase III

1 Svend Auken

First Vice Chairman of the Danish Parliament and Chairman for the Environment

2 Michael Bohnet

Deputy State Secretary, Director General for Bilateral Co-operation, Federal Ministry for Economic Co-operation and Development (BMZ), Germany

3 Yve De Boer

Deputy Director General for Environmental Protection, Ministry of Housing, Spatial

Planning and the Environment

4 Kåre Isaachsen Willoch

Former Prime Minister, Norway

5 R. Martin Lees

Rector, United Nations University for Peace

6 Klaus Töpfer

Executive Director, United Nations Environment Program

7 Crispin Tickell

Trustee of the Royal Botanical Garden of Edinburgh, the Natural History Museum and the Incorporated Reuters Foundation

8 Claude Martin

Director General, World Wide Fund for Nature, Switzerland

9 Björn Stigson

President, World Business Council For Sustainable Development, Switzerland

10 Achim Steiner

Director General, The World Conservation Union, IUCN

11 Ian Johnson

Vice President, World Bank &

Head, Environmentally and Socially Sustainable Development Network

12 Joseph Eichenberger

Vice-President-East, Asian Development Bank

13 Michael B. McElroy

Director, Harvard University Center on the Environment, USA

14 Arthur Hanson

Former Director, International Institute for Sustainable Development, Canada

15 **Laurence Tubiana(female)**

Environment Advisor, Office of Former Prime Minister of France

Director, Institute of Sustainable Development and International Relation

16 **Eileen Claussen (female)**

President, Pew Center on Global Climate Change

17 **R K Pachauri**

Director General, TATA Energy Research Institute, India

18 **Masami Ishizaka**

Executive Vice President, Japan National Oil Corporation

19 **Malcolm Brinded**

Managing Director, Shell Companies

Exit

CVs of Chinese Members to CCICED Phase Ⅲ

（1）Wang Guangya

Vice Minister, Ministry of Foreign Affairs

Mr. Wang Guangya is 52 years old. He holds a bachelor's degree.

From 1983 to1988, Third Secretary and then Deputy Division Chief, Division Chief, Department of International Organizations and Conferences, Ministry of Foreign Affairs.

From 1988 to1992, Counsellor, Chinese Mission to United Nations-

From 1992 to 1998, Director General, Department of International Organizations and Conferences, Ministry of Foreign Affair.

From 1998 to 1999, Assistant Minister, Ministry of Foreign Affairs.

Since 1999, Vice Minister, Ministry of Foreign Affairs.

（2）Xie Xuren

Vice Chairman, State Economic and Trade Commission, China

Mr Xie Xuren is 55 years old. He holds a junior college degree and is an engineer and senior economist.

From 1986 to 1990, he worked at the Plan and Economic Committee in Zhejiang Province and had been the member of the Party Group, chairman of the investment office and director chairman of the committee in succession.

From 1991 to 1997, he worked at the Ministry of Finance and had been Deputy Director, Director General, Assistant of the Ministry, and was nominated Vice Ministry in 1995.

From 1998 to 1999, he was President and Secretary of Party Committee of China Agriculture Development Bank.

From 2000 to 2001, he was Vice Secretary of the Central Finance Committee of the Party.

Since November 2001, he has been Vice Chairman and Vice Secretary of the Party Committee of the State Economic and Trade Commission.

（3）Zhang Xinsheng

Vice Minister, Ministry of Education

He is 54 years old.Mr. Zhang Xinsheng born in November 1948 in Jiangsu, China.

In 1986, he was appointed Vice Chairman of the China National Tourism Administration-a department of State Council. In 1989, he was elected Mayor of Suzhou City and in 1993 re-elected for another term. During his tenure in Suzhou, he was appointed concurrently Chairman of the Administrative Committee of Sino-Singapore Government Cooperative Suzhou Industrial Park. Prior to his public service.

Mr. Zhang graduated from the Graduate School of Design, Harvard University, where he received his Master's Degree with distinction. Previously he studied at Harvard Business School as well, and completed the Advanced Management Program at the end of 1986. Earlier, Mr. Zhang graduated from Zhejiang University in 1977 and he was also a graduate from China Military Academy of Technology in 1969.

（4）Li Xueyong

Vice Minister of the State Science and Technology Commission (SSTC)

Mr. Li Xueyong is 52 years old. He holds the title of Senior Engineer, he is also a concurrent professor of Xi'an University of Communications.

Mr. Li Xueyong received his higher education at Beijing Institute of Chemical Industry (now Beijing University of Chemical Industry) and got a bachelor's degree. His major was polymeric chemical engineering. After his graduation in1982, Mr. Li stayed at the university as a researcher and teacher.

In 1984 Mr. Li joined SSTC and embarked upon his career of science and technology management.

From 1984 to 1986 he worked in the Bureau of Basic Research and New Technology, SSTC. After 1986, Mr. Li served as officer and later Deputy Director of the Division of Nonmetallic Materials, Bureau of Industrial S & T, SSTC.

From 1989 to 1991, he was Director of the Division of New Materials, Department of Industrial S & T of SSTC.

Mr. Li was Deputy Director-General of the Department of Planning of SSTC between 1991 and 1993.

Beginning in 1993, Mr. Li served consecutively as Deputy Director-General and Director-General of the Department of Finance of SSTC.

From 1995 to 1997, Mr. Li served as Vice Mayor of Xi'an City. And he took office as Vice Minister of SSTC in May 1997.

（5）Zhu Zhigang

Vice Minister, Ministry of Finance, China

Mr. Zhu Zhigang is 52 years old. He holds a master's degree and is a senior economist.

From January 1969 to February 1989, he held the following positions in succession in Daxing County of Beijing Municipality: Secretary of Township Party Committee; Director of the Finance Bureau of Daxing County; Chairman of the Planning Commission of Daxing County; and Executive Deputy Head of Daxing County.

From February 1989 to April 1994, he held a Director General's position in the National Bureau for State Asset Management.

From May 1994 to July 1998, he was Deputy Administrator of the National Bureau for State Asset Management.

Since August 1998, he has been Vice Minister of the Ministry of Finance.

（6）Shou Jiahua

Vice Minister, Ministry of Land and Resources; Director General, China Geological Survey

Ms. Shou Jiahua is 59 years old. She holds a master's degree and is a senior economist.

From Aug.1965 to Dec.1972, Yunnan Provincial Geological Bureau

From Dec.1972 to Jun.1984, Geophisical and Geochemical Exploration Research Center, Ministry of Geology and Mineral Resources.

From Jun.1984 to Jun.1990, Deputy Division chief, Division Chef, Geophisical and Geochemical Exploration Bureau, Ministry of Geology and Mineral Resources

From Jun.1990 to Jul.1991, Deputy Director General, Subsidiary Units Management Bureau,

Ministry of Geology and Mineral Resources
From Jul.1991 to Apr.1996, Deputy Director General, Director General, Department of Finance, Ministry of Geology and Mineral Resources
From Apr.1996 to Mar.1998, Vice Minister, a Ministry Party Committee Member, Ministry of Geology and Mineral Resources
Since Mar.1998, Vice Minister, a Ministry Party Committee Member, Ministry of Land and Resourees
Since Nov.2001, Concurrently as Director General and its Parity Committee Secretariat, the China Geological Survey

（7）Qiu Baoxing

Vice Minister, Ministry of Construction.
Mr. Qiu Baoxing is 48 years old. He holds a degree of doctor.
He studied physics, economics and urban planning at Hangzhou University, Fudan University and Tongji University. He got his Doctor of Economics Degree at Fudan University.
From 1983 to 1990, the head of county in Leqing County of Zhejiang Province
From Oct.1990 to Dec.1993, Secretary General of Jinhua Municipal City of Zhejiang Province
From Jan.1994 to Feb.1999, Mayor of Jil1l1ua Municipal City of Zhejiang Province
From Mar.1999 to Oct.2001, Mayor of Hangzhou Municipal City of the Capital of Zhejiang Province

（8）Hong Shanxiang

Vice Minister, Ministry of Transportation.
Mr. Hong Shanxiang is 60 years old. He holds a degree of graduate and is a Senior Engineer.
From Jun.1971 to Dec.1983, he was the Captain of Guangzhou Oceanic Transportation Company.
From Dec.1983 to Mar.1995, he had been Deputy Manager and Manager of Guangzhou Oceanic Transportation Company in succession.
Since Mar.1995, he has been the Vice Minister of the Ministry of Transportation.

（9）Suo Lisheng

Vice Ministry, Ministry of Water Resources, China
Mr. Suo Lisheng is 58 years old. He holds a doctor degree and is a professor.
From Sep.1984 to Jan.1989, he got a doctor degree at the Michigan University of U.S.A.
From Jan.1989 to Aug.1990, he got a postdoctoral degree at the Michigan University of U.S.A.
From Aug.1990 to Feb.1998, he worked at the Hehai University and had been teacher, deputy Chairman and Chairman of the Dept. Water and Electricity, director of the Institute of Water and Electricity, Vice President and Member of the Chinese Democratic League.
From Feb.1998 to May.2001, he had been Associate Member of the Politics Consultant in Jiangsu Province, Deputy President and Major Member of the Chinese Democratic League of the Hehai University, the Deputy Member of the Chinese Democratic League in Jiangsu Province.
Since May.2001, he has been Vice Ministry of Water Resources.

（10）Zhang Baowen

Vice Minister, Ministry of Agriculture, China

Mr. Zhang Baowen is 56 years old. He holds a university degree and is a professor. His hometown is Xingping, Shaanxi Province.

From Mar.1974 to Jul.1998, he worked in Northwest Agriculture University, and had been Deputy Director of Foreign Affairs Office, Assistant to the President, Vice President and President of the University in succession.

From Oct.1997 to Feb.2000, he was Vice President and Secretary-General of the Central Committee of the Chinese Democratic League.

Since Mar.2000, he has been Vice Minister of the Ministry of Agriculture.

（11）Wei Jianguo

Vice Minister, Ministry of Foreign Trade and Economic Cooperation

Mr. Wei Jianguo is 55 years old. He holds a bachelor's degree.

From Nov. 1984 to Sep.1985, worked in the Second Department of the Ministry of Foreign Economic Relations and Trade.

From Sep.1985 to Dec. 1988, Deputy Director in the Second Department of the Ministry of Foreign Economic Relations and Trade.

From Dec.1988 to Sep. 1992, Economic Counselor of the Chinese Embassy to Gabon (at the level of director)

From Sep.1992 to AprI1993, Deputy Director General of the Department of West Asian and African Affairs in the Ministry of Foreign Economic Relations and Trade

From Apr.1993 to May.1994, Deputy Director General of the Department of West Asian and African Affairs in the Ministry of Foreign Trade and Economic Cooperation

From May.1994 to Jun.1997, Secretary of the Party Group and Director General of the Xinjiang Foreign Trade and Economic Cooperation Department; also a member of the fifth Party Committee in Xinjiang Uygur Autonomous Region.

From June.1997 to Aug.1998, Director General of the Department of the West Asian and African Affairs, Director General of the Department of Personnel Resources, Assistant Minister in the Ministry of Foreign Trade and Economic Cooperation

Since Jan.2002, Vice Minister, Ministry of Foreign Trade and Economic Cooperation

（12）Li Yucai

Deputy Administrator, State Forestry Bureau

Mr. Li Yucai is 53 years old. He holds a degree of doctor.

From Jan.1988 to Jun.1993, he had been the Deputy Director General, Director General and Secretary-General of the Party Group of the Department of Forestry of Shandong Province.

From Jun.1993 to Apr.1994, he had been the Director General of the Department of Comprehensive Planning in the Ministry of Forestry.

From Apr.1994 to Mar.1998, he had been the Vice Ministry of the Ministry of Forestry.

Since Mar.1998, he has been the Deputy Administrator of the State Forestry Bureau.

（13）Ma Shengrong

Vice president and executive deputy editor-in-chief of XinhuaNews Agency

Mr. Ma Shengrong is 56 years old. He holds a bachelor's degree and is a senior editor.

From 1989 to 1995, served in International Department of Xinhua News Agency as editor, head of

English Editorial Office, and deputy director.
Worked as chief correspondent of both Bangkok and Colombo Bureaus of Xinhua News Agency; deputy deitor-in-chief of Xinhua News Agency, 1995-2000.
Appointed vice president of Xinhua News Agency, July 2000, and concurrently executive deputy editor-in-chief.

（14）Chen Yiyu

Vice-President of CAS，academician of CAS
Prof. Chen Yiyu is 56 years old. After graduated from Xiamen University in 1964, he entered the Institute of Hydrobiology of the Chinese Academy of Sciences (CAS); where he was appointed research associate in 1978, associate professor in 1986 and professor in 1989. He was appointed as Deputy Director of the Institute in 1987, Director of the Institute in 1991- He was elected the Member of the Chinese Academy of Sciences in 1991, and in 2002, he was elected the Director of the Standing Committee of CAS Diversion of Biology. In 1995, he was appointed as Vice-President of CAS. He is the Chair of IGBP (the International Geosphere & Biosphere Program) National Committee of China, the Member of Council of the National Nature Sciences Foundation of China, the Member of China Council for International Cooperation on Environment and Development.

（15）Li Yining

Professor Li is appointed or conferred the following titles:
Dean of Guanghua School of Management, Beijing University,
Supervisor of Ph. D. Candidate,
Direct of Management Science Center of Beijing University,
Member of Standing Committee of National People's Congress (NPC),
Deputy Director of Finance & Economy Commission of NPC,
Vice President of Central Committee of China Democratic League,
Vice President of China International Exchange Association,
Member of Economics Appraisal Group of Degree Commission of State Council,
President of Historical Science Association for Sino-Japan Relationship Study

（16）Ding Yihui

Adviser on Climate Change for China Meteorological Administration
Mr. Ding Yihui is 64 years old.
From Sep.1986 to Feb.1994, Professor, Deputy –director of Chinese Academy of Meteorological Sciences
From Mar.1994 to Apr.2001, Director of National Climate Center. Co-Chair, IPCC Working Group 1. Member.
Since Apr.2001, Adviser on Climate Change for China Meteorological Administration.

（17）Chen Shupeng

Academician of CAS
Mr. Chen Shupeng is 82 years old. He is Honorary Director of the. Institute of Remote Sensing Applications of CAS. He is also the Chief Expert on the pilot project, Mechanism and

Transformation of Remote Sensing Infomation (1998). Prof. Chen has been a full member of the Commission on Geographic Data Acquisition (1984~1991) and Commission of Geographic Modeling (1996-2000) of the International Geographic Union (IGU), He is also an Academician of the Chinese Academy of Sciences (1980.), the Third World Academy of Sciences (1992~) and International Eurasian Academy of Sciences (1995-), and a member of the editorial boards of three international GlS journals.

（18）Tang Xiaoyan

Professor, Institute for Environmental Sciences, Peking University; Academician of China Engineering Academy

Ms. Tang Xiaoyan is 70 years old.

From 1954 to1958, Assistant Professor, Chemistry and Technology & Physics Department, Peking University.

From 1959 to1960, Advanced study in Geochemistry and Analytical chemistry Institute, Soviet Academy of Science.

From 1960 to 1985, Associate Director, Radioactivity chemistry group, Technology & Physics Department, Peking Univ. Associate Professor, Environmental chemistry Group

From 1985 to 1986, Senior visit scientist, National Center for Air Research, Brookhaven National Laboratory, USA

Since 1985, Professor, Institute for Environmental Sciences, Peking University

（19）Lu Zhongwu

Professor, North East University; Academician of China Engineering Academy

Mr. Lu Zhongwu is 73 years old.

From 1982 to 1983, Professor, chairman, Dept of Thermal engineering NEU

From 1989 to 1991, President, NEU

Since 1992, President, NEU

Since 1993, Concurrent professor, slate Un & Metallurgy, Wearing

From 1991 to 2001, Deputy board of board, The Chinese Society of Metals

From 1988 to 1996, Chairman, Shenyang Municipal Association for Science and Technology

（20）Zhang Jinqiu

Vice President of China Architect Commission , Academician of China Engineering Academy

Ms. Zhang Jinqiu is 66 years old.

Since 1987, Chief Architect of China Northwest Institute of Design

In 1993, member of Chinese People's Political Consultative; Commission, Vice Chair of Shaanxi Science Commission

Since 1994, Academician of China Academy of Science

Since 1996, Professor of Tsinghua University

Since 1999, Board of China City Planning Commission

Since 2001, Vice President of China Architect Commission

（21）Ni Weidou

Vice President of Tsinghua University Council, Academician of China Engineering Academy

1963-1987, Associate Professor, Professor, Chairman of the Department of Thermal Engineering, Chairman of the Department of Automobile Engineering
1988-1994, Vice President of Tsinghua University
From 1995, Vice President of Tsinghua University Council
From 1999, Academician of China Engineering Academy

（22）Sun Honglie

Academician of CAS
Mr**.** Sun Honglie is 70 years old**.**
From 1983 to 1993, Vice President, Chinese Academy of Sciences
Since 1991, Academician, CAS
Since 1992, Member, Presidium of CAS
Since 1993, Chairman, Synthesis Research Center of Chinese Ecosystem Research Network
Since 1993, Member, Standing Committee of National People's Congress of China; Member, Committee for Conservation of Environment and Natural Resources, National People's Congress of China
Since 1995, Director, Research Center of Sustainable Development, CAS

Exit

Name List of Chinese Members to CCICED Phase III

1.	Mr. Wang Guangya	Vice Minister, Ministry of Foreign Affairs
2.	Mr. Xie Xuren	Vice Chairman, State Economic and Trade Commission
3.	Mr. Zhang Xinsheng	Vice Minister, Ministry of Education
4.	Mr. Li Xueyong	Vice Minister, Ministry of Science and Technology
5.	Mr. Zhu Zhigang	Vice Minister, Ministry of Finance
6.	Mr. Shou Jiahua	Vice Minister, Ministry of Territory and Resources
7.	Mr. Qiu Baoxing	Vice Minister, Ministry of Construction
8.	Mr. Hong Shanxiang	Vice Minister, Ministry of Communications
9.	Mr. Suo Lisheng	Vice Minister, Ministry of Water Resources
10.	Mr. Zhang Baowen	Vice Minister, Ministry of Agriculture
11.	Mr. Wei Jianguo	Vice Minister, Ministry of Foreign Trade and Economic Cooperation
12.	Mr. Li Yucai	Deputy Administrator, State Forestry Agency
13.	Mr. Ma Shengrong	Deputy Director and Standing Vice Chief Editor, Xinhua News Agency
14.	Mr. Chen Yiyu	Vice President, Academician, Chinese Academy of Science
15.	Mr. Sun Honglie	Academician, Chinese Academy of Science
16.	Mr. Chen Shupeng	Academician, Chinese Academy of Science
17.	Mr. Li Yining	Chairman, Guanghua School of Economics, Peking University
18.	Ms. Tang Xiaoyan	Academician, Peking University
19.	Mr. Ni Weidou	Academician, Tsinghua University
20.	Mr. Lu Zhongwu	Academician, Northeast University

21.	Mr. Ding Yihui	Special Consultant on Climate Change, Research Fellow, China Meteorological Administration
22.	Ms. Zhang Jinqiu	Academician and Great Architect, China Northwest Institute of Design and Architecture

Exit

Environment and Sustainability: International Issues and China

Arthur J. Hanson
CCICED Lead Expert

Executive Summary

At the start of a new phase for CCICED, and in light of the significant global environment and development events over this past year, it is useful to review international issues and progress in sustainable development and their implications for China. This is a task that covers both mainstream national and international decision-making and geopolitical considerations since the issues are now major concerns for international relations, globalization and for both ecological and human security.

Ten major issues arise from the review. They are noted below.

1.Our planet's environment continues to deteriorate at an alarming rate, and the solutions, in the form of equitable human development, strengthened knowledge, institutional capacity and governance, are being implemented far too slowly. There will be serious impacts on China's sustainable development achievements, domestically and internationally, if worldwide progress lags.

2.Plausible scenarios, based on philosophies that include security first, market-based solutions, development policy, and behavioral transformation for sustainability, suggest that nations and the international community have immense power to shape outcomes over the next 30 years. At present there are forces pulling in all directions among these four approaches. Unless a suitable balance is found, the various dimensions of sustainable development will not be achieved, even if wealth continues to increase globally.

3.The social dimensions of sustainable development, including poverty reduction, environmental justice, and human ingenuity applied through business, civil society and community action, will prevail in the coming years. How can governments, including China's, foster the leadership and enabling conditions to strengthen this approach within their own countries, regionally and globally?

4.Trade, foreign direct investment, and development assistance taken together have not provided adequate sources of development assistance required to achieve the ambitious goals of the Earth Summits in Rio and Johannesburg. The latest commitments are still inadequate. China is reasonably well favoured by comparison to many other countries, but will face huge demands as a consequence of its rapid economic growth and accumulated environmental debts. To what extent can China's substantial government budget commitments for sustainable development be supplemented by innovative financing mechanisms such as fee and incentive systems, substituting ecological service solutions in place of expensive infrastructure, and by technology sharing?

5.The WSSD has focused on partnership among business, government and civil society institutions in order to accelerate the pace of sustainable development and to spread the effort more broadly into society, for example, with small and medium-sized enterprises, and in rural and urban communities. These partnerships may prove hard to sustain, depending on everything from international relations, willingness to share experience, and the right enabling circumstances and openness of governments to new governance approaches. But China may be able to benefit tremendously from this partnership model, especially given the new emphasis on business and entrepreneurs participation within governance structures.

6.The multilateral environmental conventions (MEAs) agreed upon during the Rio Earth Summit, and in the decade before and after, will continue to be the most prominent elements of the global framework governing environment and development. Yet they are still not fully internalized within national laws and decision-making of most countries. Even more difficult is the role of global conventions in creating change at local levels. China has done more than many other nations, but implementation is still limited. How can the domestic process be accelerated? And can China exert its growing influence within negotiating sessions such as the Committee of Parties meetings to develop a more effective overall system for the MEAs to operate internationally?

7.The current lack of knowledge concerning important environmental issues and ecosystems, the slow transfer of technology, and the high costs for development of sustainable technologies are working against innovative sustainable development solutions. The problem is particularly acute for China, given the rapidity of development and possible option foreclosure. Expanded international cooperation and strengthened global knowledge networks are required to address science and technology. This is an area where China may need to invest even more than it currently does in order to derive full benefits from linkages with the world's scientific and technology communities.

8.Despite considerable evidence of China's proactive and positive positions in support of international environmental negotiations and remarkable progress domestically on environmental management, there is considerable and probably growing international concern about China's potential impact on the global environment and regional conditions. These perceptions likely can only be altered through a combination of more international cooperation to address specific problems, well-documented improvements, on-going international communication of successes, and consideration of international impacts arising from resource management and other decisions.

9.China's progress towards sustainable development is of interest to all parts of the world but particularly valuable to developing countries. In the years ahead China can be expected to serve as a major source of advice, services and technology for other countries. How can China prepare for such tasks within the region and in other areas such as Africa? To what extent should it be partnering with others in this process, for example via development agencies and through private sector and professional and international civil society organizations?

10.China appears to be well positioned to take a global leadership role in sustainable development, serving its own needs and for the ultimate benefit of the entire world.

The most important window of opportunity to address international environment and development concerns is the current decade, and the window will start to close if continued erosion of biodiversity, land and water degradation, ocean and atmospheric pollution reduces options. The period for demonstrating large-scale success has been defined by the world community as 2010 to 2020. This is a very short time from the present. The challenge is great. And much of the outcome will be determined mainly by progress by a relatively small number of the largest nations and groups of countries such as the European Union.

Environment and Sustainability: International Issues and China

Arthur J. Hanson
International Institute for Sustainable Development

China Council for International Cooperation on Environment and Development
Annual General Meeting
23-25 November 2002

Purpose and Scope

This paper summarizes some international perspectives on key issues that may be particularly significant for China, domestically or in its international relations. The World Summit on Sustainable Development (WSSD) outcomes and the preparations and major published reviews leading up to it is an obvious source, but by no means the only one. The Doha World Trade Organization (WTO) meeting, the Monterrey Conference on development financing, and various on-going negotiations such as those related to the Convention on Biological Diversity and the Kyoto Protocol are helping to shape a global agenda for environment and sustainability concerns. Other sources of power and influence, ranging from those acting against terrorism to the many scientific, business and civil society sustainable development initiatives have significant implications for China.

It is impossible to document the full extent of issues in a short overview. The intent is to draw out several main themes in a fashion that may prove helpful in shaping future CCICED advice and work, especially on environment, development and governance—this year's Annual General Meeting theme. The paper may be revised in light of discussions that will take place during the AGM. This paper, and the accompanying issues paper prepared by Chinese members, should help to benchmark our starting point in Phase 3. Hopefully, in looking back half a decade from now, significant progress will be made in addressing some of the issues, both globally and as they affect China.

The paper's scope includes: the state of the planet; elements of trade and globalization, and use of the global commons; transboundary environmental impacts from China; national issues within China of broad international concern such as desertification, forest protection and sustainable water management, international fisheries, and urban development; plus and technology development relevant to sustainable development. The time frame is primarily now to 2030, with a focus on issues and directions highly relevant to decisions and action over the next five to ten years.

Ten overarching issues are identified along with their implications for China.

Global Report Cards: Environmental Conditions and Sustainable Development

A remarkable set of studies and progress reports is now available on the state of our planet, and on key issues surrounding our use and abuse of it.

Box 1. Global sustainability reports.

- **GEO 3 "State of the Planet and Sustainability Policies"**
- **IUCN Sustainability of Nations**
- **UNDP Human Development Report**
- **World Resources Report 2002-2004 Decisions for the Earth: Balance, Voice and Power and World Resources 2000-2001 People and Ecosystems: the Fraying Web of Life**
- **Specialized Reports e.g. UNCTAD World Investment Report; Disaster Report of Red Cross; UNICEF State of Children, etc.**
- **World Development Report 2003 *Sustainable Development in a Dynamic World***

There are at least five areas of convergence arising from these global overviews:

- *Human development is recognized as the central issue for ensuring sustainability on the planet.* Poverty and social factors such as education and health need to be

addressed as key elements for environmental sustainability, and good environmental conditions are recognized as essential elements for social and economic well-being. While Africa has become a focus for urgent need, sustainability conditions in Asia are perhaps the greatest long-term concern, given the concentration of population, economic growth potential, range of cultures, ecological conditions and other factors. National poverty reduction strategies and their link to environment have become a matter of concern for international development agencies.

- *Increasing urgency for action to reverse the rapid environmental deterioration detected worldwide over the past decade.* Projections are for worsening situations, with convergent economic, social, and environmental crises, This decade provides the opportunity to create change that will determine sustainability outcomes for 2030 and beyond. Choices are in our hands via improved policies, changed behavior and international cooperation in order to bring about effective action and governance. Equally plausible global and regional outcomes can be identified—ranging from steadily increasing long-term degradation and inequity to pathways of sustainability that will provide well for future needs.

- *Globalization implications for environment and development are real but action at the international level is not robust enough despite various global conventions.* Tension between developing nations and richer countries are increasing on most globalization issues, including trade and environment, transfer of financial resources and sustainable technologies, human and environmental security. Several areas of progress exist, including biosafety, perhaps climate change and food security. Action on perverse subsidies, investment protocols for sustainability and other financial and economic mechanisms needed to address macroeconomic aspects of globalization are not uniformly in place, calling into question some aspects of market approaches.

- *Knowledge, institutional capacity and governance are major barriers to sustainable development progress virtually everywhere.* Not enough progress is being made on linking the outcomes of global consensus concerning environment and development with local and national follow-up action. These issues are as important in OECD countries as they are for developing regions, but the situations in developing countries are expected to be the most critical in determining longer-term sustainable development progress globally. Development of better mechanisms to produce and equitably share essential knowledge are needed in order to provide accurate "State of Environment", "Sustainability Progress Reports" and other performance information. A shift towards participatory models of governance, and new models of public-private-community partnerships are being called for everywhere.

- *Certain ecological and resource issues are likely to become ever more significant to human well-being.* Prime issues include supply and demand of freshwater; desertification and other forms of land degradation; long-range transport of atmospheric pollutants such as persistent organic pollutants (POPs); ecological decline

in marine and coastal environments including fisheries; pervasive impacts of climate change; and "alien invasive species." A focus on ecosystems, valuation and protection of ecological services is gradually taking hold. Environmental security is emerging as a new basis for dialogue on a range of issues including natural resource disasters, war and civil disturbances, migration and refugees.

ISSUE 1. Our planet's environment continues to deteriorate at an alarming rate, and the solutions, in the form of equitable human development, strengthened knowledge, institutional capacity and governance, are being implemented far too slowly. There will be serious impacts on China's sustainable development achievements, domestically and internationally, if worldwide progress lags.

Scenarios: Understanding Consequences and Seeking Opportunities

We cannot know the future, but there is strong interest in creating scenarios that describe alternative visions of our planet's future under various governance assumptions. These scenarios help to define potential consequences for environment and sustainability and to locate opportunities for achieving desired outcomes. In UNEP's GEO 3 and other publications, including the 2002 UNDP China Human Development Report *Making Green Development a Choice*, the Stockholm Environment Institute (SEI) has described a series of "equally plausible" global and national scenarios. These are briefly described below.

At one extreme is a grim future of inequity in use of resources, and of lost opportunity for sustainable development—"Security First." At the other is a great transition to "Sustainability" with appropriate participatory institutions, and supported by more equitable sharing and behavioral change. In between are "Market First" in which globalization and liberalization of trade are dominant forces, and "Policy First" where there is a guided effort to address social and economic concerns as well as stimulating economic development primarily through policies. These scenarios may well play themselves out simultaneously, but each emphasizes different philosophies, tools and actions.

These scenarios provide a "big picture" look at the future that identifies many issues and places the burden of choice back in the hands of the international community, national governments, the private sector and civil society. In a way, events of the past year have sharpened the focus on how these scenarios could play out. The tragedy of 9-11 has been a stimulus for "Security First". The on-going debate concerning globalization and trade liberalization, a central theme of "Market First" has permeated discussions at all major gatherings of world leaders, and particularly has become identified with the WTO. The "Sustainability" scenario reflects the debate at the World Summit on Sustainable Development (WSSD) in Johannesburg. And the "Policy First" approach reflects the

rational response of governments and international bodies attempting to balance priorities through a mix of policy incentives and improved regulatory frameworks.

The important conclusion arising form these scenarios is that sustainable development cannot be separated from significant geopolitical events. It is in the mainstream of issues affecting life and societies. And that, while great progress can be made in certain sectors and regions, the objective of achieving sustainable development globally will be a long-term and difficult process. Therefore an important perspective is "bending the curve" over this current generation (the time period 2000 to 2030) so that pathways and solutions become apparent for most problems, including issues such as climate change, biodiversity loss, food security, etc.

ISSUE 2. Plausible scenarios, based on philosophies that include security first, market-based solutions, development policy, and behavioral transformation for sustainability, suggest that nations and the international community have immense power to shape outcomes over the next 30 years. At present there are forces pulling in all directions among these four approaches. Unless a suitable balance is found, the various dimensions of sustainable development will not be achieved, even if wealth continues to increase globally.

Poverty reduction is now acknowledged as the most critical concern for sustainability. This focus has become sharper, but at the same time, goals for sustainable consumption remain very unclear. Thus the gulf between developing countries and richer nations may grow since most of the world's resources continue to be consumed by the richest 20% of the world's population.

If there is a strong positive message from the scenarios it is that opportunities associated with new technologies and their applications for achieving sustainability are far reaching. This message is becoming a major part of the emerging knowledge-based economy. There is widespread agreement that innovation rather than incremental improvement is necessary for virtually all major environment and development problems. Business is leading the way with process redesign to eliminate pollution, efforts to reduce material and energy throughput, and sector-wide efforts such as "responsible care."

The business commitment to "the journey towards sustainability" is a major success story of this past decade. But it is still highly selective and there are numerous inconsistencies. For example, even as energy companies transform themselves, there is active resistance on the part of some to accepting the Kyoto Protocol. And even some of the most progressive automobile manufacturers aggressively market larger vehicles that push fuel consumption figures upward. Generally, small and medium-sized firms (SMEs) have a particularly difficult time addressing environment and sustainability matters.
Biotechnology, still in its infancy as an industry, is contentious—a sustainability innovation to some, ecological nightmare to others. Questions have been raised about the role of both science and technology on this issue and others. Thus, even as science

promises more in the solution to environmental and resource-based problems, public distrust grows—threatening to halt some research felt to be of compelling significance, for example in meeting world food needs. Such issues merge with trade and economy concerns when international markets are affected, for example though certification processes and citizen campaigns. Potential barriers to genetically-modified foods entering Europe and China are examples.

What kind of economy can we expect to emerge over the coming decade? Traditionally, some elements of the environmental community have argued for a steady state rather than a growing economy. However, this view now seems sidelined in favour of a qualitatively different growth. Hence the World Bank now focuses on five types of capital and how increases in one can happen without negative impacts on others—in other words, how to achieve positive synergies.

The 1990s represented the decade of the information economy, especially for rich countries. It is highly likely that the future will see the return to a biologically-based economy, but one that is far different than the natural resource exploitation of the past. The new biological economy will link the information economy with new genetically-based technologies, act on concepts such as *The Natural Step* for business, support the use of biological sources for carbon credits, develop advanced approaches for the conservation and sustainable use of biodiversity, and address negative impacts such as bioterrorism and bioresource depletion.

There is a broadening perspective on human and ecological security focusing on acute conflict, population growth and migration, human and ecosystem health, and poverty as key drivers of action for environment and development. The Millennium Development Goals of the United Nations, now accepted by nations as the basis for at least the minimally achievable set of development goals over the next 13 years, covers five key topics expressed as WEHAB: Water, Energy, Health, Agriculture and Biodiversity. We know the goals can be met. Yet performance on each of these issues over the past decade has been inadequate and regionally variable, casting serious doubts on what is likely to happen the future.

The issue is how to draw upon the best of human ingenuity (as suggested by T. Homer-Dixon, 2000 in his book *The Ingenuity Gap*. *How Can We Solve the Problems of the Future?*). There is a need to remove barriers and to harness the considerable desire of people and societies in all parts of the world to move beyond present-day conflicts, corruption, disorganization, single-minded action and inequity. Thus governance, social and environmental justice, equity and investment emerge as key performance concerns and issues. These are topics that are applicable for all countries—rich and poor. But the greatest concerns right now are for Africa and the very poorest nations.

As solutions to growing environment and development concerns start to emerge, will they be found internationally via multilateralism, regional and bilateral approaches within a sharply divided world, or will it be within a global community—the world operating more

or less as a single community? The latter approach is the one so far exemplified by consensus-based processes such as the Rio Earth Summit and the WSSD. But this approach is under fire. The day of the grand accords is felt by some to be coming to an end. Pragmatic solutions derived through lesser means is an alternative even though they may be exclusionary solutions. There is also the issue of unilateral action, sometimes accompanied by military, financial or other means to achieve an "ordered" response.

Box 2. Sustainable development as a moral imperative.

Sustainable development is more than economics, more than development, and more than environment. It is a crusade based on the moral imperative of saving our planet and making it safe, secure, and prosperous for all. It is based on economic justice, social justice, and ecological justice. The time for action is now.

- James Wolfenson, World Bank, 26 August 2002 at the WSSD

Leadership and coordination continue to be key issues—whatever the scenario. Rarely do environmental agencies have the standing or the funding to provide sufficient direction and action. This is true at all levels from local to national and global. There is a definite feeling that the limited achievements of such organizations have been outpaced by those dedicated to economic matters. It is not simply a matter of providing additional funding, or even a somewhat expanded mandate. The broader issue is who should lead and coordinate sustainable development? Globally, the mechanisms devised so far have been considered inadequate (e.g. the Commission for Sustainable Development within the UN and the concept of a World Environment Organization). Within countries and in business the situation is also difficult. Inherently cross-sectoral, environment and development problems require persistent and, at times, very bold action by CEOs, Presidents and Prime Ministers. Most of the striking success stories can be traced to such leadership.

ISSUE 3. The social dimensions of sustainable development, including poverty reduction, environmental justice, and human ingenuity applied through business, civil society and community action, will prevail in the coming years. How can governments, including China's, foster the leadership and enabling conditions to strengthen this approach within their own countries, regionally and globally?

Benchmarks: Doha, Monterrey and Johannesburg

Three key challenges are emerging in the global environment and development dialogue:

- World problems are growing more complex and difficult to address, frequently with convergence among political, socio-economic and environmental crises.
- Economic change is outstripping capacity of environmental institutions to respond, with the result that both environment and economy are negatively affected.

- The political gulf between rich and poor is widening, making solutions to both poverty reduction and environmental improvement more difficult.

The search for solutions to these problems has introduced even more complexity, including more international environment and development agreements. But, from the perspective of many frustrated governmental and non-governmental bodies and other interests, there have been many obstacles to progress: limited commitment of funding, lack of accountability in the form of binding timetables for action, and failure to remove important barriers and to set in place precursors for action, including appropriate institutional change. Over the past year the three major global meetings to address these concerns were the WTO Ministerial Meeting in Doha, the high-level meeting to enhance development financing held in Monterrey, Mexico, and, of course the WSSD.

***Doha*:** This meeting has set the stage to incorporate sustainable development within the next round of global trade negotiations, and to address market access for developing countries. The Doha negotiations brought home the realization that environment and development are matters to be dealt with in many parts of WTO—not only the Trade and Environment and the Trade and Development Committees. Agriculture and fisheries subsidies are prime examples. But the bridge between rich and poor nations is still not built, to the detriment of all. Thus trade, as the engine for globalization, continues to fuel discontent in all corners of the globe. This issue was not resolved at the WSSD, nor is it likely to be over the next several years.

Box 3. WTO perspectives on trade and sustainable development.

The WTO's contribution to sustainable development goes beyond raising incomes and helping to alleviate poverty. Market restrictions and distorted prices result in scarce resources being overutilized. The removal of certain trade restrictive measures and distortions can benefit both trade and the environment. Take the case of the environmental impact of fisheries subsidies – an issue long discussed in the WTO. Negotiations are now taking place under the Doha Development Agenda with a view to clarifying and improving WTO disciplines on fisheries subsidies. Agriculture, energy and fisheries are all sectors where greater market disciplines could have positive effects on the environment.

However, as important as they are, correcting pricing distortions alone will not solve all environmental problems. Lowering tariffs will not stop a deteriorating ecosystem or rainforests from disappearing. Trade is an ally of sustainable development but it cannot substitute for policy failings or gaps in other areas. The solution to environmental and other challenges lies in sound domestic policies and in reaching enforceable global agreements and standards. At Doha, governments committed themselves to negotiations on the relationship between Multilateral Environmental Agreements and the WTO. This will ensure there are no contradictions between the two and will enhance the mutual supportiveness of trade and the environment.

- from a speech at the WSSD by the Director General of the WTO

Monterrey: This important meeting committed to a doubling of development assistance and better debt solutions, with a financial commitment to the UN Millennium Goals and to improving assistance to Africa. However it is a commitment with challenges and

conditionality, calling for national improvements via better governance, safety nets, and altered macroeconomic policies. Importantly, the Monterrey meeting agreed to address international systemic issues. Unfortunately, the opportunity to directly address environment and development funding gaps was not taken. By comparison to the overall needs for development funding, the gains from Monterrey appear modest.

The reality is that most development funding must still be found within countries and through other sources, including private sector foreign direct investment, and from remittances of citizens living abroad. It is possible that for richer countries, the flow of development assistance will decline due to the targeting of the poorest nations and the focus on Africa. While this may be proper, there needs to be recognition of the serious capacity-building, policy and institutional development that should accompany all stages of economic development, especially when there are high levels of foreign direct investment. Whether Monterrey weakened or strengthened this balance is hard to determine.

Box 4. Financial assistance for the Rio Conventions

The Development Advisory Committee (DAC) of OECD examined Official Development Assistance annual aid flows of 23 DAC members between 1998-2000 in support of three UNCED Conventions (Climate Change, Biological Diversity and Desertification). The study demonstrated an annual commitment for all three of about USD 4 billion per year—2.7 billion for climate change, 1 billion for biodiversity, and 700 million for desertification.

- DAC Working Party on Statistics – Contribution to WSSD

WSSD*:* For the first time at the global summits, a genuine recognition and shift to a poverty and development focus took place. In addition, there was a broader recognition of partnership arrangements, but only modest gains in terms of specific implementation goals and timetable. The general disappointment in official negotiations, called into question the comprehensive summit approach, but the energy and enthusiasm present at events outside of the official negotiations raised the issue of whether real progress on sustainability is indeed primarily outside of governments and international bodies.

Overall then—is sustainable development moving beyond concept into practice globally? The answer is: “yes, but”, especially when the three hypotheses at the start of this section are considered.

Box 5. The Earth Negotiations Bulletin perspective on WSSD outcomes.

Now that the Summit is over, the mixed reactions are not surprising. Despite the Secretariat's smooth organization and servicing, most knew at the start that this Summit was never going to produce the abundance of new manifestos and agreements that Rio did. Stocktaking is much more mundane, particularly because no one needed a meeting to know that the condition of the world's poor and the environment do not get high marks. But if measured against the UNGA's stated objectives, the WSSD produced both advances and setbacks.

And beyond the confines of the negotiating halls where real sustainable development activities were constantly showcased, it was evident that "sustainable development" is more than a concept and is making a difference. Like Stockholm and Rio, however, the effects of this Summit cannot be fully measured in the immediate aftermath. Their impact on the international process and on national, local and individual levels will only become more visible with time.

- Earth Negotiations Bulletin WSSD Summary Issue

ISSUE 4.Trade, foreign direct investment, and development assistance taken together have not provided adequate sources of development assistance required to achieve the ambitious goals of the Earth Summits in Rio and Johannesburg. The latest commitments are still inadequate. China is reasonably well favoured by comparison to many other countries, but will face huge demands as a consequence of its rapid economic growth and accumulated environmental debts. To what extent can the already substantial government budget commitments for sustainable development be supplemented by innovative financing mechanisms such as fee and incentive systems, substituting ecological service solutions in place of expensive infrastructure, and by technology sharing?

WSSD—Examination of Progress and Outcomes

The 1992 Rio Earth Summit has provided the framework for most successes concerning sustainable development since that time. Many would argue that some of the most significant success stories from rich countries have come from the European Union. However it is only since 1999 that sustainable development has become an overarching objective of all EU policies, and only since 2001 that a first set of priorities has been established under the EU Sustainable Development Strategy.

Progress within OECD nations has been summarized in *Working Together towards Sustainable Development. The OECD Experience* (July 2002, OECD). This document highlights 5 major issues for policy attention to overcome key barriers:

- Reform of government decision-making processes to allow more integrated approaches
- Greater use of market-based instruments, combined effectively with regulations
- Harnessing of science and technology and boosting its contribution to sustainable development
- Ensuring that trade, investment, environment and social policies are coherent and mutually supportive, and the opening of world markets

- Introducing policy changes at a pace and in a manners that allows for adequate adaptation to any adverse social effects

The OECD recognizes the need for partnerships as an essential ingredient for sustainable development progress. It is perhaps one of the most vital outcomes of the Rio Earth Summit that much more broadly-conceived partnerships, often linking civil society, business and government, began to be formed.

Over the past decade within Asia, there has been very significant uptake of sustainable development as a guiding concept. But, as a thoughtful analysis prepared for the Asian Development Bank (*D.V. Smith and K.F. Jalal 2000. Sustainable Development in Asia)* revealed, actually achieving this objective has, for the most part, not been successful. Their proposed solutions centre on transforming consumption, production and distribution of benefits and costs through a policy focus on:

- Political economy of markets and their perfections and of access to land, capital and information
- Quality of governance and its impact on who bears the costs and who reaps the benefits of political decisions; and
- Civil society and how social values are communicated and transformed into public policy through processes of public participation.

They conclude that the "The market's invisible hand often needs a strong visible hand reflecting social norms and standards."

With the assistance of several well-experienced observers, the International Institute for Sustainable Development (IISD) produced a short list of the major successes and failures since Rio. Entitled *Ten Plus Ten* the list can be found at http://iisd.org. Failures include:

- The breakdown of the Rio bargain between rich and poor countries
- A widening wealth gap
- Continuing overconsumption especially within developed countries
- Damage done to developing countries by attaching strings to aid packages, for example via the Washington Consensus
- Inability to align economic signals with environmental needs, for example, through removal of environmentally perverse subsidies
- Rise in armed conflicts
- Oceans and fisheries in jeopardy
- Growing scarcity of freshwater
- Devastation caused by AIDS, especially in Africa
- Unchecked biodiversity/species loss

A very penetrating analysis of sustainable development issues and strategies was prepared by the International Institute for Environment and Development (IIED) in the months

leading up to the WSSD. This work, released as a series of papers and a major workbook (*Sustainable Development Strategies A Resource Book* Earthscan, July 2002), is highly recommended as a source.

The expectations for WSSD were modest and the outcomes, not surprisingly, were equally modest. A summary of the key outcomes, as provided by the UN meeting organizers is included as Annex 1 to this paper. Without timelines, or with only generally stated objectives, progress for many of these outcomes will be difficult to measure. This problem plagued Agenda 21 throughout the 1990s and it will very likely continue to be a major issue. Furthermore, costing for each of the key objectives is not well worked out.

Box 6. Excerpts from WSSD Political Leaders Statement.

We commit ourselves to act together, united by a common determination to save our planet, promote human development and achieve universal prosperity and peace.

We commit ourselves to the Johannesburg Plan of Implementation and to expedite the achievement of the time-bound, socio-economic and environmental targets contained therein.

From the African continent, the Cradle of Humankind, we solemnly pledge to the peoples of the world, and the generations that will surely inherit this earth, that we are determined to ensure that our collective hope for sustainable development is realized.

The exception may be the Millennium Development Goals. These targets are quite clear and the cost of achieving them reasonably well understood. Here it will be a question of political will, improved governance and long-term commitment on the part of poor countries, the multilateral agencies and donor nations. While some argue that the Millennium Goals do not go far enough, it is refreshing to have clear objectives focused on both poverty reduction and environment. These should be taken as the minimum level of commitment.

Box 7. IMF Development Committee Post-Johannesburg commitment.

Earlier this month, the WSSD concluded in Johannesburg with a number of decisions that provide additional direction to our task of eradicating poverty and achieving sustainable development. A series of important commitments were made in the areas of water and sanitation, energy, health, agriculture, biodiversity and ecosystem management, accompanied by the launch of implementation initiatives. Today we committed ourselves with a new vigor and determination to implement the agreed strategies and partnerships and to use our future meetings regularly to review progress through clear and measurable indicators. Building on the outcomes of Monterrey and Johannesburg, we also intend to have further discussions on global public goods.

Civil society and business enriched the WSSD agenda in many ways, including exchange of knowledge, new partnerships and as watchdogs of the official negotiating process. The World Conservation Union (IUCN), which successfully invested an enormous effort to establish an independent forum at the WSSD released an analysis of the official

negotiations, expressing disappointment that the Summit did not deliver a comprehensive, collaborative and integrated plan of action for the implementation of sustainable development. It was "a summit of lost opportunities" (see Annex 2 for further IUCN commentary).

Business, including a coalition of the World Business Council for Sustainable Development (WBCSD) and the International Chamber of Commerce, has made it very clear that the private sector will work best with clear objectives and timetables (see Annex 3). Their representatives to WSSD noted that:

> "Business is disappointed that there is not a focus on creating the enabling environment for business, especially SME's to grow and thrive. It is essential that we build the energy, transport and ICT infrastructure in developing countries in order to facilitate delivery of development goals. NEPAD provides an excellent framework for this to be achieved for Africa."

The focus on small and medium-sized enterprises (SMEs) will become more and more important in achieving environmental goals and poverty reduction. Their needs are not well met anywhere in the world.

Clearly, many of the "deals" made on the sidelines of the WSSD are cross-sectoral partnerships intended to be practical problem-solving and capacity-building efforts. The issue is whether these new activities can be sustained in the years ahead. As noted at the start of this paper, there are several equally plausible scenarios for the future. Only some provide the enabling environment in which sustainable development enterprises can flourish.

Box 8. WSSD and global governance.

This summit will be remembered not for the treaties, the commitments, or the declarations it produced, but for the stirrings of a new way of governing the global commons—the beginnings of a shift from the stiff formal waltz of traditional diplomacy to the jazzier dance of improvisational solution-oriented partnerships that may include non-government organizations, willing governments and other stakeholders.

- Jonathan Lash, President, World Resources Institute

China was a major beneficiary from the extensive deliberations at the time of the Rio Summit, since many of the principles and concepts such as those of Agenda 21 could be immediately applied during this period of rapid change and high economic growth (see *The People's Republic of China National Report on Sustainable Development, Beijing 2002)*. For different reasons, Africa may well be in a position to take advantage of the Johannesburg negotiations. The recognition that no part of the world can be left in isolation when needs are great was made very concrete by the commitments of rich

nations to support NEPAD (New Partnership for Africa's Development), and the commitment of African leaders to improve governance and other requisites for more effective development. NEPAD's performance is a critical issue for meeting Millennium Development Goals. One of the important questions is how developing nations like China can transfer their successful experience with sustainable development.

It has been suggested that the WSSD may be the last in a series of environment and development summits extending from the 1972 Stockholm Conference. "Summit burnout" may well be a short-term problem, but it is difficult to imagine that the world is not a somewhat better place for having a venue where people of many walks of life and differing views can develop a shared understanding of needs along a complex spectrum of issues extending from local initiatives to global environment and development problems. At minimum the WSSD provided a measure of national and international attitudes towards achieving goals that most nations and people would agree are critical to the future of human existence and a healthy planet.

ISSUE 5. **The WSSD has focused on partnership among business, government and civil society institutions in order to accelerate the pace of sustainable development and to spread the effort more broadly into society, for example, with small and medium-sized enterprises, and in rural and urban communities. These partnerships may prove hard to sustain, depending on everything from international relations, willingness to share experience, and the right enabling circumstances and openness of governments to new governance approaches. But China may be able to benefit tremendously from this partnership model, especially given the new emphasis on business and entrepreneurs participation within governance structures.**

Global Agreements and National Action ("Global and Local")

The legacy of the 1992 Earth Summit (UNCED) is becoming more evident in decision-making particularly through the action under the major international environmental conventions and accords (a list of those negotiated since UNCED is provided in Chapter 4 of the *2002 PRC National Report on Sustainable Development*). These now demand major rethinking of private investment and government expenditures. The conventions were intended to address a growing global ecological debt not only by more effective control measures but also by gradually moving towards restorative and precautionary action.

China, which has ratified many environment and development conventions, likely now invests more of its GDP in addressing environment and sustainability than any other large developing country—more than 1%. This is still below many OECD countries such as the USA, which has not ratified either the Biodiversity Convention or the Kyoto Protocol.

Debate rages in countries like Canada over the costs of ratifying the Kyoto Protocol, suggesting that finally the interlocking of environment and economy is beginning to be felt. The tentative acceptance of the conventions on the part of some countries, and the relatively limited financial support for them in terms of official development assistance, and in the domestic budgets of OECD nations are major causes for concern. Indeed funding has never come close to meeting the estimated funding needs arising from the 1992 accords, and from earlier identified needs such as water supply and sanitation.

Yet the Earth Summit conventions are powerful instruments of change for sustainable development. Each has an established mechanism for information, negotiation and action. National action plans, domestic legislation, and changing business practices are all contributing to national and local internalization of globally-agreed objectives. These conventions are likely to have a higher profile in the years ahead, and their economic impact is likely to increase. Ultimately their value will be well recognized as environmental benefits become apparent and as innovations stimulated by the conventions demonstrate increasing economic return.

In the years ahead, during Committee of Parties (COP) meetings and in other negotiating forums, there will be efforts to weaken the conventions, and efforts to increase the commitments and roles of developing nations. The monitoring and scientific backstopping needed to assess progress and compliance will require expanded international cooperation and innovation at a scale we can hardly contemplate today. In addition, some of the older conventions such as the Law of the Sea will require major upgrading. The issue is whether the international system is so overloaded that the tasks will simply not get done properly. Already there are strong views that we should try to do what we can with the tools at hand rather than continue to build and adjust the system.

The accumulated number and range of multilateral environmental agreements (MEAs) is astonishing. Capacity to develop useful linkages among the many multilateral environmental agreements (MEAs) is still limited. The argument for seeking synergies and for creating more efficient/effective action and outcomes is compelling but there are many practical difficulties since secretariats are physically separated and overtaxed to the point where it is hard to carry out basic functions. Also, in general dispute mechanisms and sanctions for violating terms of MEAs are weak or absent. Will this situation change over time, and will adequate national reporting systems be set up? These are major issues that may well undercut the success of agreements.

Resolving relationships among MEAs, trade and other international agreements will become more important over time. This issue is already a concern for the WTO and it will certainly spill over into some of the regional trade arrangements. There will be other areas, perhaps concerning human rights, and certainly investment, if negotiations proceed towards new conventions on this topic.
It has become clear that building from the top-down and from the bottom-up are both necessary to create effective implementation regimes within nations for global and regional conventions and agreements. A demand-driven approach from communities and

local governments is likely to be more successful than elaborate plans crafted in national capitals but with limited comprehension and buy-in on the ground. Throughout the world there are some good signs of progress, but it is a major of issue of governance to deal with the multi-level and cross-sectoral approaches needed to bring national action into line with international environment and development accords.

Without going into detailed discussion about each, the following four topics are examples of particularly difficult to implement agreements: Climate Change – Kyoto Protocol; Biodiversity Convention – Biosafety Protocol; Convention on Desertification – Global Mechanism; Sustainable Fisheries – FAO Responsible Fisheries. In each case success is unlikely without substantial behavior changes and action at local levels. No government has so far been successful in implementing a satisfactory regime of action.

The maturing international system of environment and development agreements has been a remarkable achievement of the past three decades. The general sense is that it is now time to make it work as a system, and for the common good. This is perhaps the most concrete opportunity we have, since the effort can be based on elements for which there is already substantial support.

ISSUE 6. **The multilateral environmental conventions (MEAs) agreed upon during the Rio Earth Summit, and in the decade before and after, will continue to be the most prominent elements of the global framework governing environment and development. Yet they are still not fully internalized within national laws and decision-making of most countries. Even more difficult is the role of global conventions in creating change at local levels. China has done more than many other nations, but implementation is still limited. How can the domestic process be accelerated? And can China exert its growing influence within negotiating sessions such as the Committee of Parties meetings to develop a more effective overall system for the MEAs to operate internationally?**

Science and Sustainability

If there is one topic on which most groups agree it is that our knowledge to motivate for behavioural change and to manage for complex institution changes is limited. As well, far too little is known about most environmental problems, about ecosystems, and about human adaptation and response to sustainability problems. Emerging scientific fields exist for addressing risk and surprise, adaptation and precaution. There are various theoretical underpinnings, with the most interesting being the science of complex adaptive systems. But there is not a consensus on the directions to be taken. Indeed, management practices in natural resource fields such as agriculture, fisheries and forestry have been slow to change. Many practices have worked against sustainability. In addition, bio-economic approaches to management are still, for the most part, crude and generally based on

inadequate models focused on enhanced production of economically-significant species rather than ecosystem health.

Our relative lack of knowledge about ecosystems, and their characteristics when under stress lead to bad decisions—including overinvestment in some environmental mitigation efforts, and almost complete disregard for other issues until they become huge concerns. The Millennium Ecosystem Assessment is therefore one of the most critical undertakings of the new century. This initiative will examine ecosystems and ecological goods and services globally and selectively at more local levels. It will provide baseline ecological information that will prove to be valuable for whole regions, and, over time, will yield some of the essential knowledge required for management of policy, institutional and technological change. The Millennium Assessment offers huge opportunities for developing countries in particular since it provides for a level of cooperation generally not available, especially in the poorer countries.

Another approach to highlight is the "Eight Grand Environmental Challenges" identified by the US National Academy of Sciences (*Grand Challenges in Environmental Sciences, National Academy Press, 2001).* These challenges are: biogeochemical cycles; biological diversity and ecosystem functioning; climate variability; hydrologic forecasting; infectious disease and the environment; institutions and resource use; land use dynamics; and reinventing the use of materials. They are deemed to be the most important areas of research for the next generation. Funding on the order of 10 billion dollars may be required to address each.

The knowledge economy is a combination of both science and technology. Some of the greatest challenges and potentially also the greatest contributors to sustainable development are the so-called transformative technologies. Among these are biotechnology, nanotechnology, remote sensing and associated tools such as geographic information systems and telemetry, and alternate energy such as hydrogen fuel cells. In one way or another most of these are related to the information technology revolution of the past two decades. The future holds much promise for the use of linked, large-scale data bases, realistic modeling and scenario development, more efficient design and operation of infrastructure and cost-effective environmental monitoring on a scale never before imagined. Great advances in the use of water and chemicals for agriculture should be possible, and better forecasting of weather and other natural phenomena should provide much better opportunities to reduce impacts of natural disasters.

The research and development investment, the institutional needs, cross-sectoral coordination and international cooperation required to reap the full sustainable development benefits are substantial. Some of the investment may best be carried out at regional levels. There are concerns over the extent to which poorer countries will be able to take advantage. For example, not only is there a "digital divide" but fears of "bio-piracy" and of the capacity of interests outside a country to extract valuable natural resource information through remote sensing. The issue of establishing equitable

arrangements so that benefits of sustainability technologies can be realized will continue to grow in significance and in urgency.

Box 9. Transfer of environmentally sound technologies.

In respect of technology transfer, developed countries have not kept their commitment to transfer to developing countries environmentally sound technologies at preferential conditions, under the pretext of intellectual property rights. That has led to little progress on the issue of technology transfer, and has seriously affected the improvement of developing countries' ability for sustainable development.

- Chapter 4, PRC National Report on Sustainable Development, 2002

It should be obvious that no single country can be expected to solve globally significant scientific puzzles. This is particularly true for biodiversity conservation, but it is equally true for climate variability and all the challenges noted above. Global cooperation for addressing environmental scientific needs is essential. But where should emphasis be placed? Should it be for the fundamental topics noted above, or for more applied concerns such as those related to food security? And where should research investments be increased, both from within-country sources and from international funding? There are successful network models such as the Consultative Group on International Agricultural Research (CGIAR); science-based panels such as the Intergovernmental Panel on Climate Change; global monitoring and reporting systems (e.g. for freshwater).

The interdependence of nations is increasing when it comes to building scientific capacity, and under any of the models noted above, it is only via active cooperation that individual nations will benefit. The means to ensure this happens is by no means assured for poorer countries. For richer nations (both developing and developed), the extent of innovation and investment in environmental and sustainability science and technology should be a critical issue. Too little, and the capacity to tap into international knowledge networks may be limited.

ISSUE 7. **The current lack of knowledge concerning important environmental issues and ecosystems, the slow transfer of technology, and the high costs for development of sustainable technologies are working against innovative sustainable development solutions. The problem is particularly acute for China, given the rapidity of development and possible option foreclosure. Expanded international cooperation and strengthened global knowledge networks are required to address science and technology. This is an area where China may need to invest even more than it currently does in order to derive full benefits from linkages with the world's scientific and technology communities.**

International Perspectives on China's Role

The world looks upon China with a mix of admiration for its immense achievements, at present and over past millennia, and of fear that, as the world's most populous nation and the fastest growing major economy, it will create regional or global impacts that cannot be readily addressed. In addition there are decisions and pathways taken within China that create concern outside the country. All of these perspectives are relevant to consider in relation to China's environment and sustainable development contributions and reputation.

Simplifying a complex discussion, there are three key perspectives to be considered:

- China as a pillar of support for international cooperation and multilateral action to address global environmental needs.

- China becoming the world's most important country in the future as a contributor to environmental problems (e.g. biodiversity loss within China and through impacts on distant areas such as high seas fisheries; ecological footprint on the world's natural resources such as tropical forests, endangered species used in medicines; regional and global polluter including transport of POPs, carbon dioxide; through desertification and other land and water management concerns; rising urban consumption patterns).

- China as a potential world leader and innovator in rapidly addressing domestic environment and development concerns.

While opinions vary about success level, and the effectiveness and efficiency of China's efforts to address environment and development issues (see, for example, *World Bank 1997. Clear Water, Blue Skies: China's Environment in the New Century)*, a greater consensus exists that China's situation is unique and offers tremendous opportunity—perhaps beyond that of any other country in the world.

Thus China's support for international cooperation and multilateral action is of tremendous value in solving global and regional environment and development problems. The commitment of China's leaders is also very clear on this point, although not without qualification that the major job still lies with the developed world, based on the principle of "common but differentiated responsibilities."

The concern that China may be accruing an enormous and cumulative environmental debt within its own borders, while contributing to environmental problems regionally and globally, is widely held. And there are many facets to this issue. Perhaps the most commonly quoted is China's growing energy uses and the environmental impacts associated with coal burning. China now leads the world in sulphur emissions and therefore contributes acid rain to a significant area of northeast Asia and beyond.

While per capita energy use remains low, some studies suggest that domestic energy supplies will be insufficient, thus potentially driving up global energy prices, and ultimately taking over from the USA as the world's largest contributor to carbon dioxide releases. Also, black soot from China and India is now believed to be contributing to global warming on a substantial scale. In a recent book from the Woodrow Wilson International Center (*Crouching Suspicions, Hidden Potential: U.S. Environmental and Energy Cooperation with China, August, 2002)* it is suggested that "even countries halfway around the globe are feeling the impact of China's pollution problems and inefficient use of resources."

Box 10. Addressing China's global responsibilities.

We are deeply aware of the responsibilities on our shoulders…If we do a good job in running China well, it will be a great contribution to the world cause of sustainable development…We will continue to work hard, unflinchingly shoulder our responsibilities, honor our commitments with deeds, and steadfastly take the road of sustainable development.

- Premier Zhu Rongji speaking at the WSSD

Throughout, China has been very proactive in tackling international environmental issues. It has signed an array of important international environmental instruments and registered widely hailed achievements in stringently fulfilling its own international obligations and responsibilities. In the new century, we will, as always, make further efforts in international cooperation and make our due cooperation to achieving sustainable development and protecting the global environment.

- Xia Zhenhua, Minister of SEPA, GEF Assembly in October 2002, Beijing

China's logging ban has undoubtedly had an impact on the forests of other nations through increased wood imports. In a strange twist, over-reporting of fish catches over a long period of time apparently has led to substantial errors in world fish statistics. While world catches have been reported to be on the increase, when the Chinese national figures are corrected, world catches are shown to be on the decline—a very significant shift (see *R. Watson and D. Pauly, Nature, November 29, 2001. Systematic distortions in world fisheries catch trends. Vol. 414).*

Development in Western China is eliciting a number of international concerns, including a fear that downstream water shortages may occur, affecting a number of countries that receive water from rivers with origins in the Tibetan Qinghai plateau (see *M.H. Glantz, Qian Ye and Quansheng Ge, May/June 2001 Aridlands Newsletter. China's Western Region Development Strategy and the Urgent Need to Address Creeping Environmental Problems.)* Desertification receives attention in the international press each year as dust storms swirl around Beijing, but the reports are now as likely to come from North America when the dust is deposited in locations such as the Yukon territory of Canada.

As noted by IFAD in its partnership on desertification in China: "The global problem of desertification has hit China far worse than most countries worldwide. The 1.3 billion Chinese people survive on just one quarter of the worldwide per capita average of arable land and water resources…In China alone, between 1957 and 1990, the area of arable land was reduced by an area equal to all the crop land in Denmark, France, Germany and the Netherlands combined, mainly because of land degradation."

While China is justifiably proud of its efforts to be self-sufficient in food, and its growing capacity to produce and export high value organic and processed foods, others worry about the ecological footprint that will be created elsewhere if a richer and more urbanized China becomes a major consumer of imported meat and other items high on food chains. For example, a researcher in the USA (Eugene Takle at Iowa State University) calculated that if every Chinese citizen were supplied from U.S. farms the equivalent beef of a MacDonald's "Quarter Pounder" each week, it would take half the U.S. corn crop, and would require the equivalent of 4.5 times the total human wastewater treatment facilities available in the U.S. to treat the animal wastes of the U.S. raised cattle.

In the 2002 ranking of 142 countries by the World Economic Forum using an Environmental Sustainability Index (ESI) based on 20 indicators aggregated from 68 variables, China scored poorly. It ranked 129 with a score of 38.5, while the USA was ranked 45 with a score of 53.2, and four countries (Finland, Norway, Sweden and Canada) ranked above 70.

Box 11. "Painting China green: the next Sino-American tussle"

[China's] environmental practices affect Americans, from the rate of skin cancer to agricultural productivity to the frequency and scale of natural disasters. Moreover, China's need for grain has a direct and growing impact on U.S. farmer's interests. Beyond these direct effects, however, China's environmental policy influences the full range of U.S. interests in China: stability and security, human rights, democracy and trade.

-Elizabeth Economy, Foreign Affairs, March/April 1999

Many of these perceptions and fears will disappear if China is highly successful with its sustainable development efforts over the course of this decade, and can communicate these successes to the world community. Certainly with the 2008 Olympics China has the global showcase to do so.

ISSUE 8. Despite considerable evidence of China's proactive and positive positions in support of international environmental negotiations and remarkable progress domestically on environmental management, there is considerable and probably growing international concern about China's potential impact on the global environment and regional conditions. These perceptions likely can only be altered through a

combination of more international cooperation to address specific problems, well-documented improvements, on-going international communication of successes, and consideration of international impacts arising from resource management and other decisions.

China may already have established the world's most profound and potentially important transformation of a national economy towards sustainable development. It is too early to know. Much will depend upon the continued level of leadership, investment patterns, and the emerging patterns of urban consumption and increased participation of the Chinese people in sustainable development.

In the aftermath of the major global meetings of this past year, we can hope that the international community and private sector will be attentive to Jiang Zemin's call in 1999 for rich nations to "take on more responsibilities and utilize their economic, scientific and technological advantages to assist developing countries actively in tackling environmental problems." China could do much to demonstrate how effective such external support could be used in leveraging domestic funding and action.

Furthermore, there is growing recognition of the need and value of incorporating Chinese environment and development approaches with solutions being developed and applied elsewhere—including emissions trading, carbon credits, sustainability certification for traded goods and services, sustainability criteria for foreign direct investment, and eco-friendly technology development.

Other developing countries undoubtedly will be seeking technical assistance and other support on environmental matters from China in the years ahead. Chinese environmental technology, knowledge about sustainable agriculture, reforestation and techniques for addressing desertification, integrated coastal planning and a host of other successful tools and problem-solving techniques will be in demand. Can China prepare itself for this role? And should it do more on a partnership basis within its own regions of East, Southeast and Western Asia. These are important international relations and development matters.

ISSUE 9. **China's progress towards sustainable development is of interest to all parts of the world but particularly valuable to developing countries. In the years ahead China can be expected to serve as a major source of advice, services and technology for other countries. How can China prepare for such tasks within the region and in other areas such as Africa? To what extent should it be partnering with others in this process, for example via development agencies and through private sector and professional and international civil society organizations?**

Conclusion

The most important window of opportunity to address international environment and development concerns is the current decade, and the window will start to close if

continued erosion of biodiversity, land and water degradation, ocean and atmospheric pollution reduces options. The period for demonstrating large-scale success has been defined by the world community as 2010 to 2020. This is a very short time from the present. The challenge is great. And much of the outcome will be determined mainly by progress by a relatively small number of the largest nations and groups of countries such as the European Union.

Will China become the leader among developing nations, or even among all nations concerning sustainable development? This might be quite possible over the coming 10 to 15 years. While leadership may appear to be a difficult burden, it also could be an incredible opportunity. Indeed, an opportunity without parallel. This is not to say that all environment and development problems could be resolved over such a time span within China, or through China's international contributions. What is important is to continue building the momentum for change towards sustainable pathways. In this past decade China has been able to demonstrate a capacity to "bend the curve" under conditions of rapid economic growth, dramatically so in the case of energy conservation, and in certain badly polluted situations.

ISSUE 10. China appears to be well positioned to take a global leadership role in sustainable development, serving its own needs and for the ultimate benefit of the entire world.

Annex 1

Key Elements from the Johannesburg Plan of Implementation (as abstracted by UN WSSD Secretariat)

Poverty Eradication

Halve, by the year 2015, the proportion of the world's people whose income is less than $1 a day and the proportion of people who suffer from hunger (*reaffirmation of Millennium Development Goals*).
By 2020, achieve a significant improvement in the lives of at least 100 million slum dwellers, as proposed in the "Cities without slums" initiative *(reaffirmation of Millennium Development Goal*).
Establish a world solidarity fund to eradicate poverty and to promote social and human development in the developing countries.

Water and Sanitation

Halve, by the year 2015, the proportion of people without access to safe drinking water *(reaffirmation of Millennium Development Goal).*
Halve, by the year 2015, the proportion of people who do not have access to basic sanitation.

Sustainable Production and Consumption
Encourage and promote the development of a 10-year framework of programs to acceleratethe shift towards sustainable consumption and production.

Energy

Renewable energy
Diversify energy supply and substantially increase the global share of renewable energy sources in order to increase its contribution to total energy supply.

Access to Energy
Improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services and resources, sufficient to achieve the Millenium Development Goals, including the goal of halving the proportion of people in poverty by 2015.

Energy Markets
Remove market distortions including the restructuring of taxes and the phasing out of harmful subsidies. Support efforts to improve the functioning, transparency and information about energy markets with respect to both supply and demand, with the aim of achieving greater stability and to ensure consumer access to energy services.

Energy efficiency
Establish domestic programs for energy efficiency with the support of the international community. Accelerate the development and dissemination of energy efficiency and energy conservation technologies, including the promotion of research and development.

Chemicals

Aim, by 2020, to use and produce chemicals in ways that do not lead to significant adverse effects on human health and the environment.

Renew the commitment to the sound management of chemicals and of hazardous wastes throughout their life cycle.

Promote the ratification and implementation of relevant international instruments on chemicals and hazardous waste, including the Rotterdam Convention so that it can enter into force by2003 and the Stockholm Convention so that it can enter into force by 2004.

Further develop a strategic approach to international chemicals management, based on the Bahia Declaration and Priorities for Action beyond 2000, by 2005.

Encourage countries to implement the new globally harmonized system for the classification and labeling of chemicals as soon as possible, with a view to having the system fully operational by 2008.

Management of the Natural Resource Base

Water
Develop integrated water resources management and water efficiency plans by 2005.

Oceans and fisheries
Encourage the application by 2010 of the ecosystem approach for the sustainable developmentof the oceans.

On an urgent basis and where possible by 2015, maintain or restore depleted fish stocks tolevels that can produce the maximum sustainable yield.

Put into effect the FAO international plans of action by the agreed dates:

- for the management of fishing capacity by 2005; and - to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.

Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 .

Establish by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment.

Eliminate subsidies that contribute to illegal, unreported and unregulated fishing and to overcapacity.

Atmosphere
Facilitate implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer by ensuring adequate replenishment of its fund by 2003/2005.

Improve access by developing countries to alternatives to ozone-depleting substances by 2010, and assist them in complying with the phase-out schedule under the Montreal Protocol.

Biodiversity
Achieve by 2010 a significant reduction in the current rate of loss of biological diversity.

Forests
Accelerate implementation of the IPF/IFF proposals for action by countries and by the Collaborative Partnership on Forests, and intensify efforts on reporting to the United Nations Forum on Forests, to contribute to an assessment of progress in 2005.

Corporate Responsibility

Actively promote corporate responsibility and accountability, including through the full development and effective implementation of intergovernmental agreements and measures, international initiatives and public-private partnerships, and appropriate national regulations.

Health

Enhance health education with the objective of achieving improved health literacy on a global basis by 2010.

Reduce, by 2015, mortality rates for infants and children under 5 by two thirds, and maternal mortality rates by three quarters, of the prevailing rate in 2000 *(reaffirmation of Millennium Development Goal).*

Reduce HIV prevalence among young men and women aged 15-24 by 25 per cent in the most affected countries by 2005 and globally by 2010, as well as combat malaria, tuberculosis and other diseases (*reaffirmation of General Assembly resolution).*

Sustainable Development of Small Island Developing States

Undertake initiatives by 2004 aimed at implementing the Global Program me of Action for the Protection of the Marine Environment from Land-based Activities to reduce, prevent and control waste and pollution and their health-related impacts.

Develop community-based initiatives on sustainable tourism by 2004.

Support the availability of adequate, affordable and environmentally sound energy services for the sustainable development of small island developing States, including through strengthening efforts on energy supply and services by 2004.

Review implementation of the Barbados Program me of Action for the Sustainable Development of Small Island Developing States in 2004.

Sustainable Development for Africa

Improve sustainable agricultural productivity and food security in accordance with the Millennium Development Goals, in particular to halve by 2015 the proportion of people who suffer from hunger.

Support African countries in developing and implementing food security strategies by 2005.

Support Africa's efforts to implement NEPAD objectives on energy, which seek to secure access for at least 35 per cent of the African population within 20 years, especially in rural areas.

Means of Implementation

Ensure that, by 2015, all children will be able to complete a full course of primary schooling and that girls and boys will have equal access to all levels of education relevant to national needs (*reaffirmation of Millennium Development Goal*).

Eliminate gender disparity in primary and secondary education by 2005 (*reaffirmation of Dakar Framework for Action on Education for All).*

Recommend to the UN General Assembly that it consider adopting a decade of education forsustainable development, starting in 2005.

Institutional Framework for Sustainable Development

Adopt new measures to strengthen institutional arrangements for sustainable development at international, regional and national levels.

Enhance the role of the Commission on Sustainable Development, including through reviewing and monitoring progress in the implementation of Agenda 21 and fostering coherence of implementation, initiatives and partnerships.

Facilitate and promote the integration of the environmental, social and economic dimensions of sustainable development into the work programs UN regional commissions.

Establish an effective, transparent and regular inter-agency coordination mechanism on ocean and coastal issues within the United Nations system.

Take immediate steps to make progress in the formulation and elaboration of national strategies for sustainable development and begin their implementation by 2005.

Annex 2

IUCN Perspectives on WSSD Comments by Juanita Castaño, IUCN Special Advisor to the WSSD

IUCN notes that the Plan of Implementation fails to speed up the process towards sustainable development. Furthermore, the Plan let overriding attention to trade liberalisation defuse energy targets and impede the harmonization of international agreements such as integrating Multilateral Environmental Agreements into the WTO trade rules.

As for Rio's precautionary principle, it was only reaffirmed after much debate and was not further elaborated or applied in any concrete way. The ecosystem approach was confined to fisheries, biodiversity and protected areas rather than applied to the management of all resources. In fact, the Summit did not even bring solid new commitments on resources to existing agreements and goals such as the Millennium Development Goals.

However , IUCN does recognize that governments made some concrete commitments such as halving the number of people without access to *safe water and sanitation* by 2015 (paragraph 7); significantly reducing the loss of *biodiversity* by 2010 (paragraph 42); and maintaining or restoring *fish stocks* by 2015 (paragraph 30). Other positive pledges include minimizing the negative impacts of *chemicals and toxics* on human health and the environment by 2020 (paragraph 22) – the date is subject to further agreement as well; developing the use of various instruments, including *marine protected networks*, to promote the conservation and protection of oceans by 2012 (paragraph 31); and removing *ecologically harmful subsidies* (paragraph 86). IUCN also commends the call by states that have ratified the *Kyoto Protocol* on climate change asking other states to follow suit (paragraph 36).

On the one hand, the Summit renewed the attention given to sustainable development; yet on the other, it did not deliver a comprehensive, collaborative and integrated plan of action for the implementation of sustainable development. For one, it fell short of recognizing that the conservation of nature and natural resources for poverty alleviation is a prerequisite for sustainable development.

A summit of lost opportunities, the WSSD did however mark an important step in the search for a new mode of global collaboration between governments, the private sector and civil society for the sustainable development of our planet's wealth. In this frame of mind, IUCN, as a partnership of governments and civil society, remains dedicated to work with the millions around the globe who strive for a just and equitable world that values and conserves natural resources.

Annex 3

Business Sector Comments on WSSD

Business Action for Sustainable Development (BASD*)*

Business welcomes the agreement reached at this Summit, and particularly the Implementation Plan. Business is at its best when it has clear goals and practical targets. These give us a framework for entrepreneurial opportunities, long-term planning and partnership possibilities.So we are rolling up our sleeves to help make it happen.

We need to make sustainable development happen by generating economic growth with greater resource efficiency, minimizing environmental impacts and with maximum social well being for more people.

We also welcome the growing realization that business is an indispensable part of the solution to the problems of the world. We have improved our relationships with governments, NGOs and others. Together we will turn the idea of sustainable development through practical partnerships into a growing reality on the ground.
As we move forward the view of business could be summarized in the words of Elvis Presley:
" A little less conversation
a little more action"

WBCSD, Int'l Chamber of Commerce and Others

The following comments were developed by a series of business consultative groups in Johannesburg comprising members of the International Chamber of Commerce, World Business Council on Sustainable Development, and other business organisations and company representatives who participated in the World Summit on Sustainable Development. The consultative groups coordinated the participation of business experts on the following subjects in the plenary sessions, roundtables, panel discussions, and other meetings that took place at the World Summit on Sustainable Development.

GENERAL
If we are successful in the years ahead, the Johannesburg plan of implementation establishes the enabling framework to address global poverty and inequity, whilst at the same time making the world more robust to the adverse impacts of climate change, desertification and deforestation and setting the scene to mitigate these impacts in the long term. Historical paradigms must be overcome to achieve this – new initiatives such as the Community Development Carbon Fund and the mechanisms established under the Kyoto Protocol are good examples of how we can achieve this.

Business is disappointed that there is not a focus on creating the enabling environment for business, especially SME's to grow and thrive. It is essential that we build the energy, transport and ICT infrastructure in developing countries in order to facilitate delivery of development goals. NEPAD provides an excellent framework for this to be achieved for Africa.

CORPORATE GOVERNANCE
The agreements on transparency and good governance are strongly supported as these are the norm in the business sector. Business needs a well defined and consistently enforced regulatory environment in order to thrive.

With respect to corporate accountability we welcome the thrust to enhance mechanisms to reinforce corporate responsibility and social contributions – especially at a local level. In this regard we see a future of corporate social responsibility increasingly becoming core business, along with triple bottom line management and reporting. e.g. GRI, the UNEP process and OECD guidelines.

At the same time we feel that not enough companies are reporting on a triple bottom line basis and we need to encourage more to be done in this regard. Multinationals tend to be the most advanced in corporate reporting. In fact compliance plus is the norm for multinationals. We need to get this accepted as a standard practice for all businesses.

ENERGY

The agreement relating to energy is welcomed – in particular the recognition of the need to develop all energy sources aimed at addressing common challenges. This enables every nation to address their energy needs in alignment with their resource constraints whilst creating the framework to enhance access to clean, modern, cost effective and affordable energy for those who are currently starved of energy.

In particular the recognition of hydro as a renewable option creates the environment for the realisation of NEPAD's energy aspirations through the development of Southern Africa's massive hydro resources.

With respect to the absence of a specific renewable target, we welcome the emphasis this gives to energy access. At the same time the strong encouragement to increase the global share of renewable energy sources enables national targets as an integral component of national energy plans.

AGRICULTURE

Farmers need greater market access, but the transport and information infrastructure in developing countries needs to be enhanced in order to maximise this opportunity.

Farmers need access to a full range of technologies as well as the information that allows them to determine the best combination for local conditions.

SUBSIDIES

Subsidies – Subsidies should not distort open markets and where applied should enable access to energy depleted regions and promote sustainable development.

Subsidies are generally undesirable, but where applied must be transparent and be used with a view to catalyse a sustainable activity. As such they should be consistent over time and include definitive exit strategies, which will enable the long term commercial viability of the activity subsidised. Tax incentives, where appropriate, should promote energy that contributes to sustainable development.

PARTNERSHIPS

Business supports partnerships as one of the most practical means of delivering sustainable development outcomes. Partnerships are supplementary to strong Type I agreements, and business is supportive of partnerships as implementation mechanisms where business can play a meaningful role.

Over 300 partnerships have come forward to BASD. These partnerships are illustrated on the BASD website and the Virtual Exhibit, or were awarded ICC/UNEP World Summit Business Awards for Sustainable Development. These 300 + partnerships are illustrative of the thousands of diverse partnerships that business is involved in to deliver sustainable development solutions around the world. Out of this wealth of partnerships, some have come forward and submitted their initiatives directly to the UN as Type II Summit Outcomes. The business contribution is measured by partnerships that deliver solutions.

CORPORATE RESPONSIBILITY AND ACCOUNTABILITY

The interpretive statement will refer to promoting corporate responsibility and accountability through "development and implementation" of intergovernmental agreements. This refers to existing agreements and is not a call for a new international regime. Business is part of civil society, a major group designated by Rio Earth Summit, participating in WSSD process constructively.

Business is already accountable to national law (wherever it operates), customers, investors, employees, communities – this applies to companies of all sizes, sectors and nationalities, not just multinational companies.

Business has worked with governments, trade unions, and interest groups to develop guidelines for responsible business conduct (U.N. Global Compact, OECD MNE Guidelines, others on corruption, social aspects, transparency). Business maintains and abides by numerous voluntary policies, codes, agreements of its own (national, sectoral, international).

Despite successes, progress, more needs to be done. Business cannot do this alone, depends upon partnerships and an enabling framework at national, international levels in which business will work thru networks, supply chains, employees, investors and customers, w/technologies and financial resources at its disposal.

There are a range of indicators and vehicles for tracking and reporting business practices (beyond internet, publications, consumer information, etc.): The Global Reporting Initiative, Emerging ISO standards, UNEP/business prepared 22 sectoral reports on industry sector sustainability practices, all of which were subject to stakeholder review. All above are points of departure for further elaboration & to draw in other sectors.
Business requires a clear, equitable and predictable decision making framework in which to make long-term investments and dedications of capital. It is not attracted to invest in countries where regulation is lax, which would put such investments at risk.

Building, strengthening capacity in national, local governments to develop, implement, enforce the regulatory frameworks is the utmost priority. This is essential to local business entrepreneurship, good business practices and foreign investment: predictable, clear rules, consistent enforcement, absence of corruption, an independent judiciary system, private property systems, and strong institutions.

TRADE/FINANCE
The challenge of globalization and sustainable development: through Doha, Monterrey and Johannesburg follow up to make the markets work for everyone, improving quality of life worldwide. Doha, Monterrey and Johannesburg outcomes should be seen as a reinforcing ensemble, much greater than the sum of their parts. (Also regional partnerships, like NEPAD)

We support the WSSD reaffirmation of: Millennium Declaration targets and goals
mutual supportiveness of trade disciplines, agreements and environmental agreements and institutions

We do not support trade distortive subsidies.

HEALTH
Business strongly supports the notion that health is a key enabling factor for sustainable development, and supports the WSSD outcomes which highlight the linkages between health and sustainable development.

The draft plan of implementation rightly re-emphasizes the need for greater access to health care systems and services. Industry strongly supports the three pillars of sustainable development: good governance, financing and public/private partnerships to achieve these outcomes.

Industry has a history of partnerships facilitating access to health care and remains committed to long term partnerships to address health care needs.

Industry strongly endorses the vital role of the Global Fund for AIDS, TB and Malaria and the need for continued funding of health care infrastructure in developing countries. Key to sustainable development in

health care is the need for continued research and development into diseases requiring vaccines, enhanced treatments and cures. To this extent, an environment conducive to innovation is essential.

Industry strongly supports the need for good governance and political commitment to address health needs. These are essential to attract short-term aid and the long-term capital investments that are key to economic growth. Indeed, it is only sustainable economic growth that can forever change the status of developing countries to that of developed.

BIODIVERSITY
Business is working positively on biodiversity issues – e.g. the partnership launched between ICCM and IUCN on biodiversity and the mining sector.

Business urges governments to resolve the issues of indigenous rights and traditional knowledge with respect to using the products of biodiversity sustainably whilst developing equitable benefit and access sharing regimes.

Clear, transparent, equitable and consistent decision making frameworks are needed
Poverty and excessive consumption are both detrimental to biodiversity
Business supports delinking production and negative environmental impacts in the context of the concept of responsible prosperity.

BIOTECHNOLOGY
Biotechnology is one critical tool in the quest for sustainable development, and countries need to be free to make their own choices regarding its responsible use.

While no negative health impacts have been reported, concerns about the safety of the technology continue to be raised. These concerns need to be addressed by scientists, government officials and others through the provision of accurate and understandable information and dialogue.
Recognizing the adoption and near-term implementation of the Cartagena Protocol on Biosafety, there is need to move forward to responsibly harness biotechnology to enable more sustainable development through applications in health, agriculture, industrial processes and environmental remediation.

WATER
Business supports the sanitation goal and has played a role in promoting this.
Water issues are at the very core of poverty. Industry has been pushing hard for sanitation goals and is delighted with the new goal to halve the number of people without access to sanitation by 2015

Industry does not support privatisation of water assets, we believe that Governments should maintain the ownership and control of water supply.

Industry does have a critical role to play in providing innovative and least impact collection, treatment and distribution of drinking water, as well as sanitation.

Human impact on water supply is evident through the different ‘footprints’ of economic activity and also of poverty

The provision and maintenance of water supply and sanitation can save communities money, while at the same time protecting health, improving quality of life and ‘freeing up time’ desperately needed for other activities. But water and sanitation provision do require cost recovery – research, technology, appropriate infrastructure require high levels of investment. The sustainability of this basic service to address poverty means it must be a user pays or Government funded service.

SUSTAINABLE PRODUCTION AND CONSUMPTION AND TECHNOLOGY

To paraphrase Nitin Desai - overcoming poverty by 2015 must be coupled with the long term objectives of achieving sustainable production and consumption by 2050. Business applauds this approach as a long term framework of regulation, investment and procurement must be put in place to drive innovation and the decoupling of economic activity from negative environment and social impacts. It is important that governments help to establish baseline markets for sustainable production and consumption and that they also help to raise awareness of the need for action at all levels. Again this is an area of partnership at its most fundamental.

We do not have three planets and even with the combined financing and intellectual power of business we will never have the resources required – we therefore have an obligation and responsibility to reduce the impact of economic activity. We accept this obligation with enthusiasm and look forward to working with governments, NGOs and civil society to make sustainable production and consumption a reality.

By recognising the different 'footprints' of production/consumption and poverty, business is determined to help reduce the negative externalities that drain economies, the environment and health. We need to make markets work for all and a holistic, compassionate, multi-sectoral and long term approach will be fundamental to delivering practical solutions.

Markets and trading patterns are already changing to favour sustainable production and consumption and business encourages this transition. Investment into eco-efficiency, resource efficiency, renewable energy and energy efficiency is a dynamic driver. The partnership approach to sustainable prosperity at international, national and local levels must be underpinned by sustainable production and consumption.

Our challenge lies in demonstrating the benefits that will encourage SMEs across all sectors to embrace sustainability. We need clear signals to the marketplace and clear signals to the breadth and depth of industry to achieve this.

Exit

Environment, Development and Governance: How to Face Environmental Challenges in the New Century

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Abstract

Environmental problem is one of the most rigorous challenges that China has to face in the 21st century. Environmental protection, the key of long-term and steady economic increase and sustainable development, is a basic national interest. In China, the solution of environmental problems has great impact on its national security, its international image and the fundamental interest of public as well as the realization of comparatively well-off society. It is a basic responsibility and duty of government to provide a good resource and environmental base and to let all the people have clean air, clean drinking water and safe food.

International experiences indicate that government plays a dominant role in the area of environmental protection, which means efficient environmental administration institution is the precondition of environmental improvement and sustainable development. In the past 20 years, especially during 1990s, China made achievement in the area of environment and resource protection. To some extent, pollution discharge has been controlled, the discharge volume did not increase with the economic development. Meanwhile, ecological conservation and exploration went into a new era. These achievements, to some extent, came from the constantly improvement of environmental administration system and relevant institutional arrangement.

In accordance with social economic changes, environmental protection work also steps into the phase of transition. We are now facing a very complicated situation with problems of multi-environmental pollution and ecological degradation. The development future is not optimistic. Compared with the situation of 20 years ago, lots of changes of environmental issues occurred including changes in type, structure and region. Comprehensive type of resource and environmental problems (normally raised in the stage of transition) happened during the time of low economic development phase. The severity not only involve in the increase of pollutant discharge and enlarge of ecological degradation scope, but also involve in the interaction between resource, environment, and socio-economic development. The pressure of social, economic and global environmental problems will last for a long period of time. China is now facing a situation that had never happened in any other countries. As a large and responsible developing country, China

has to make right response and reasonable choice to cope with the new phase of environment and development.

In order to cope with the multi-challenge of environment in the new century, and to realize the comprehensive goals of sustainable development, new type of resource/environment administration institution and relevant mechanism should be established. Current resource/environment administration institution has problems of less comprehensive and coordinating capacity and incomplete instrument and lack of unified supervision mechanism. In the strategic report that recently published by the World Bank and UNDP on the environmental issues of China, environmental institutional arrangement and governance reform were put as the top priority.

New resource/environment administration institution should reinforce mechanism of unified supervision and the one of coordination to avoid the problems of function overlapping, cross-sector management and unclear definition of administration. With unified, coordinating, integrated and transparency concept in mind and with the help of unified supervision, coordination, comprehensive decision-making and public participation mechanisms, environment administration institution can be well run and its goals can be realized. And this kind of institution can also reflect the integrity, comprehensive and coordination requirements of environmental protection and sustainable development.

To establish a coordinating organization is very necessary for new type of resource/environment administration institution. Constrained by its characters and rank of government, environment protection or resource management department doesn't have the independent ability to do the inter-ministry coordinating work. It is necessary to set up a coordinating mechanism at national level, such as environment and resource protection committee under the leadership of the State Council.

In the new situation, it is necessary to adjust the environmental protection strategy; to start from the driven force that cause resource/environmental problems to set up environmental friendly and life-cycle socio-economic system through institutional reform and policy innovation which integrates environmental protection into development; to improve governance of environmental protection and to encourage stakeholders get involved in decision-making and increase the capacity building of environmental NGO and to strengthened international cooperation.

PART A: Environmental protection and economic development are two sectors that supplement each other. Environmental protection administration institution,

which consists effective administration organization and healthy institution, is the center for the work of environmental protection and sustainable development. In terms of environmental protection, environmental administration should not be weakened but enhanced.

1.Environmental protection is the fundamental benefit and one of the basic goals of long-term development of China, and sustainable development is still the challenge that China has to face. Environment and development are two factors that supplement each other. Environmental protection is one important part of development. Development will be decreased without necessary environmental protection; there will be no enough financial guarantee for environmental protection if economic development is not strengthened. In the situation of developing country, conflicts always exist between development and environmental protection. Economic growth may increase environmental pollution and the degradation of resource, it may also bring a better environment, the selection of institution and policy play a very important role in this case. To integrate development and environmental protection and search the way of sustainable development will definitely have to pay; the key work to achieve sustainable development is to keep the balance among economic development, social development and environmental protection and the way to integrate these three components.

2.An effective administration institution, healthy mechanism and good policies are the foundation to realize goals of environmental protection and sustainable development. Government is the key body of macro-institution establishment, policy making and incentive mechanism implementing; government structure will not only be constrained by regulations, it will also be adjusted with the change of time. The innovation of administration institution should not only be made based on the experiences and lessons, more importantly, it should also be made to deal with all conflicts and challenges people has to face in the new century. Therefore, as a country in the phase of transition, it is a very important task to find out a better administration institution, and mechanism innovation and a set of development policies to improve environment and to achieve sustainable development.

3.Environmental protection should be an area where government plays important role. There is no doubt that market failure and government failure are the two reasons leads to resource damage and environmental pollution. Private factor could almost not provide any innovation activities to improve environment; the externality of social economic activity and the public goods character of the environment require the public actions to solve environmental problems. Unreasonable institution and policies are also the basic driven forces for environmental degradation. Therefore, to a large extent, the work of environmental protection relies on government, and to set up a strong environmental administration institution with constantly improved governance will provide precondition for environmental improvement.

4.The institution establishment for environmental protection enhancement and sustainable development is an international topic. In the “Plan of Implementation” of World Submit on Sustainable Development (Johannesburg), one chapter was used to describe the institution framework for sustainable development, from which we can see the importance of it for sustainable development. In this plan, an effective institutional framework at all level (international, regional and country level) is considered as a key to sustainable development. It also emphasizes that good governance is the fundamental of sustainable development and requires all countries to set up sustainable institution framework at national level in a unified and coordinating method including the establishment/enhancement of necessary decision-making, coordinating and enforcement organizations.

5.In the past more than 20 years, the achievement of national environmental protection and sustainable development, to a great extent, was attributed to the constantly improvement of environmental administration institution and related institution arrangement. Under the pressure of rapid economic development and large amount of population, China is now facing the most comprehensive environmental problems in the world. A series of measures have been taken in China, inter alias, considering the situations in response to particular situation of the country and feature of environmental problems, making fully use of the dominant role of governments with limited capacities of state finance, grasping industrial pollution as the most important environmental problem during the middle and end of the 20th century, formulating laws, perfecting policies, strengthening law enforcement, perfecting monitoring system, improving technological capacities and collecting environmental protection funds through various channels, especially strengthening the functions of government on environmental protection at the twice government’s restructurings in 1993 and 1998 respectively, etc., which had contributed a lot to control the trend of more serious environmental pollution. The dominating function of government at population, resource, and environmental protection is a very important experience we learnt through the work sustainable development.

6.Compared with the development of other issues, environmental protection work and the legislation and institution have been enhanced. Until now, besides the Environment Protection Law of People's Republic of China (1989), 8 specific laws on environmental protection and more than 20 other laws were stipulated and added some items in relation to environmental protection. In order to enforce the national environmental protection law, the state council has promulgated more than 30 rules of law on environmental protection or in relation to environmental protection. Up to 2001, the number of all kinds of environmental standards has reached 459. By passing these laws and regulations, a basic environmental protection law system with China’s characteristics has been established to provide powerful law and policy supports for setting up, carrying out and developing national environmental protection system.

7.Through constantly adjust the way of thinking, work of environmental protection and sustainable development present the concepts of "advance with the times", current resource/environment administration institution still needed to be reformed and strengthened. Basing on the development of environmental situation, the key efforts of environmental protection were transformed from original point pollution source control to combination of point pollution source control with comprehensive prevention and control, as well as to combination macro environmental management with control of key regions and river basins. During the ninth five-year plan period, the environmental protection guideline pointed that pollution prevention and control should be paid equal attentions. And actions have been taken to promote total amount control, to promote environmental model cities, to strengthen ecological conservation, etc. During the ninth five-year-plan period, the amount of 12 key pollutants discharged was reduced 10-15% respectively with 8% rapid economic growth rate in China. At the same time, a set of actions and policies have been taken by the government for the purpose of sustainable development, all which made China achieved great progress on the areas of population control, human resource development, resource and energy conservation, poverty release and agricultural development. However, on the view of the trends of environment problem change or on the view of social economic development, current resource/environment administration institution and some development policies can not meet requirements of new situation, therefore, the resource/environment administration and development mode should be reformed and strengthened.

Part B: During the last ten years, the character of environmental problems changed sharply, China is in a stage with multi-environmental problems, which bring long-term and deep impact and risks to eco-system, people's health, economic development and even to the national security.

8.From point pollution pattern to a comprehensive one which combines point and non-point pollution. In the past, industrial point pollution was the key one. Since the 1990s, point pollution has been basically controlled and non-point pollution has gradually become a new problem of pollution control. In the eastern part of China, non-point pollution, which is caused by over or unreasonable use of fertilizer and pesticide together with pollutants from rapidly developed intensive livestock operation as well as urban and rural sewage, is becoming more and more significant. At present, non-point pollution covers half pollution load of the total. In urban areas, the number of automobiles goes up rapidly with the increase of average income and tail gas becomes the most difficult one to be treated. Compared with point pollution, the individual discharge amount of non-pollution is smaller, but the accumulated discharge scope is big and covers large amount of areas. There is no effective measure to control this kind of pollution under the current administration institution and policies.

9.From single industrial pollution pattern to the one with industrial and domestic pollution at the same time. Another character of the environment change in China is that urban industrial pollution has been controlled primarily while the weight of domestic pollution has increased sharply. Due to the improvement of people's lives and the change of consuming pattern, the volume of urban domestic solid waste and sewage increase sharply and the discharge of urban waste is one of key problems of city. In 1999, it was the first time that the volume of urban sewage exceeded that of industrial wastewater, but the second grade treatment rate of sewage was up to only 20%. The composition of wastewater changed due to the increase of chimerical usage, together with the change of chemicals and nutrition in sewage make it more difficult to be treated. Meanwhile, industrial pollution form changed also, the pollution from the state-owned industries has been controlled, while the pollution from township and village industries is becoming more severe and will be the domination industrial pollution in the future.

10.New pollutants emerged constantly, we are in the phase of pollution transition. With the strengthening of industrial pollution control and the increase of income, even though some traditional pollution has been controlled, newly emerged pollutants, such as incretion interferon and POPs, become the new risk of environment and peoples' health. Air pollution in urban areas is now transferring from the pattern of coal smog to the mixture of coal smog and tail gas. Water pollution is from the type of organic pollution to the one of eutrophication. In the stage with new type of pollution and some traditional one, which has not been controlled completely, therefore, more advanced technology and cost are required as well as more comprehensive administration instrument.

11.Long-distance/trans-boundary pollution is becoming more serious. Traditional industrial pollution, which affects local environment quality, has been basically controlled through these years' hard work by taking the concept of total amount control. With the increase of industrialization and rapid development of township industries, pollution impact has enlarged. In recent years, long-distant and trans-boundary pollution (such as acid rain) and watershed pollution problems (such as Haihe River, Huaihe River and Taihu Lake) are becoming more and more significant but not effectively controlled. Local environmental problems cannot be solved by only control local pollution.

12.Ecological problems become more and more significant, which have influenced the security of regional and watershed ecological system and sustainable development. After the enormous flood in 1998 and frequent sand storms happened in recent years, ecological degradation problems especially in the Western Area are becoming more severe; degradation degree and scale as well as the difficulties of ecosystem restoration make ecological issue more and more significant among all the environmental issues. Ecological problems not only cause the

degradation of nature, which is the base of regional subsistence and development, but also cause large scale ecological unbalance, etc. increase the crises of flood and ecosystem and also impair the ecological foundation barrier for economic development social stability. Although ecological conservation has been given top priority, presses and risks of ecological degradation caused by improper activities still exist. Besides all these, bio-safety, invasive species are the new task for ecological conservation.

13.The pressure caused by global environmental issues has direct impact on each area such as political, economic and social life. Global warming, which is caused by the emission of green house gases, is now becoming the most important environmental problem in the world. China is currently the second large country of CO_2 emission in the world，more and more responsibilities that China is asked to take as a big developing country. Global and international environmental issues, especially the convention implementation of Climate Change, Desertification, ODS, POPs, Bio-diversity have or will have great impact on national environment security and long term social and economic development and will be an issue of national benefit. Therefore, how to deal with the global environmental issues and take the opportunity of international convention implementation will influence many issues in political, economic and social prospects.

14.It is a long-term task to optimize energy structure and to solve environmental problems. Although, energy is no longer a bottle-neck for economic development through years hard work, China still has to face the situation of lack of high quality energy supply as well as the energy and environmental problems caused by coal-dominating energy structure. At present, 85% SO2 and 28% TSP are caused by coal-burning, all which lead to decline of air quality and land degradation (30% of total) caused by acid rain. China's CO2 emission accounts for about 14% of the world total and it is directly related to the energy consumption. With the constantly increase of energy consumption, it will be a hard work to solve environmental problems by cost-effective and environmental friendly methods.

15.Nuclear safety problems are more and more severe. Nuclear safety is one of the special one among all the environmental security problems. At present, there are seven nuclear power generators are under operation. It is estimated that, by the end of the Tenth Five-year Plan, another four will be put into operation to generate electricity. In China, there are different types of reactors in different areas, all these will bring many difficulties of management in the future. Once a large nuclear accident happened, it will not only be a disaster of China, but also of the world nuclear industry. And there is no appropriate method to treat nuclear waste so far, therefore, ten years later, when the capacity of spent fuel storage is fully reached, the waste disposal and transportation will be a very difficult issue to be dealt with. It is not an easy work to safely have the current plant operated and decommission and safe waste disposal. Nuclear safety will be one of the key environmental challenges we

have to face.

16.Environmental health has been put into schedule, the issues of cleaner air, drinking water and food safety get more and more attentions from public. With the development of economy and the improvement of people's life, the type of environmental health risk has changed from traditional one (caused by the lack of infrastructure, such as unclean drinking water, infected disease) to the type of modern one (caused by environmental pollution). Many incident of food pollution have been reported and many shocking figures can be found from some representative investigations. According to the human capital method, it is estimated that the economic loss related to the impact of unexpected death and disease caused by out door air pollution is about 0.6% of GDP (WHO/UNDP, 2001).

Part C: Nowadays, environmental issues are closely connected with social economic development, social economic development, on one hand, brings long-term pressures to environment; on the other hand, it is a driven force of environmental improvement. Attentions of environmental protection and sustainable development has been changed from end-of-pipe treatment to the one of driven forces, which means to get win-win result of environment and development by promoting environment-orientated economic development.

17.Nowadays, environmental protection is closely related to economic development and social development, and they are now the three fundamental components of sustainable development. Social economic development will bring both opportunities and challenges to environmental protection. In the early stage of 21st century, environmental pressure caused by economic development will not be released. The pressures include the one of population growth, of consumption increase, of resource cost expense and pollution discharged increase that caused by economic development, therefore, the environment in the middle of the century is not optimistic. At the same time, with economic development, restructuring, marketing reform, public environment awareness increase, technology advance and the involvement of globalization process will provide opportunities for environment improvement. How to establish a reasonable mechanism to make integrate arrangement and release pressures is an important issue should be considered during the process of institution reform.

18.Large population will continually bring huge pressures on environment and nature resources. In 2001, the population of China was 1.276 billion. Even though the increase has been effectively controlled, the large amount of population is still a rigorous fact that China has to face. It is predicted that the population peak will come during 2030-2050 with 1.6 billion populations in China approximately. The population crises will have great impact on social and economic circumstances with permanence pressure on resources, ecosystem, the environment, employment,

urbanization as well as social insurance system; all these will affect the realization of the goals of sustainable development. Mean while, there is a huge human resource in China. The average education level is only reach to the one of primary school, therefore, in order to cope with the furious international competition situation, to explore the human resources is very necessary. To have people with better education will help the work of environmental protection.

19.Poverty is a key element, which restrict resource conservation and ecological improvement. Since poverty has great relationship with environmental degradation and may form vicious circle, therefore, poverty release is a precondition for sustainable development. There were still 30 million people living under the line of poverty in 2000, if we numbered them according to the standards of UN, the figure could be bigger. Since most of the poverty countries are located in the western area or in environmental fragile areas such as mountain or desertification areas. No ecological restoration activities will reach success or could last long if poverty release and ecological conservation cannot be integrated.

20.The supply situation of strategic resources, such as water, land and oil, is becoming more severe, the problems of sustainable resource usage and resource security become more significant. Large scale and fast economic development as well as rough operation mode speed up the consumption of resources. Some resources are in the edge of exhaustion, the problems if serious lack of land, water are getting worse and the amount of imported oil is becoming bigger and bigger. In the future, the economic development of China will more and more rely on the international resources; more and more basic materials such as food, wood, metal ore , especially oil and natural gas will be imported, all these will bring resource/energy security problems and may have great impact to socio-economic development.

21.Domestic consumption and environment awareness increases constantly. With the increase of average income, and the consumption irreversibly enlarge the cost of resources, which will bring pressures to ecosystem. At the same time, the increase of public awareness of environmental protection requires better environment. Due to the lack of mechanism for environment information release and communication channel, the requirement to improve environment can not be met, in which case, the social stability will be affected. Therefore, in order to keep social stability and meet the requirements of environmental administration in the new stage, it is necessary to set up information sharing mechanism.

22.Economic restructuring provides a chance to integrate environmental protection and economic development. Economic development of China is now step into a key stage of large scale restructuring. Economic restructuring will play a key role during the time of the tenth-five-year plan or the development in the next 10 years. The restructuring will provide a good opportunity to reduce high energy-consumed and pollution-intensive industries and products; it also provides a

good opportunity to change the traditional industrial mode and set up an environmental friendly economic system in China. The strategy revision on industrial restructuring will drive the reform of urban and rural and regional structure; and it will also bring great impact on our modernization progress and sustainable development. To promote and guarantee the integration of environmental protection in economic restructuring progress and achieve the win-win principle between economic development and environmental protection, a corresponding environmental administration institution and policies are required.

23.Rapid urbanization process will bring large amount of environmental problems. Followed by the industrialization process and the transferring of spare labor force of rural areas, the process of urbanization will be speed up rapidly. By 2020 urbanization rate will reach at 50%. On one hand, the volume of pollution discharge in urban areas will increase, which need large amount of investment for environmental infrastructure.; on the other hand, more problems will emerge, especially that of transportation caused by the increase of car. Traffic problems will become restrictive element for sustainable development as well as the problems caused by tail gas. At present, there is no ideal method to solve urban traffic problems. It should be given priority to establish a proper transportation mode to cope with local situation and demonstrate it broadly.

24.The accession of WTO is like a two-edge sword to the work of environmental protection. At the time when international resources are used, the pollution could be transferred. After the entry of WTO, China is further involved in the process of economic globalization, which provides China more opportunities to practice "Comparative Advantages Strategy", to fully use both national and international resources, markets, technologies and funds, to explore the capacity of resource and space usage, and to provide external condition to solve the problems of population, resource, the environment and development. On the other hand, the entry of WTO brings more challenges especially the pollution transfer caused by the transferring of industries. In spite of these, green trade barrier, international environmental certification, environmental standards influence product export.

25.To protect environment by using market mechanism. In terms of environmental protection, it may not be better than planning economic one if it were not controlled well. There are many experiences of developed countries of using market mechanism to conduct the work of environmental protection, more and economic incentive instrument are adopted. Different actions have been taken, such as to decrease subsidies, to take environment tax and to have trade mechanism of pollution discharge license, through which integrate the cost of environment to the internal cost and to decrease the market loss. Reasonable price and environmental tax will encourage public and private to put their investment in environmental/resource friendly projects and projects of environment infrastructure construction. At present, wastewater treatment fee has been raised to more that one yuan in many eastern cities, which

effectively promote the multi-investment in wastewater treatment plants. Public investment in environment/resource management area is one part of economic development and it is also an important part of sustainable development.

26.Technology development will help the solution of environmental problems. General speaking, technology development has the positive impact on environmental protection, new technology can increase the ratio of resource usage and decrease the intensity of pollution discharge. The solutions to many environmental problems are more and more depends on technology development; new type energy, information and bio-technology will bring bright future for environmental protection. Of cause, we have to admit that new technology will bring new environmental challenge, for example, the bio-safety problems caused by trans-gene technology.

27.Followed by the change of the characters, type and the structure of environmental problems as well as the increase of economic pressure, it is can be seen that the tradition environmental management and development mode, which mainly focused on industrial pollution control, cannot meet the requirement of current time. It is now a time to conduct a work of comprehensive environmental protection. Environmental protection task in the new stage has been set up to solve environmental problems, to release social economic pressure, to improve government administration capacity and to prevent corruption, it also has set up new requirements for environmental protection administration. To deal with multi-environmental challenges, we have to have institutional and legislative preparation, environmental administration department has to closely cooperate with economic department and participate important decision-making process; and to make comprehensive economic and environmental policies; to encourage public participation, to have comprehensive environmental management and to have win-win result of environmental protection and development.

Part D: To face environmental challenges in the new century, current resource/environment administration institution cannot cope with the new environmental problems, and the comprehensive and coordinating capacity of current institution is far beyond the requirement with less instrument. There is a lack of supervision mechanism for the work of ecological conservation. Lack of cooperation between different departments makes the work of environmental protection with less integrity and far from the goal of sustainable development, therefore, it is a very urgent to take the innovation work for resource/environment administration institution.

28.After 30 years development, China has formulated a administration mechanism of "unified supervision and separate management". The responsibilities of current environmental protection system are: the authority of

supervision and administration for pollution prevention and control is concentrated to SEPA and the environmental protection departments of various level local governments. The responsibilities for nature and resource conservation are disseminated to the departments of environmental protection, resource, agriculture, forest, water resource, and land separately. Although national environmental protection administration department plays a dominating role on the area of environmental protection, its administration functions are enlarged, the structure of it is getting improved and the rank of it is getting higher, some inevitable problems are still exist.

29.Lack of necessary instrument to have environmental protection work integrated in social economic development decision making. In order to improve the capacity of integrating environmental protection into comprehensive decision making, in 1998, the institution reform of the State Council prescribed that SEPA should carry out environmental impact evaluation (EIA) work for all significant economic and technology policy making, for development planning and significant economic development planning on behalf of the State Council. Actually, the function of comprehensive decision-making involvement of environmental protection department is not put into practice; compared with economic development, environmental protection is normally in passive situation. Local environmental protection bureaus have the same kind of problems. Nowadays, the environmental protection has close relationship with social and economic development, if the environmental protection department cannot be positively involved in relevant legislation progress or significant social and economic development planning or policy making, it will definitely loss opportunities to solve environmental problems during the time of economic development.

30.The decline of environmental protection coordination ability. The previous Environmental Protection Committee was repealed after the institution reform of the State Council in 1998 and its basic competency was handed over to Nation Environmental Protection Administration (SEPA). In fact, SEPA, which is not a member of the State Council, does not have necessary authority or implementation instrument; therefore the coordination function of the previous “Committee” has not been implemented. Although the affiliation scheme among ministries on the issues of national environmental protection had been approved by the State Council in 2001, so far the scheme is consummated. Under the conflicts brought by unclear definition and some relevant legislation, it will take some time to exam how this scheme will work. Environmental protection task cannot be only conducted by environmental management organization in any country; it is a task requires cooperation between different departments. It does not matter what kind of resource/environment administration institution to be set, an effective cooperation scheme setting is the most important.

31.Unreasonable competency definition between environmental protection

department and natural resources management department makes it impossible to have unified supervision on ecological conservation. First, Government function of ecological conservation are scattered in different departments according to the management of ecological and resources factors. There is no strong or unified supervision mechanism for ecological conservation. The lack of "unified decision making and supervision" mechanism in the areas of environmental management brings overlapping and malfunction among different government departments, management work done by department with no specific authority as well as conflicts between public and department benefits. Secondly, law and regulations made by different departments for the resources that the department managed will try to put more authorities to the department through laws/regulations making process. All these will make conflicts between laws/regulations bring more difficulties of law/regulation enforcement; thirdly, there is gap between lawmaking and planning. in this case, there are different standards of ecological conservation, therefore, there must be lots of difficulties of macro-control or fully use of investment in the area of environmental protection. Lastly, there is no clear distinction between administration function and that of development of resource management departments, which means, those departments have both resource conservation, supervision and ecological conservation and that of resource exploration. Ecological conservation work cannot be conducted under this circumstance.

32.Necessity on regional and watershed management institution reform. A comprehensive resource/environment administration institution for regional and river basin management has not been set up in China. In China, environment is managed according to administration definition. There is no cross-sector administration or trans-boundary ecological conservation or environmental protection administration institution and relevant actions. In this case, driven by local benefits, there is no development linkage between different regions or watersheds. The difficulties of coordination between regions aggravate ecosystem degradation. Driven by the sector benefits, the difficulties to coordinate environmental issues among regions prick up the degradation of eco-system. There is no ecological compensation mechanism; therefore, there is no guarantee mechanism for the environmental coordination between watershed/regions. Therefore, it is very urgent to have regional and watershed resource/environmental protection administration institution reform.

33.To have continually environmental protection administration institution reform at local level. With a consideration of national benefit and the character of trans-boundary environmental problems, the current environmental administration department at provincial level is under the leadership of both national environmental protection administration and provincial government. This kind of mechanism, to some extent, restrain some behaviors/activities which against the national environmental protection policies due to the short-term consideration of local government. But main function the current mechanism is to appoint the leaders of provincial environment protection administration department, while, there is no

effective supervision mechanism for the detailed work and for the one which is lower the provincial level. In the future, environmental protection administration institution at local level reform should be continued and to strengthened the national environmental protection administration leadership to the one of provincial level. Meanwhile, innovation work should be conducted in some pilot to promote vertical management from provincial level to municipal level and from municipal level to the one of county.

34.Compared with the function of government on environmental management, the role of environmental protection that legislation sector, public and individual play is limited. Environmental law has paid great emphases to environmental protection authority of government, but there is no clear definition for public environmental authority and rights. Penalty is not serious and the process is too complicated, which will constrain the involvement of legislation department and also influence the enthusiasm of public participation.

35.Serious lack of personnel and funds. Although the purpose of institution reform is to increase working efficiency by decrease the number of staff, the lack of staff has greatly affected the normal operation of government environmental protection administration. The percentage of professional staff of the total population is only one tenth or one of several tens of that of the developed countries. Because of the lack of human resources, the administration staff is busy dealing urgent issues and has no time to make long time development plans/strategies. Environmental protection work is one of the basic government functions, which demands large amount of financial support. But within the financial plan, the percentage of the budget for environmental protection administration work cannot meet the actual need that the environmental protection administration institution. This problems is very significant in ecological conservation administration, there is not enough financial support for environmental protection. If this situation lasts for a long time, it will definitely cause short dated government behaviors and against the principle that environmental protection administration institution should fully consider long term and the whole national benefits.

36. In the strategic report that recently published by the World Bank and UNDP on the environmental issues of China, environmental institutional arrangement and governance reform were put as the top priority. They believe that environmental protection can only make achievement with high attentions from government, with cooperation of all government departments. In the report, suggestion and recommendation have also been made in the aspects of comprehensive decision-making enhancement, legislation system, cross-sector coordinating, comprehensive watershed management, institution capacity building, public participation, etc. Therefore, national environmental administration institution reform should reflect the concept of Advance with the Time, through institution and legislation innovation to cope with the change and requirements in the new situation

and to realize the new management goals.

37.From international experiences, it can be seen that most developed countries have unified supervision and comprehensive decision making power in the area of environmental protection and ecological conservation. There are clear legislation basis of government administration department in the area of environmental and resource protection. Also in those countries, there are healthy coordinating mechanisms and process between different departments. The administration methods have changed from passive to active and comprehensive management, including river basin management, integrated ecosystem management and economic incentive instruments. Since the 1990th, environment protection has started to be considered as a key element of national development policies of those countries and good governance framework has been set up since then. All these experiences are worth to learn during our governmental restructuring process.

Part E: To establish a new type of resource/environment administration institution to increase the authority of unified decision-making and supervision. By institution and comprehensive policy arrangement to integrate environmental protection and economic development and to promote sustainable industrialization and urbanization; to improve governance and get stakeholders broadly involved and increase the capacity building of environmental NGO, to enhance international environmental cooperation can provide guarantee to control environmental degradation and to achieve sustainable development.

38.Goals for establishing new resource/environment administration institution. New resource/environment administration institution should reinforce mechanism of unified supervision and the one of coordination to avoid the problems of function overlapping, cross-sector management and unclear definition of administration. With unified, coordinating, integrated and transparency concept in mind and with the help of unified supervision, coordination, comprehensive decision-making and public participation mechanisms, environment administration institution can be well run and its goals -- environmental pollution prevention, health risk reduction, ecological degradation control and resource security -- can be realized. And this kind of institution can also reflect the integrity, comprehensive and coordination requirements of environmental protection and sustainable development.

39.Institution innovation is the basic to guarantee the realization of management goals. In the past, even though there were many effective environmental protection mechanisms, most of them were set up within the sector of environmental protection. In the new stage, mechanism should be set up to strengthen and promote the cooperation between environmental/resource management department and other governmental sectors and public sectors. Through regulation setting to eliminate institutional barrier of environmental/resource management and to make sure the new

resource/environment administration institution can be well run and to get the goals realized. Four mechanisms are necessarily to be set up including unified supervision, coordinating, comprehensive decision-making and public participation.

- **Unified supervision mechanism.** It should be clarified by regulation, procedure and standards to make sure the unified supervision function of environment and resource protection is under the resource/environment administration institution; to make sure that the long-term benefits of environment protection as a whole can be reached; to make sure that division of each department is under a unified framework, which means that environmental protection work in each area should be under the supervision of environment/resource protection department.
- **Coordinating mechanism.** To provide a coordinating institutional framework for environmental issues involved in different industries, different sectors and difference regions.
- **Comprehensive decision-making mechanism.** With the consideration of environment and resource protection and the important meaning of sustainable development, legislation should be made at national and local level to clarify the authority and the process of environmental protection and resource management departments in comprehensive decision-making.
- **Public participation mechanism.** In order to achieve people's fundamental benefit, it is necessary to establish a set of mechanism and regulation to encourage stakeholders into environmental decision-making and administration process.

40.Coordinating institution set up. It is very necessary to set up coordinating institution for resource/environment administration institution in the new situation. Constrained by its characteristics and the rank in the government, environmental protection and resource management departments are not strong enough to do the coordinating work independently. The coordinating institution for environmental protection and resource conservation at national level should be set up, such as the environment and resource protection committee of the State Council. The leader in charge of environmental protection in the State Council should preside over this institution to make sure the implementation of policies.

41.To establish sustainable socio-economic system and to take a path of sustainable Industrialization and urbanization. By taking instrument of law, regulation, standard and policy, to change unsustainable way of production to a sustainable production and consumption mode. For example, to make detailed implementing regulation and industrial performance standards and label (e.g. standards for water consumption per unit of output, generation performance standards, etc.) and to make policies for goods reuse. All actions mentioned above will encourage the taking of cleaner production and lifecycle economy, will increase the use rate of resources, will optimize the structure of energy, will decrease the pollution discharge and will control the trends of high consumption. To fully use the opportunities of development mode transfer, structure adjustment, marketing reform, WTO accession and technology advance to integrate environmental protection

principal and activities to the process of social economic transition.

42.To use the comprehensive policies of environment and development and fully take the functions of marketing. In the future, most policies involved in environment management will be the one of comprehensive consideration. Development policies including the one for poverty release, trade and investment will take a consideration of the environment cost. Methods will be taken by having the environmental cost internalized and by making ecological compensation to reduce the damage of environment; environmental policies should not constrain but encourage and promote development and the setting up of environmental friendly socio-economic system, such as the adoption of gradual environmental policies, taking market mechanism and more economic incentive policies are the direction of environment policy making in the future. For example, to clarify property of resource and environment and to impose environment tax; to broadly use waste discharge license and to effectively integrate incentive policy and the one for control only.

43.To set up partnership between government and private enterprises and to make policies for the enterprises to be involved in environmental protection actions. At present, the efforts for environmental protection mainly rely on the input of government. In order to cope with the requirements for environment improvement and with the increase of urbanization level, the financial pressure for government input increase too. Therefore, it is a trend to have market oriented mechanism or multi-formality input in the area of environmental protection. In the southeast areas, since the economic situation is relatively good, market-oriented mechanism for environmental protection should be introduced first. Mechanism and policies for environmental protection should be provided by government by taking economic and administration tools for enterprises, in which way, private input can be introduced to the urban infrastructure construction and environmental friendly technology development. Different kind of partnership can be set up between government and private enterprises, such as, through special contract or concession issuing (e.g. BOT，BOOT，BBO，BOO，BTO, etc.), to remise the development and operation of environmental service industry; meanwhile, to deregulate for concession operation (e.g. release price control), to abolish service subsidy and set up the user pay mechanism to form multi-solution system for environmental improvement.

44.To establish and improve institution of public involvement for environmental protection. To encourage the development of NGOs of environmental protection and the environmental information sharing mechanism establishment. Public involvement of environmental protection and the promotion of "good governance" will be the main trend of environmental administration reform. Environmental protection work is not only part of government function, it is also part of public affairs. The suggestion is to set polite area in the developed area, to abolish the constrains for license application for non-government non-profit environmental organization (which need a supervision unit) establishment; to increase the capacity building of NGOs of

environmental protection, to encourage public involvement in the activities of environmental protection, decision-making and environmental supervision and to increase the environmental awareness of civil society. Meanwhile, in order to have the public have the right of acknowledgement and supervision, it is necessary to set up/improve information transparency mechanism and to encourage the involvement and supervision of public including: the mechanism of administration information sharing, the information sharing of regional water quality, drinking water quality, the result of food examination and the assessment of industrial environmental activities.

45.To have broadly international cooperation. To strengthen international cooperation and take international environmental responsibility will not only set up political image as a responsible large country, to help the work of environmental diplomatic development and to protect the rights of environmental protection and economic development, it will also provide opportunities of international funds and mechanism (e.g. CDM), technology and administration experiences utilization and to promote the work of environmental protection and economic development.

Part F Conclusion

46.China is now facing a very comprehensive situation of environment and resource management, which are cause by many reasons, and new problems emerged constantly. To achieve sustainable development in China will bring great impact to the world. According to the newly raised problems and development trends of environment, this paper provides a draft analyze of environment and development, especially environmental administration innovation. Some basic suggestions, which should be improve and further studied, have been made in this paper, too. As an international consultation institution at high level, CCICED should provide strategic, foresee, innovative and operational policies for the Chinese government. According to the newly raised issues of environment protection and sustainable development mentioned above, CICCED in its 3rd phase should select some important topics to take deep study with the reference of successful experiences and failures of foreign countries to get objective conclusion and make contribution to both China and the world's sustainable development.

Exit

ECO-SECURITY TASK FORCE REPORT

Strategies for Controlling Invasive Alien Species in China

BEIJING 2002

Foreword

Since UNCED in Rio de Janeiro in 1992, biodiversity conservation or bio-security has been concerned more and more by international societies. One of the focuses is the issue of invasive alien species (IAS) and bio-security. People become aware of the ecological damage and economic loss resulted by IAS, either actual or potential, cannot be underestimated. Internationally, IAS has been listed the second largest threats of the loss of biodiversity after habitat deterioration.

Meeting the requirement of CCICED and the need of biodiversity conservation, the Eco-security Task Force was established with the approval of CCICED on the basis of the work of biodiversity working group. In about 2 years, evaluation and research of IAS and bio-security will be focused on in order to put forward pertinent recommendations to the government.

Due to the short duration since the Task Force established with official approval, as well as our international members being heavily involved in Johannesburg Summit Conference, it has been unable to hold a formal meeting of ETF dealing with the ETF mission. This report is therefore formulated on the basis of the study on IAS issue carried out by the former BWG and especially a recently held Workshop on China's Eco-security and IAS Control Strategies and Action. The participants include EFT Chinese members, one ETF international member and one of ETF member's representative, as well as invited experts from relative governmental sectors and international organizations. The Secretary General and members of the CCICED secretariat also presented part of the workshop. Therefore, the report is the result of collective efforts by experts in various fields to a certain degree. We appreciate their contributions to EFT and expect their further support and cooperation in the following years.

Strategies for Controlling Invasive Alien Species in China

Contents

Executive Summary

The following recommendations emerged from the BWG/ETF's work on IAS as well as the Workshop on Invasive Alien Species held on 23-24 October, 2002, in Beijing.

Background:

- *Problems experienced by Invasive Alien Species (IAS) affect many production and health sectors as well as posing threats to native species, habitats and ecosystem functions.*

- *Globally, IUCN now rated IAS as the second greatest threat to global biodiversity after habitat loss.*

- *Some sectors in China are well aware of the problems and are applying good practices for combating the threats, especially in areas of health and production agencies whose productivity is directly affected by IAS. Less awareness and less activity is evident with respect to the invasion of natural and semi-natural habitats, where production losses are not noticed and the degradation caused by IAS is gradual and less spectacular.*

- *China is particularly vulnerable to Alien Invasive attack because its territory is so large and habitats so diverse that almost any species can find a home here; native habitats are damaged and degraded; and China is emerging as a major global trading nation with large-scale imports of grain seed, timber, wildlife and human visitors.*

- *Already several hundred Invasive Alien Species have been recognized in China and some case studies highlighted in the booklet produced by the task force indicate that these are causing great hardships and economic losses.*

- *In USA the total damage from these problems is estimated at more than $137 billion per year and there is no reason to imagine the figure for China would be much less.*

1.2 Recommendations:

- *China needs to develop a national IAS strategy and embark on a comprehensive programme to combat the threats of Invasive Alien Species.*

- *It is recommended that SEPA as the national agency responsible for Convention on Biological Diversity (CBD) affairs and overall coordinating agency on environment should form a special IAS committee to develop this strategy, review relevant legislation and supervise the overall programme.*

- *Many aspects of the programme would be undertaken independently by the concerned responsible sectors, but there are areas of overlap and synergy that warrant a comprehensive approach. Moreover, solution to IAS problems requires the cooperation of many sectors such as aviation, tourism, trade, shipping etc. that are not themselves feeling losses due to IAS.*

- *The nature of the problem is essentially international and requires close links to a number of relevant international programmes (GISP, IPPC, CITES, CBD etc.) and databases as well as direct collaboration with neighbouring countries and major trade partners.*

- *Although GMOs are very distinct from natural IAS, they pose similar problems with regard to threats to native species and ecosystems. It is important to apply similar risk assessments, and field trials before permitting field releases and IAS should be screened just as vigorously as GMOs in this aspect.*

- *Prevention of IAS entering the country is better than cure and early response is cheaper than waiting for major problems to develop. The focus of a national IAS programme should be prevention, early detection and warning system, rapid response and fast sharing of information and experiences.*

- *Any introduction of alien species into China should be subject to strict risk assessment. The level of risk acceptable should be determined in relation to the level of benefit expected from the introduction but systems of suitable risk assessment still need to be developed for some sectors (forestry and natural environment).*

- *Tightening up on the screening of species crossing national borders will have a secondary benefit of reducing vulnerability to deliberate import of malicious organisms for bio-terrorism purposes.*

- *Consideration of IAS risks should be built into all types of Environment Impact Assessment. In particular, the problems of unintended introduction of IAS should be covered.*

- *Due to the wide biogeographic variation across China, internal eco-region boundaries may need to be manned with checkpoints to prevent internal transfers of unwanted species.*

- *Considerable research and capacity development will be required and local IAS units will need to be established and equipped. This will require new public expenditure.*

- *The following guiding principles are recommended for the national programme :- User pays; full social cost pricing; precautionary principle; protection of the public interest and subsidiarity.*

- *A review of existing laws and regulations needs to be undertaken. New regulations are needed to cover gaps and loopholes in existing legislation. A new comprehensive law covering all aspects of IAS should eventually be drafted. The law should refer to dynamic lists of prohibited species, species allowed for introduction and species requiring different levels of risk assessment and testing. These lists will need constant revision and should not be embodied within the law itself but maintained by authorized expert committees.*

Strategies for Controlling Invasive Alien Species in China

Eco-security Task Force/CCICED

Introduction

"**Alien species**" (non-native, non-indigenous, foreign, exotic) means a species, subspecies, or lower taxon occurring outside of its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans) and includes any part, gamete or propagule of such species that might survive and subsequently reproduce. "**Invasive alien species**" means an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity.

China is the world's third largest country and one of the richest in terms of biodiversity. Its vast territory stretches 5,200 km from east to west, spans 50 degrees of latitude, and covers five climatic zones: cold-temperate, temperate, warm-temperate, subtropical, and tropical. Consequently, it has many types of ecosystems. A wide range of habitats and environmental conditions makes China especially vulnerable to the establishment of invasive species of foreign origin. Potential invasive alien–species from most parts of the world may find suitable habitat somewhere in China.

China's rapid economic development in the twentieth century, including explosive growth in trade and transportation systems, and especially becoming a member of the WTO, is increasing the pathways for the introduction and spread of invasive species within China and the introduction of new invasive species to China from other countries. Since many invasive species have long lag times from initial establishment until the appearance of a full-blown invasion, the full effects of recently arrived invasive species in China may not be felt until well into the 21st century. In the United States, the globalization of travel and trade has facilitated introductions of invasive species since the early days of the Industrial Revolution in the nineteenth century. Many species that were first introduced decades ago have only recently begun to spread rapidly in ecosystems. There has been an upward trend in the establishment of non-indigenous species, and large numbers of invasive species have been documented. In view of the ecogeographic similarities between the United States and China, the U.S. situation may be a good indication of future trends in China as China's world trade and domestic development continues to expand.

For many years, Chinese government departments responsible for agriculture, forestry, and animal husbandry, as well as customs authorities, have recognised the potential threat posed by a small number of alien species, leading to the quarantine of alien diseases and pests. However, it was

only a few years ago that the concept of invasive species was introduced into China and the potential threats to China's natural heritage are still not widely recognized. This contrasts with the situation in a growing number of countries where invasive species have become an important environmental issue.

There have already been many studies and publications, mostly from developed countries, on alien mammals, plants, weeds, fishes, mollusks, crustaceans, herpetofauna and wildlife diseases, including general discussions of pathways, vectors, the role of natural and human-caused disturbances (physical, chemical, climatic, *etc.*), and the economic and environmental impacts of invasions. The World Conservation Union (IUCN) has also established the Invasive Species Specialist Group (ISSG) to address problems of invasive species. The Convention on Biological Diversity (CBD), to which China and 177 other countries are Party, calls on governments to "prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species" (Article 8h).

However, in China, except for the attention given those species that have created great economic loss and damage to human health, little research on, or management of, invasive alien species and their impacts on natural ecosystems had been conducted. In 1999, several projects were initiated to remedy this situation. Statistics and educational material on the status of alien species in China and their potential to create harm have been collated and disseminated, and control measures directed at alien species implemented. Websites, such as www.chinabiodiversity.com and www.bioinvasion.org have been developed to improve public awareness. Current research estimates that there are already 600 naturalized plants species, in which the number of actual invasives is unknown, and far more than 60 animals species that have become invasive in China. The number of alien invasive micro-organisms and diseases has not been well enumerated but is probably high. . Except for a few fish species that are invasive across regions within China, these figures only count species that have come from foreign countries,. The situation of invasive species across regions within China is much more complicated and has been insufficiently studied.

Alien species occur in each of China's 34 provinces, municipalities and autonomous regions. They occur widely in both urban and rural landscapes, and also inside protected areas. Alien plants have been reported everywhere, except in a few remote reserves in the Qinghai-Tibet Plateau, Hengduan Mountains, Xinjiang and Inner Mongolia. Alien species occur in almost every watershed and ecosystem, including forests, wetlands, grasslands, and croplands. They are from many taxonomic groups, including mammals, birds, reptiles, amphibians, fish; arthropods and crustaceans; algae, ferns and seed plants; fungi, viruses, bacteria, and other micro-organisms. These AIS have already caused great damage in China. Since China stopped logging and is restoring vegetation in many places, IAS have become the most important cause of ecosystem degradation and biodiversity loss. Especially in freshwater systems and south tropical and sub-tropical regions, IAS have been considered as the primary threat to biodiversity loss. The damage caused by these species includes the replacement of local species, endangerment and extinction of endemic species (It has been recognized that introduction of alien fish was the first factor to endanger local fishes in Yunnan), the simplification and degradation of the ecosystem,

interference with the normal functioning of ecosystems, change and destruction of the local landscape and pollution of the local genetic pool. IAS have threatened human health and caused economic loss to China's agriculture, forestry, and fishery industries. A conservative estimate is that IAS cause many 100 billion RMB worth of damage each year in China (for details please refer to Appendix 1).

Invasive alien species in China published by the Eco-security Task Force of CCICED has introduced the status, and impacts of AIS, and the reasons they pose such a threat to the economy, environment, biodiversity and human health in China. It describes the taxonomy, identification, biology, current distribution, original distribution, reasons for introduction, impacts and control measures of 128 IAS in China. The book and the website created by ETF/CCICED at www.chinabiodiversity.com, provide essential information on the current status of IAS in China. This report is generated from these studies, and focuses on developing a strategy for dealing with the IAS issue in China.

China's people and government are now facing the great challenge of controlling AIS, minimizing the losses caused by IAS them and restoring a degraded ecosystem. Since 1999 the Eco-security Task Force/CCICED (former Biodiversity Working Group) has engaged in a comprehensive study and impact evaluation of invasive alien species invasive alien species . Based on these studies, ETF/CCICED compiled the booklet *Invasive alien species in China*, which is the first publication to comprehensively address the IAS issue. This work has drawn the attention of the government and public, and has created the scientific basis for further studies and monitoring of invasive species. IAS is an issue which relates to many sectors, such as legislation/enforcement, import/export administration, forestry, agriculture, husbandry, fishery, oceanography, environmental protection, research and education. Understanding and cooperation among these sectors on the AIS issue is key to the successful control of AIS.

Based on these concerns, ETF/CCICED held a multi-sectoral workshop to pursue a combined control strategy for IAS from 23~24 Oct. 2002 in Beijing. Management sectors attended the workshop were the State Environment Protection Agency (SEPA), State Forestry Administration (SFA), Ministry of Agriculture (MOA), Fishery Bureau of MOA, General Administration of Quality Supervision , Inspection and Quarantine of the People's Republic of China (AQSIQ), Ministry of Health (MOH), State Oceanography Administration (SOA) and State Endangered Species Import and Export Management Office (SESIEMO). Research institutions attending were the Insitute of Zoology and Institute of Botany of the Chinese Academy of Sciences (CAS), College of Life Sciences of Fudan University, Institute of Biological Control of the Chinese Academy of Agriculture Sciences (CAAS) and the Institute of Viral Disease of the Chinese Disease Control Center. ETF/CCICED made presentations on the overall status of IAS in China and international control strategies. Representatives from management agencies gave presentations on the problems and various control strategies existing in relevant departments. These presentations conveyed a favourable impression of current IAS control in China. Then participants had an enthusiastic discussion on how to strengthen management. The following report on "Strategies on Controlling IAS in China" was generated based on these studies and the subsequent workshop.

Guiding Principles on the Management of AIS

User pays: Make those responsible for the introduction of economically harmful invasive species liable for the costs they impose. Importers could be required to take out insurance to cover such liabilities. The government could apply commodity taxes to cover risks incurred by the importation of alien species.

Full social cost pricing: Ensure that the prices of goods and services whose production or consumption exacerbates the damage of invasive species reflects their true cost to society.

Precautionary principle: Precautionary measures should be taken wherever there is a perceived risk even in the absence of complete proof. A risk should be assumed to exist until proved otherwise.

Protection of the public interest: Since the measures to limit damages from invasive alien species invasive alien species are implemented mainly to protect public interests, public funds should be used to support such programmes.

Sharing of information: Agencies holding information about IAS risks liable to be faced by other agencies are required to allow free access to such information and are encouraged to maintain relevant information on open web sites.

Right of redress: Persons or agencies facing threats or damages as a result of IAS have the right to seek compensation from the responsible importers.

Grassroots management: Operate policies and management at the lowest level of government that can effectively deal with the problem.

Holistic approach: Coordinated programmes should involve all relevant stakeholders including NGOs and the general public.

Timely action: Prevention is better than cure and early response is cheaper than delay.

Facilitating coordination and cooperation between relevant agencies

The IAS issue relates to many agencies including those responsible for legislation/enforcement, import/export administration, agriculture, forestry, animal husbandry, fisheries management, marine resources, environmental protection, customs, quarantine, health, research and education. Other agencies involved include the departments of tourism, civil aviation, transport and shipping, army, trade, zoos, botanic gardens, wildlife breeders, food importers, universities and normal colleges. Understanding and cooperation among these sectors on the IAS issue is the key to the successful control of AIS. The number of different agencies involved has resulted in serious overlap and duplication of effort, management gaps and a sometimes unscientific approach to IAS

issues. Moreover, there is far from enough communication and exchange of information among these sectors. Each sector usually considers the IAS issue soley from its own perspective and fails to recognise the potential damage to other sectors, especially the environment and ecosystems. This often results in inadequate or no management measures being taken.

Actions suggested:

- **Establish a "National Invasive alien species Commission" with sufficient authority.** Like the State Environment Protection Commission which serves as a comprehensive coordination mechanism for different government agencies on environment protection programmes, there is a need to establish a National Invasive alien species Commission. Legislation is required to empower such a commission. The commission would exert these rights in the name of the State Council. The rights should include the power to: 1) draft and revise relevant laws and regulations; 2) coordinate relevant sectors/make decision on control strategies; 3) determine permit systems on the importation of AIS, such as revising lists of species to be controlled; 4) draw up and approve terms/definition to standardize terms. Staff and tasks of the commission should be relatively stable.
- **Establish an "Invasive Alien Species Expert Committee".** This will strengthen cooperation and have a supervisory role with respect to scientific research. Legislation is required to give the committee the power to evaluate, supervise and guide scientific research. The committee will manage species lists to be managed. It will also have the function of coordinating different sectors.
- **Hold multiple-sector workshops.** Hosted by the National Invasive Alien Species Commission, the Invasive Alien Species Expert Committee should hold at least two workshops each year which national and international experts and relevant sectors should attend. These workshops will prepare proposals on strategies, actions and programmes and apply and coordinate national and international funds. Each sector should be requested to devote a necessary proportion of its working plan to addressing the issue of AIS.
- **Strengthen information sharing among management sectors.** A Biological Diversity Convention (CBD) Implementation Office has been established under the framework of the CBD. This has initiated the development of a Biodiversity Information Clearing House. The Clearing House should be greatly expanded to promote itself as an important tool of integrating information from different sectors, promoting information exchange both vertically from the grass-roots to central government as well as horizontally between agencies. The Eco-security Task Force of CCICED could be involved in facilitating coordination and help with development of this Clearing House.
- **Strengthen cooperation with research institutions.** Both national and international cooperation and management of IAS should have a solid scientific base. Cooperation between management sectors and ecological societies should be achieved at all levels. In order to deal with the IAS issue more effectively, before and during management operations, ecological specialists should be contacted and consulted to develop specific management plans, steps and approaches. Inappropriate management can exacerbate an invasion or the ecological damage caused by AIS.
- **Strengthen communication and cooperation with local communities.** The IAS issue is

closely related to the life style of every person. Control measures are often implemented in areas with high levels of human activity. In inhabited areas, the IAS issue is closely related to the interests of local communities and the control of IAS will have a direct impact on such communities. Therefore, effective control of IAS requires broad base local participation. Local communities should be encouraged to work cooperatively with IAS government agencies to deal with IAS issues. Local people should be invited to contribute to management plans and it should be recognized that their support is the key to the success of these plans. Use rural spare labor, or, during the fallow season, promote grass-roots control measures. Regional and small scale IAS control or eradication programmes should mostly rely on local people supported by subsidies from the government. Recruit volunteers to promote management of AIS, establish and improve the IAS investigation systems, reporting and response IAS at the community level. Local people should become the front line in dealing with IAS and protecting ecosystems. Education to combat the blind introduction of IAS and destruction of ecosystems is another urgent requirement. Strategies to encourage local people to become involved in this work should be developed.

Strengthening legislation

Existing laws or regulations already address to some degree the control of AIS. These laws or regulations are the People's Republic of China (PRC) Animal and Plant Quarantine Law, PRC Import and Export Goods Inspection Law , PRC Health Quarantine Law, PRC Plant Quarantine Regulations, PRC Animal Epidemic Prevention Law, PRC Livestock and Fowls Prevention Regulation, Agriculture GMO Safety Management Regulation, PRC Wildlife Protection Law, PRC Oceanic Environment Protection Law, PRC Food Hygeine Law, and PRC Plant Introduction Law (for details please refer to Appendix 2). The major agencies resposible for implementing these laws are: the Bureau of Import and Export Animal and Plant Quarantine, Agricultural Techniques Popularizing Center and Plant Protection Stations of MOA which distributed nationwide, the Forest Protection (Quarantine) Stations of SFA, and branches of SEPA and MOA. However, the legislation and agencies mentioned mainly focus on plant diseases, insect pests and weed quarantine. No attention has been paid to invasive organisms that may not cause serious economic losses in the short term but threaten ecosystems and biodiversity. China has a vast territory containing many kinds of ecosystems. Not enough attention has been paid to control of species movements across ecosystems within China, and there is no regulatory mechansim to manage regional AIS. At the same time, although China has taken some measures to control the risk of introductions through national ports, a complete set of IAS control systems is far from established. Little emphasis has been placed on early prediction, supervision, control and rapid response systems to manage invasive species risks. Thus, there is an urgent need to develop legislation to control IAS in order to protect ecosystems and biodiversity.

Actions suggested:

- **Improve existing legislations relevant to AIS.** There is a need to evaluate and improve existing legislation, so that it can adapt to the situation after China has entered the WTO, and to protect both our industries and environment. Add sections on AIS. Strengthen management

of each sector especially aspects pertaining to ecological and environment impacts from AIS. For example, the Plant Quarantine Regulation should be upgraded to a Plant Quarantine Law to strengthen plant quarantine within China. Development of legislation and control plans should be done in consultation with scientists and lawyers.

- **Develop Invasive Alien Species Management Regulation.** Having reviewed existing legislation, the Task Force has agreed that the system is not able to wholly minimize the damage to ecosystems or economic and human health caused by AIS. Consequently it is necessary to begin drafting Invasive Alien Species Management Regulations, which can be upgraded into a law when appropriate. The regulations should address the IAS problem in different regions within China (such as among provinces) and should improve the species introduction permit system.
- **Increase the scientific content of legislation.** Develop managed species lists and risk assessment methodology based on plenary scientific studies and information gathering. These scientific results should be listed as appendices to laws or regulations and serve as references for the implementation of legislation. Laws should be stable for a relatively long period, but the appendices should be updated regularly to keep abreast of advances in scientific knowledge and changing conditions.

Creating Awareness

In the past 50 years, environmental education has helped the public realize the impact of human civilization on the natural environment. There have already been many measures implemented to protect the environment such as measures for the prevention forest fires, reducing chemical and waste pollution, recycling, etc. The new environmental ethic has already effectively changed people's behaviour and IAS education has become a new field in environmental protection. As we know, IAS is closely related to human activities. Human transportation is the key channel for the spread of IAS , therefore peoples' habits and lifestyles are an integral part of the IAS issue. Today, most people know that they should not do activities which will cause chemical or physical pollution. However, most people remain ignorant of the environmental risk posed by carrying or introducing AIS, and the casual release of alien animals remains a major problem in some parts of the world. People should be educated to notice, report and tackle IAS problems. Awareness of the nature and scale of the problem and the respective responsibilities of many sectors of society needs to be increased by a widely ranging programme consisting of the following elements.

Actions suggested:

- ***Establish a new biosafety prevention ethic.*** Widely increase public awareness of the risks posed by IAS and the importance of maintaining biosafety, so that everybody will be conscious of the potential of spreading IAS through their own activities. Each sector and individual should recognise they have a responsibility to control IAS and establish a new ethic which will help prevent the unintentional introduction of AIS. Try to use local species wherever possible. Develop a National Invasive Alien Species Information System to provide information and technological assistance through a network or other channels. Mobilize the public to help the early detection of new alien species and reporting any such recent invaders

to the relevant institutions.

- ***Make IAS education part of the school and university curriculum.*** Build an education base by promoting relevant education in primary and middle schools. Knowledge on controlling IAS should be added to courses on the natural sciences in primary and middle schools throughout China to increase public awareness. Various activities could be encouraged. For example, "Biosafety week" or "Biosafety interest groups" could be established in addition to training workshops, field studies of typical invasive species, writing short scientific papers, collecting alien species specimens and so on. There are already ecosystem and environment relevant specialist courses in universities and colleges. These institutions should regard the training of specialists to deal with IAS issues as a long-term task. Normal universities should set bio-security education as a basic course. Academies should take in graduate students and Ph.D candidates to major in IAS studies, and send scholars to overseas institutions study IAS problems and management. Faculties of environment protection, nature resources, economic trade, legislation and administration, should also include relevant aspects of IAS management in their own training courses.
- ***Fully utilize mass media:*** The mass media are the most efficient means of promoting public awareness. Radio, television, films, newspapers, magazines, electronic publications, websites etc. can all be used to increase public awareness. Government agencies and NGOs should organize various activities and use the media effectively to publicize these. Use public, easily accessed and attractive approaches, such as education courses or public display boards. Establish education stations in ecologically vulnerable sites, provide various education materials, and make sure that every family is aware about the IAS risk at these sites. Take advantage of World Environment Day, Earth Day, International Biodiversity Day and other relevant commemorative days and important conferences to conduct intensive education programmes. In urban areas, establish long term education IAS display panels in scenic spots, zoos, wildlife parks, botanic gardens, and aquariums. Various protected areas including nature reserves, world heritage sites, and scenic spots should include IAS public awareness as one of their long-term tasks. Ecologists and biologists should also be actively involved in disseminating information and educating the public about AIS.
- ***Conduct high-profile media events to stimulate public interest:*** conduct well publicised, attention-grabbing projects and action programmes to draw the attention of the public. Mobilize artists and scientists to work together, and present the IAS issue in media-friendly ways. Create a strong public voice in society and increase public pressure on those responsible for IAS management, especially the relevant officials at various levels of government. Refer to positive and negative case examples to improving public awareness of how IAS threats should and should not be managed. Strengthen media and public scrutiny of IAS management, praise best practices and expose illegal behavior. The objective of public education is to make society aware that the IAS issue is a basic component of bio-safety, and that managing the IAS threat depends on the vigilance and voluntary cooperation of the entire community.
- ***Hold various training courses.*** Ecological research and education institutions should be in charge of providing training materials; conservation and management experts should be engaged in preparing training plans and teaching materials. Training methods must be enjoyable and flexible to suit different situations. Course contents should be both specific and

practical. If possible, training should be conducted locally, and integrated with the local situation. Relevant local people should be heavily involved. There should be special in-service training courses for local government planners and officials.

- ***Public access to information.*** Since the public has the right to obtain relevant information it is necessary to establish channels to effectively disseminate such information. These could include an IAS telephone "hot-line", research institutes, and public web sites. Bulletins should be active and on time.
- ***Shared experience:*** international exchanges of experience, information and expertise
- ***Promote NGO's role on education.***

Strengthen International Cooperation

The IAS issue is a global issue that transcends national borders. Therefore, controlling IAS inevitably involves international trade, customs, quarantine, etc., all of which will have impacts on the economy and international relations. Control techniques (for example, the introduction of natural enemies of AIS) will require international cooperation and research. It is necessary to share information and cooperate with neighboring countries, especially in Southeastern Asia. Some species (Crofton Weed (*Eupatorium adenophorum*)) entered China either naturally or through human activity from Southeastern Asia. Many IAS in southern China are also spreading into Southern Asia. Therefore, it is necessary to maintain clear lines of communication with these countries to ensure information sharing and coordinate management of IAS threats.

Action suggested:

- China should fully participate in relevant international initiatives. These include: the Convention of Biological Diversity, Cartagena Protocol on Biosafety, United Nations Convention on the Law of the Sea, Ramsar Convention (Wetlands of International Importance), Convention on Migratory Species of Wild Animals (Bonn), International Plant Protection Convention, Plant Protection Agreement for the Asia and Pacific Region, Agreement on the Application of Sanitary and Phytosanitary Measures, International Health Regulations, Agenda 21, Code of Practice on the Introductions and Transfers of Marine Organisms, Code of Conduct for Responsible Fisheries, Code of Conduct for the import and release of exotic control agents, Prevention of the Introduction of Invasive Alien Species resolution of the International Civil Aviation Organisation, Convention on International Trade in Endangered Species of Wild Fauna and Flora, Global Invasive Species Programme, and etc. (for details please refer to Appendix 3)
- China should enter into special cooperation agreements with its many land neighbours and nearest marine neighbours. ASEAN countries are currently developing an ASEAN Regional Strategy on Invasive Alien Species and are keen to include what they term ASEAN plus 3 (China, Korea, Japan).
- Strengthen cooperation with trade inter-transfer ports, such as Hong Kong, Macao and Taiwan.

- Invite involvement of IAS international experts in drafting relevant law.
- International experts should be invited to assist with training relevant staff and to exchange information and experiences

Develop Research Capacity

Greater research effort should be diverted to solve several urgent IAS problems:

Action suggested:

- Improve facilities and establish technical bases for controlling AIS. Develop national alien species information and data collecting nodes and an information sharing mechanism. Gather information and fill gaps where basic information is lacking. Develop an Invasive alien species Information System and form the base for management decision-making. Establish an alien species identification center, setup required equipment and form academic groups focused on dealing with the IAS threat. Develop research institutes and mechanisms for cooperating on the IAS issue.
- **Strengthen fundamental studies.** Basic scientific studies form the foundation for controlling AIS. For example, *Flora of China* and *Fauna of China* should be revised, and amended by inclusion of material on AIS. Promote greater taxonomic skills particularly parataxonomy at local levels so that people can spot IAS or notice the appearance of new species in their environment. Conduct systematic surveys, region by region and sector by sector to get a comprehensive understanding of the IAS situation IAS in China. Build basic information interfaces and initiate monitoring. Conduct further studies on the impacts of IAS on ecosystems and the environment. Conduct studies on the relationships between human activity, climate, land-use and the spread of alien invasive species. Identify key habitats and localities that require special protection from the threat of alien invasives. Identify key zoogeographic barriers where intra-national controls on the movement of species should be applied.
- **Strengthen studies on relevant methodologies, criteria and guidelines.** Develop standards of IAS management, incorporate international technical criteria appropriate to the Chinese situation, and develop national or sector criteria for investigation, monitoring, evaluation and management. Develop suitable risk assessment methodologies for respective sectors. Develop sound field trial methods and criteria for different taxa. Develop suitable field monitoring and reporting methodologies for different sectors. Develop and test appropriate technologies for the containment, eradication and control of different invasive species. Develop specific safety tests for GMO's. Develop methodologies for habitat restoration. Develop better screening procedures to exclude alien species from packing materials, ballast water, ships' hulls, luggage etc.

Develop Management Capacity

Control and management of IAS requires high quality, efficient and progressive personel. Therefore, there is an urgent need to improve the quality of managers at all levels, and establish

management teams qualified to deal with AIS.

Action suggested:

- **Strengthen institutional and system development.** Form cross-sector working teams and committees at different levels. Establishing IAS specialist positions in natural resource management agencies. Develop monitoring and reporting as part of an early warning system. Develop rapid response mechanisms appropriate to different sectors**.**
- **Provide Traing.** Training in parataxonomy is needed so that field teams can undertake monitoring of indicator species and detect alien species in local environments. This should include: the training of customs and quarantine staff in recognition of potentially dangerous or banned species, design and introduction of new materials into education and training programmes, training of local teams in environmental restoration techniques, inclusion of IAS aspects in Environmental Impact Assessments, training in risk assessment and field trials, improved data management and information access and familiarisation with international programmes, initiatives, terminology and standards.
- Management capacity requires urgent strengthening in several sectors especially at the local level.

Develop IAS risk assessment system

The degree of risk posed by an alien species needs to be estimated by conducting risk assessment prior to authorizing release. Consequently, an invasive risk assessment system is urgently needed. This system should be based on characteristics of alien species and determine the risk of a given species establishing itself in the wild. The risk assessment system can be part of the introduction permit system, but should also be used by local management departments to manage local alien species, detect potential IAS threats, identify species that require monitoring, develop control strategies and promote awareness. Risk Assessment forms the basis for granting or not granting permission to import, introduce or release alien species or undertake activities considered to have a risk of accidentally introducing or inviting alien species invasion.

Risk Assessment has several components – health risks; threats to productivity; threats to local wildlife and biodiversity; risks of causing environmental damage or loss of the ecological services of ecosystems. This may require different kinds of screening and assessment by different concerned sectors but two major components will generally be: ‘What is the likelihood of this species becoming invasive in the environment?’ and ‘What type of damage or loss could such a species cause?’. Being found to be a low risk to one sector does not imply that a species has no risk to other sectors, and being found to be of low risk in one region does not imply that the species will also be low risk in different regions or ecosystems.

Currently, some relevant departments have established Risk Assessment Systems. The SQCA has conducted Pest Risk Analysis (PRA) since 1980, and its plant PRA work is in the ahead of the global plant quarantine field. It has developed qualitative and quantitative risk assessment procedures incorporating GIS software, and has created technical bases for quarantine

management agencies. The MOA has organized an agriculture research institute and academies and SFA has also organized the Chinese Academy of Forestry and other research institutes to conduct risk assessment. SEPA has organized the Nanjing University and other environmental protection research institutes to establish a risk assessment system. The ETF/CCICED has also draft a risk assessment system (Appendix 4: Alien Species Invasion Risk Index System). The participants agree that the system should primarily "assess the risk of alien species becoming established in the wild" instead of focusing on the potential "economic damage" caused by alien species. This makes the system more ecologically relevant, but at the same time creates a need for more detailed information.There willl inevitably be situations where the risk of an alien species becoming established in the wild will be unknown due to a lack of information. The appropriate response in such situations requires further consideration.

Action suggested:

- **Establish a species introduction permit system.** Based on the precautionary principle, establish a "Species Introduction Permit System". This would require any individual or organisation who want to introduce alien species from foreign countries or different ecosystems within China to apply for a permit. The permit cannot be issued until it has been proved that the proposed introduction will not cause damage to national or regional ecosystems, the environment, human health or economic development. As China is so huge, this requires regional screening. A species found to be safe in one part of China cannot be assumed to be safe in other regions. Each province should issue its own licenses for importation.
- **Revise the organism list:** Some import and export quarantine species lists have been developed in China but are far from complete. Updated potentially invasive species lists are needed. Th introduction of species on those lists should be prohibited or restricted according to the degree of perceived risk. Dynamic lists are recommended. Lists should have 3 categories: 1. Black List. Species known to be invasive and so destructive that their introduction should be prohibited; 2. White List. Shows species that stringent testing has shown to have such a low probability of invasion that they can be introduced; 3. Grey List. Shows species of uncertain risk that require further risk assessment. The Grey List includes all species not listed in the black and white lists.
- **Develop an Alien Species Invasive Risk Assessment System.** Organize a cross sector team, including experts from the State Quality Checking Agency, MOA, SFA, SEPA, SOA and CAS, to develop an Alien Species Invasive Risk Assessment System. The team could work as a Task Force. The system should consider the impacts of IAS on the economy, environment and society, placing particular emphasis on long term ecological impacts.

Field Release Trials

Action suggested:

In many cases field release trials under controlled and reversible conditions may be a necessary component of risk analysis prior to giving permission for more widespread releases. This is

particularly relevant to the release of GMO's.

One particular problem in this respect is the long lag time invasive alien species invasive alien species between the time of a species first establishment and the time when its invasive nature becomes evident. Because of this, it is prudent to apply the precautionary principle and assume a high risk for any alien species that shows it is capable of establishing itself in the natural environment without further human assistance. By simply occupying space, the species is already competing with some local species.

Information Sharing

The sharing of information is one of the cornerstones of the national programme for combating alien invasive species. It is essential that everyone involved in the programme have access to the best possible information.

Action suggested:

- **Compile information on AIS.** This information will include both the identification of AIS and the risks associated with given species. This information can be organized into coded lists. For instance a Black List showing species known to be invasive and so destructive that their introduction should be prohibited; a White List showing species that stringent testing has shown to have such a low probability of invasion that they can be introduced; a Grey List showing species of uncertain risk that require further risk assessment. Knowledge about species movements – source, pathway and destination of species - is required including the movement patterns of migratory species. The main requirement is information on the natural ecology of species such as: details of natural enemies, diseases or controlling agencies of species; details of the documented continuing spread of invasive species, preferably in point plot map format; case studies of the impact, damage or health hazards associated with particular species; access to best practice methods for eradicating or controlling different species. Details of international protocols, standards and practices are also required, such as, details of land cover, land-use, major development plans and scenarios of climate change.
- **Manage information by using databases.** Such data need to be maintained in easily accessible databases, preferably on open web sites. Databases should be maintained and regularly updated by data custodians familiar with the nature of the data, i.e. experts in the particular taxa or sector concerned, but also need to be linked into an efficient network for wide access. The network will itself need to be networked to regional and global databases due to the transfrontier nature of the datasets involved. A network is more efficient than a centralised database because data can be managed by specialists and can be updated without downloading or multiple editing of the same files or records. There is some sense in having a central website at the hub of the network which can generate news, highlight developments and serve as a search engine to direct the data seeker to the most appropriate database. Databases need to be dynamic and responsive. Interactive databases should be able to receive raw data quickly from the field but such data requires screening and verifying before being uploaded onto public sites.

Strengthen Monitoring：

Field monitoring is the basis for the early detection and rapid response to the establishment of new alien species; evaluating the effectiveness or success of control prescriptions; reporting to database systems and information sharing. High levels of public participation are required.

Actions suggested:

- **Improve IAS surveys.** Conduct surveys at the level of province or county to determine the status of local IAS and their impacts on local ecosystems. Then conduct regular surveys each year to monitor changes. Strengthen specific survey and monitoring of particularly harmful IAS and in critical areas (such as seriously impacted areas, ecological vulnerable areas and ecological nature reserves)
- **Strengthen information management system development.** Gather and manage information on AIS, especially data from field surveys and monitoring. Develop database and GIS records, map impact situation at county level. Using a website, compile monitoring information from various sectors and develop it into dynamic database that can be updated frequently. Develop an identification expert database, so that experts can be easily located to help identify potential AIS.
- **Develop monitoring procedures and criteria.** The details of monitoring will differ from sector to sector. The agriculture sector would monitor weeds, pests and other agricultural problems, fisheries would monitor catch size, species composition, species size and condition; foresters would monitor weeds and pests in forests and plantations whilst conservationists would note the appearance of new species in the natural environment; health agencies would monitor the spread and movement of diseases and disease vectors, trade agencies monitor patterns of demand, supply, consumption and customs and quarantine monitor species and their condition at ports, borders and other checkpoints. Suitable monitoring procedures still need to be developed by different sectors and staff trained to implement these procedures.
- **Develop reporting and bulletin system.** A regular reporting system will gather information on time which will assist in making reports to management sectors and timely management. The government agencies responsible should publish prevention lists, impacts and relevant control measures.
- **Develop monitoring responsibility system.** Organisations or individuals that seek to introduce new species should be required to contribute to the monitoring of such species to avoid the risk of invasion. If an introduced species becomes invasive, the introducer should be responsible for its eradication, and face legal or economic liabilities.
- **Strengthen monitoring capacity training.** In some cases there will need to be an improvement in the staff's abilities to recognize different species; this could be assisted by the production of specific keys or identification guides. Such guides could also be made in easily to use electronic formats – web, palm computers etc.

Develop an early detection system

Even the best standards of quarantine and controlled introduction systems cannot totally prevent

the invasion of alien species; it's inevitable that some alien species will intentionally or unintentionally be introduced into a new ecosystem and that some of these will become invasive. For example hundreds of varieties of grass are currently being introduced into China as part of the growing turf industry. If a new invasion is not detected and control measures are not taken in time, serious damage will probably occur. Early detection and timely control measures are essential since: A) The cost of control is extremely high and artificial removal is often impossible. B) Many invasions cannot be controlled. China already has some early detection systems. SQCA has a report system on port interceptions that requires making daily reports and developing a database. MOA, SFA, and SOA have their own epidemic reporting systems. These departments also have an epidemic monitoring system. However, these systems are only applied to a very limited number of quarantined species and there is no monitoring and early detection system for species that may impact on the environment and ecosystems.

Action suggested:

- **Establish a National Early Detection System.** As a matter of fact, to establish a national prediction system of invasive alien species is to develop a coordination mechanism between local and central governments. Governments should establish multimedia networks (websites, publications, CD, etc.) to provide information on invasive alien species, help evaluate the risks posed by them, predict potential influence and offer recommendations on management measures. At the same time, all sections should report new records and current status of invasive alien species to the responsible authorities through the appropriate channels. This early prediction system supplements introduction control measures. The two measures can work together to better combat the economic and environmental losses resulting from invasive species.
- **Develop an early warning system at the provincial level.** As important as the monitoring itself is the swift transfer of data to databases that can collate and analyze it at different levels. This forms the basis for an early warning system. Data should be reviewed by specialists, probably at provincial level so that early alarm can be given whenever new invaders are noticed or established alien species show signs of becoming invasive. These provincial agencies should have the capacity to make spot checks to verify incoming reports, verify species identification or propose revision or intensification of monitoring procedures. It is recommended that such agencies are based in provincial offices of SEPA but have the ability to call on provincial experts in other agencies or academic institutes. In consultation with national and other provincial agencies, provincial units should decide on the most appropriate response to new threats and launch appropriate actions within the appropriate time-frame.

Develop quick response system

Strict monitoring is needed for established IAS alien species that have high invasive risk. Once there is any sign of invasion or reinvasion, control measures should be put in place as quickly as possible. To avoid outbreaks of AIS, an efficient quick response system should developed. Currently SFA has some quick response systems, such as aerial control. MOA has a quick response system to deal with a serious epidemic situation, and SQCA has a relevant emergency

action plan. However, these existing quick response systems do not consider the problems facing the environment and ecosystems. There is an urgent need to develop quick response systems to deal with full-scale, especially environment and ecosystem, invasions. When the actions to be applied in response to new threats are determined, these should be transmitted to grassroots agencies at the county, or even village, level for action. The effectiveness of the rapid response mechanism will depend on the efficiency of the entire communication network and the preparedness of the local agencies to undertake the prescribed actions. This in turn will depend on manpower, budgets, availability of suitable tools or equipment, training and skills. Creating such capacity will be the role of the management capacity development programme.

Actions suggested:

- **Train staff in bio-emergency response techniques and prepare equipment and resources.** Very different types of training and readiness will be required in different sectors, but actions could include: manual weeding of invasive plants, applications of herbicides and pesticides; erection of animal fences; capture and destruction of dangerous animals; taking of samples or specimens for further analysis; inoculation programmes; erection of checkpoints; destruction of poultry or animal herds; restriction of access to critical areas; halting of ongoing construction projects etc.
- **Establish emergency fund for controlling AIS.** Ensure that there are enough funds for quick response. This fund should be able to cover costs for hiring experts to conduct identification and research, field surveys, eradication operations and subsequent monitoring.
- **Develop vulnerable area system.** Classify vulnerable areas according to their degree of risk. Set up buffer zones to strengthen quarantine and control introduction channels to stop bioinvasion to vulnerable areas.
- **Improve quick response capacity.** Strengthen education and training on known high risk species, so that problems can be identified as quickly as possible and timely action taken. The species listed in *Invasive alien species in China* can be a good reference.

Develop a system of economic responsibility and appropriate penalties

At present, most people are ignorant of scale of economic losses resulting from AIS. Invasion is usually is a slow process with limited initial impact and unclear economic loss. At this stage, it is difficult to prove that a given species is invasive, therefore such species receive little attention until an irruption causes great economic loss. When people intentionally or unintentionally introduce some species to new habitats, they are usually not aware of the risks. Moreover, in most cases, these risks do not threaten their own interests. Before an IAS causes great damage, people can hardly monitor them, take early control measures or accept economic responsibility for the subsequent impacts of such species. When damage finally occurs, all economic costs are carried by others or future generations, rather than those who permitted or imported these pests. This is neither fair nor reasonable.

It is a ridiculous situation that China, which has probably has more native species of grass than any other country, has never developed any of these species commercially. 95% of all grass planted in China is alien seed. The risk introduced by such practices could easily be avoided by

using native plant resources in preference to exotic plants.

Action suggested:

- **Include IAS control as one of the ecological conservation measures in the national financial budget.** Ecological conservation is a basic task for all levels of government. Government responsibilities should include the quarantine and control of AIS, which should also be included in the ecological conservation plans of different levels of government, including the national basic plans and budget. Central and local governments should arrange funds accordingly. Within the national budget, basic construction investment, agriculture support funds, ecological restoration and environment integrated renovation funds, unemployment benefit funds, poverty alieviation funds, environment conservation funds, integrated agricultural development funds, plus all industry and enterprise fees, should regard IAS management as an important component of their annual plans and increase the amount allocated for this yearly.
- **Develop a risk fund.** Since the impacts of IAS may only become apparent after several decades it is possible that the agency responsible for the importation of a species that subsequently becomes and invasive pest may no longer exist. Therefore, all importers should be required to pay into a risk fund according to the estimated degree of the risk posed by the organism they import, or establish a risk sharing system to transfer some of the economic risk of IAS to the private sector or commercial insurance companies.
- **Develop measures to compensate for losses caused by AIS.** In addition to legal punishment for people or agencies who who illegally import AIS, these parties should also be required to pay compensation to those who suffer economic or other harm as a result of their actions. Victims of economic or other damage caused by IAS should also be able to apply for compensation from the National Government. There is also a need to scientifically evaluate the risk posed by species currently listed in introduction duty fee policies**.**
- **Develop economic penalties.** Appropriate government agencies should develop and implement regulations for applying economic penalties to agencies or individuals responsible for ecological damage and economic loss. If an imported alien species is no longer required due to changes in market prices, the agencies or individuals who introduced it should either properly dispose of it, or pay for its proper disposal.
- **Improve cost-benefit budget methodology.** Effective control of invasive alien species requires clearly defined responsibilities. Especially in international or national trade, the cost of potential risks by introducing IAS should be factored into trade costs. A fair and reasonable mechanism to define the economic responsibilities of introducers of potential IAS should be developed. The introducers should evaluate the risk of given introduced organism, undertake field trials, monitoring and control measures, and accept responsibility for compensation if the IAS organism causes damage. If introducing an alien organism carries an economic cost proportional to the risk it poses to the environment introducers will consider such introductions more carefully.
- **Promote the use of local species.** Encourage local governments to promote the use of local species. Develop policies to promote public use of local species. Strengthen scientific studies on local species to build a scientific basis for their utilization. A proposed introduction of an

alien organism should only be considered if it has been proven safe to human health and the environment and if there isn't a suitable local equivalent.

Prevention Measures

The best way to reduce the risk of invasive alien species invasive alien species is to prevent their entry into the country or area of interest.

Prevention has several components:
Legal: regulations to prohibit or control the import or movement of high risk species
Permits: to control import, export and movement of potentially risky species
Quarantine: to reduce the risk of accidental entry of species
Customs: to check for illegal movement of species and verify details of permitted movements of species

Actions suggested:

- All these mechanisms are already in place in the health sector and as part of the CITES agreement to which China is a signatory. All that is required is an expansion of the lists of species requiring different types of permits.
- Under CITES an exporter from another country must acquire both an export permit from the country of origin and an import permit into the destination country before shipment is possible. In this way unwanted shipments are prevented at point of origin, not halted at the gates of the destination country. Such a system should be extended to all species imports.
- Customs officers would require training to identify high risk species.

Eradication programmes

Where border control measures have been breached and a new alien species has become established and detected through the 'early warning system', a quick decision should be taken as to whether eradication should be attempted. Similarly, a permitted introduction may result in an unexpected invasive situation in which case there must be the capacity to quickly withdraw the permit. Another possibility is that a species which has not been permitted for release, but has been permitted for captive confinement, escapes from its cage. In this case an eradication programme needs to be initiated as soon as possible. Such a programme should be supervised by specialists. Techniques will vary from case to case. A disease may be controlled through inoculation. Escaped vertebrates may be trapped, hunted, or poisoned. Weeds can be physically removed or killed with herbicides. Biological control agents can be introduced to prey on or parasitize the pest species. In the case of insect pests, sterile animals can be introduced into the feral population to reduce its fecundity.

Action suggested:

- **Develop effective eradication capacity before taking action.** Eradication and control have very different objectives. Control operations attempt to limit the impact of an IAS by restricting its population size or range IAS , while eradication attempts to entirely exterminate an invasive species from a given region. Obviously eradication is preferable since it eliminates the pest and obviates the cost of long-term control. However, eradication is usually more difficult than control and may not always be feasible. Effective eradication operations require careful evaluation and planning and adequate resources. These include: 1) A sound scientific base that must be carefully reviewed by authorising agencies before the operation is launched; 2) Effective monitoring methods to ensure that the pest is, in fact, eradicated; 3) The support of the local community and all relevant stakeholders; 4) The support of relevant legislation and institutions; 5) Adequate funding; 6) Effective, cost-effective techniques; 7) Measures to prevent any further introduction or invasion. It is important to ensure that eradication techniques and approaches are environmentally sound, ethical and socially acceptable. Methods should only affect the target species and do minimal damage to local biodiversity and the environment. There should be provision to undertake any necessary ecosystem restoration measures after eradication.

- **Developing suitable methods of response** forms part of the research capacity programme, learning successful techniques through the information sharing system will be very important and training in the application of such techniques will form a major part of the management capacity programme.

Control programmes

Total elimination of pest species is usually difficult and is virtually impossible unless the pathway of invasion can be terminated. An interim stage that is easier to achieve is, control ; the containment of an IAS within a prescribed geographical area. It is usually only possible to apply control programmes to prevent the further spread of IAS and minimise their ecological impact.

Actions suggested:

- In managing control programmes it is necessary to carefully monitor expenditure against perceived damage mitigation. Sometimes the costs of control are too high relative to the benefits achieved. But there are many cases where the savings from control programmes are hundreds or thousands of times greater than the cost.
- Again, the same caveats apply to control programmes as elimination programmes.

Critical Site protection measures

Where invasive alien species invasive alien species are already well established inside the country and eradication is deemed impossible, it becomes important to reduce their impact on local biodiversity by ensuring security for precious and endemic species at key sites. Such sites include

the national system of protected areas and other geographically critical areas such as areas of local endemism, isolated lakes, mountains, mangroves, islands etc.

Actions suggested:

- Special management or protection measures should be considered for such sites. These should include: Strict prohibition of any alien introductions within the site or a surrounding buffer zone; Careful planning of surrounding land-use adjacent to the critical site; Vigorous monitoring of the site and surrounding areas; Aggressive control and eradication programmes for alien species found in site or surrounding areas; Protection of key species on isolated islands that can be more effectively protected from alien invasion.
- Protected areas should not be used as release sights for confiscated wildlife that have not been screened for diseases and are of unknown origin. Only healthy local species should be released into protected areas.

GMO issue

China is gradually becoming a big producer and importer of transgenic organisms and products. The impacts of these organisms on ecosystems and the environment should be evaluated. GMOs are a kind of alien species. The GMO issue in China has the following features: 1) The geographical scale is large. A main GMO crop is transgenic cotton which has been planted over 1.5 m hectares. There are also another 4 kinds of crops including corn, soya, tomato, and Petunias that have been commercialized. In addition, each year there are 15 m tons of soya beans imported from the USA most of which are transgenic. 2) The public lacks awareness of the issue. There may be advantages in having some GMO foods on Chinese markets, however without labeling consumers' rights have been violated. 3) Legislation is not complete. Although the Ministry of Science and Technology, MOA and MOH have issued some regulations, inconsistency among these complicates management.

Actions suggested:

- **Strictly limit the scope of GMO technology.** One of the transgenic crops developed is a Petunia which has been genetically modified to have a different colour. It is surely not worth risking environmental damage simply to improve a plant's beauty. Traditional selection & hybridization are quite adequate technology for developing such novel ornamental varieties. The only justification for GMO's is to improve the production, quality and safety of food, to reduce environmental damage (e.g. herbicides) or to benefit human health through the development of new therapies or reducing the cost of medicines..
- **Improve coordination among government sectors.** Improve management cooperation among different government agencies, and establish a GMO bio-safety expert group. Improve legislation through cooperation and sharing information. GMO crops are closely related to commercial interests and patent issues, legal experts should be involved in dealing with these issues.
- **Use precautionary principles in GMO management.** As with other AIS, GMOs should be

presumed to be a bio-security risk and be required to be proven safe before introduction. Since most introductions of GMOs are intentional, there is a need to strengthen the permit system for their introduction and environment release. Management of GMO should also consider the particular local uses of such crops in and across China. For example, although trials of commercialized GMO cotton in the USA focused on detecting adverse skin reactions from wearing cloth made from this material,,in China oil made from cotton seed is a widely consumed food. Therefore, blind acceptance of safety certification from other countries is inappropriate and could well be disastrous. At the same time, the health and environment responsibilities pertaining to introduced GMOs should be shifted to the introducers.

- **Strengthen ecological risk evaluation and environment release trials and monitoring.** China is rich in biodiversity and is the place of origin of many commercially important crops. Since there are wild or related varieties of these crops which can easily become genetically polluted by closely related GMOs there is considerable risk in the incautious release of such organisms. It is necessary to conduct ecological risk evaluation and environment release trials and monitoring, and research the impact of GMOs on native biodiversity. Particular attention should be paid to high risk species such as transgenic fishes. Hybridization and gene movement in such organisms will be difficult to manage and monitor. Once damage occurs it may be irreversible.
- **Improve public access to information.** There is need to increase public awareness. Since GMO foods are now on the market, there should be improved labeling to facilitate tracking, monitoring and management.
- **Separate management and industry, and ensure the neutrality of departments responsible for evaluating and management.** Neutral departments that have no vested interest in the importation of alien species or organisms will have more objective judgment and management concerning IAS issues. Regulations must consider not only the environment, biodiversity, human health and animal welfare, but also national security and social equity. As a developing country with rich resources, China has to ensure the safety of the ecosystem, environment and genetic resources, and avoid becoming a testing ground for the GMOs of other countries. There are considerable social implications in the widespread use of GMOs (see Appendix 5).
- **Develop a strategy for the management of GMOs.** GMOs are a special group of IAS that pose a clear potential threat to the environment. Since their assessment and management is similar to that of other AIS the strategies that have been developed in the report for IAS can be also used to manage GMOs. However, the GMO issue is more complicated, and there are additional risks due to the inherent genetic instability of these organisms that have additional health, food safety, political and economic implications. Further evaluation should be conducted and a separate strategy for managing GMOs should be developed.

Appendix 1: Expenses for control and loss from alien invasive species

Species	Economic variable	Time	Influence (RMB)	Place
Eupatorium adenophorum	Econ. Loss of animal husbandry	Every year	Several 10 million yuan	Liangshan Prefecture, Sichuan Prov.
Eupatorium adenophorum	Control	Several years in 90s,2000	150 thousand yuan	Liangshan Prefecture, Sichuan Prov.
Eupatorium adenophorum	Control	Several years in 90s,2000,every year	800 thousand yuan	Liangshan Prefecture, Sichuan Prov.
Eichhornia crassipes	Artificial eradication	1999	5 million yuan	Putian, Fujian Prov.
Eichhornia crassipes	Artificial eradication	1999	10 million yuan	Wenzhou City, Zhejiang Prov.
Eichhornia crassipes	Artificial eradication	1999	> 0.1 billion yuan	Whole country
Ambrosia artemisiifolia	Pollen allergic	Every year	> 1 million yuan	Whole country
Alternanthera philoxeroides	Economic loss	Every year	0.6 billion yuan	Whole country
Liriomyza sativae	Economic loss	1995	24 million yuan	Sichuan Prov.
Liriomyza sativae	Economic loss	1995	110 million yuan	Shandong Prov.
Liriomyza sativae	Control	Every year	0.45 billiion yuan	Whole country
Nutria	Economic loss	1994-1996	20 275 yuan	14 peasant families, Hubing township, Gutian county, Fujian Prov.
Pinewood nematode	Economic loss		0.5 billion yuan	Anhui & Zhejiang Provs.
Pinewood nematode	Only reduce 4000 ha	One year	60 million yuan	Guangdong Prov.
Spartina alterniflora	1 year loss of aquaculture	1990	> 10 million yuan	Around Dongwuyang, Ningde City, Fujian Prov.
Spartina alterniflora	1 year loss of aquaculture	Every year	Peasant income decreased by several hundreds million yuan	6 counties of Fujian Prov.
Fowl influenza	Living fowl burned, compensating loss	1997	0.14 billion H.K.D	Hong Kong
Several main IAS	Economic loss	Every year	57.4 billion yuan	Whole country
All IAS	Economic loss	Every year	Several hundreds billion yuan	Whole country

Appendix 2:

Chinese major laws and regulations pertaining to IAS management

Laws and regulations	Species/ Ecosystem involved	List
People's Republic of China (PRC) Animal and Plant Quarantine Law, 1992 Implementing Details on People's Republic of China (PRC) Animal and Plant Quarantine Law, 1997	Animal infection, verminosis and dangerous diseases, pests, weeds and other organisms threatening plants	1. A quarantine list of dangerous diseases, pests and weeds (1997). 84 quarantined pests, diseases and weeds 2. A list of first and second class epidemic and parasitic diseases of imported animals (1992). 97 imported animals listed as requiring quarantine including 15 first class and 82 second class diseases 3. A list of animals, animal products and other quarantine goods which are forbidden to be carried or mailed into the PRC 4. A list of forbidden imported plant quarantine objects
PRC Health Quarantine Law 1986，1992 Implementing Details on Health Quarantine Law 1989, 1997	Infection	
PRC Plant Quarantine Regulations, 1983, 1992 Implementing Details on Plant Quarantine Regulations (Agricultural part) 1983, 1995 Implementing Details on Plant Quarantine Law (Forestry part) 1984, 1994	Dangerous diseases, pests and weeds threatening plants	1. A list of plant quarantine objects and plants and plant products to be quarantined (1995). 32 quarantine objects including 12 diseases, 17 pests and 3 weeds. 2. A list of forest plant quarantine objects and forest plants and their products to be quarantined (1996) lists 35 domestic forest plant quarantine objects
The PRC Animal Epidemic Prevention Law, 1998	Animal epidemic and verminosis	
PRC Livestock and Fowls Prevention Regulation, 1985 Implementing Details on PRC Livestock and Fowls Prevention Regulation, 1985, 1992	Livestock and fowl epidemic (including verminosis)	A list of first, second and third class livestock and fowl epidemic diseases (1992), 51 livestock and fowl epidemic (including verminosis)
Agriculture GMO Safety Management Regulation, 2001	Agriculture GMOs	
PRC Wildlife Protection Law, 1989 Implementation Regulations on	Captive wild animals. Requires that appropriate measures be taken to prevent their escape to the wild. Return of such animals to the wild	

Protecting Terrestrial Wild Animals, 1992	requires scientific reasoning and submission of a report to the Forestry Authority of the State Council for approval.	
PRC Oceanic Environment Protection Law. 1982, 1999	Before introducing marine animals, there should be scientific evaluation to avoid ecological damage.	

Appendix 3: International and regional legal instruments and institutions pertaining to invasive alien species

Instrument/Institution	Relevant Provisions/Decisions/Resolutions
1. Convention on Biological Diversity (Nairobi, 1992) http://www.biodiv.org	Article 8(h). Parties to "prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species".
2. United Nations Convention on the Law of the Sea (Montego Bay, 1982) http://www.un.org/Depts/los/losconv1.htm	Article 196. States to take all measures necessary to prevent, reduce and control the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes.
3. The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971) http://www.ramsar.org	COP7—Resolution VII.14 on Invasive Species and Wetlands
4. Convention on Migratory Species of Wild Animals (Bonn, 1979) http://www.wcmc.org.uk/cms/	Range State Parties of Endangered Migratory Species (Annex 1) to prevent, reduce or control factors that are endangering or likely to further endanger the species, including exotic species. (Article III (4)(c)). Agreements for Annex II Migratory Species to provide for strict control of the introduction of, or control of already introduced exotic species detrimental to the migratory species (Article V (5)(e)).
5. Convention on the Law of Non-navigational Uses of International Watercourses (New York, 1997) http://www.un.org/	Watercourse States shall take all necessary measures to prevent the introduction of species, alien or new, into an international watercourse. (Article 22).
6. International Plant Protection Convention (Rome, 1951, as amended in 1997) http://www.fao.org/legal/treaties	Creates an international regime to prevent spread and introduction of plants and plant products through the use of sanitary and phytosanitary measures by Contracting Parties. Parties establish national plant protection organizations and agree to cooperate on information exchange and on the development of International Standards for Phytosanitary Measures. Regional agreements for Europe and the Mediterranean, the Asia-Pacific, Near East, Pacific, Caribbean, North American, South American, South America and Africa.
7. Plant Protection Agreement for the Asia and Pacific Region (Rome, 1956) http://www.fao.org/legal/treaties	Contracting Governments to prevent the introduction into and spread within the South East Asia and Pacific Region of plant diseases and pests. A supplementary agreement under Article III of the IPPC.
8. Agreement on the Application of Sanitary and Phytosanitary Measures (Marakech, 1995) http://www.wto.org/english/tratop_e/sps_e/spsagr.htm	A supplementary agreement to the WTO Agreement. Applicable to all sanitary and phytosanitary measures directly or indirectly affecting international trade.
9. International Health Regulations (Geneva, 1982) (adopted by the 22nd World Health Assembly in 1969 and amended by the 26th World Health	To ensure maximum security against the international spread of diseases with a minimum interference with world traffic. Regulations

Assembly in 1973, and the 34th World Health Assembly in 1981) http://www.who.int/emc/IHR/int_regs.html	strengthen the use of epidemiological principles as applied internationally, to detect, reduce or eliminate the sources from which infection spreads, to improve sanitation in and around ports and airports, to prevent the dissemination of vectors and to encourage epidemiological activities on the national level.
10. IUCN-Guidelines for the Prevention of Biodiversity Loss Caused by Invasive alien species (2000) http://www.chinabiodiversity.com/shwdyx/ruq/ruq-index-cn.htm	Guidelines designed to increase awareness and understanding of the impact of alien species. Provides guidance for the prevention of introduction, re-introduction, and control and eradication of invasive alien species.
11. Guidelines for the Control and Management of ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens. (Resolution A.868 (29)1997, International Maritime Organisation) http://www.imo.org	Provides guidance and strategies to minimize the risk of unwanted organisms and pathogens from ballast water and sediment discharge. Revokes the "Guidelines for preventing the Introduction of Unwanted Organisms and Pathogens from Ships' Ballast Water and Sediment Discharges" (IMO Resolution A. 774 (18) 1991).
12. Agenda 21—United Nations Conference on Environment and Development (Rio, 1992)	Calls for increasing protection of forests from disease and uncontrolled introduction of exotic plant and animal species 11.14); acknowledgement that inappropriate introduction of foreign plants and animals has contributed to biodiversity loss (15.3); appropriate rules on ballast water discharge to prevent spread of non-indigenous organisms. 17.30(vi); controlling noxious aquatic species that may destroy other aquatic species (chap. 18-40(e)(iv)).
13. Code of Practice on the Introductions and Transfers of Marine Organisms (ICES/EIFAC 1994)	Recommends practices and procedures to diminish risks of detrimental effects from marine organism introduction and transfer, including those genetically modified. Requires ICES members to submit a prospectus to regulators, including a detailed analysis of potential environmental impacts to the aquatic ecosystem.
14. Code of Conduct for Responsible Fisheries (FAO, 1995) http://www.fao.org/fi/agreem/codecond/ficonde.asp	Encourages legal and administrative frameworks to facilitate responsible aquaculture. Including pre-introduction discussion with neighbouring states when non-indigenous stocks are to be introduced into transboundary aquatic ecosystems. Harmful effects of non-indigenous and genetically altered stocks to be minimized especially where significant potential exists for spread into other states or country of origin. Adverse genetic and disease effects to wild stock from genetic improvement and non-indigenous species to be minimized.
15. Code of Conduct for the import and release of exotic biological control agents（FAO，1995） http://www.fao.org	Aims to facilitate the safe import, export and release of such agents by introducing procedures of an internationally acceptable level for all public and private entities involved, particularly where national legislation to regulate their use does not exist or is inadequate. Outlines specific responsibilities for authorities of an exporting country, who should ensure that relevant regulations of the importing country are followed in exports of biological control agents.
16. Preventing the Introduction of Invasive Alien Species. Resolution A-32-9, International Civil Aviation Organisation (ICAO) (1998). http://www.icao.int/icao/end/res/a32_9.htm	Urges all Contracting States to use their civil aviation authorities to assist in reducing the risk of introducing, through civil air transportation, potentially invasive species to areas outside their natural range. Requests the ICAO Council to work with other United Nations organizations to identify approaches that the ICAO might take in assisting to reduce the risk of introducing potential invasive species.
17. Global Programme of Action for the Protection	Introduction of Alien Species acknowledged to

of the Marine Environment from Land-based Activities (UNEP, 1995) http://www.unep.org/unep/gpa/pol2a.htm	have serious effects upon ecosystem integrity.

Appendix 4: Scoring system for assessing the level of risk posed by alien species

Questions		**Risk scoring**			
		Low	**Medium**	**High**	**Unacceptable**
		0	**2**	**5**	**20**
I Reproduction &Dispersal mechanisms	1. Can the species be established in nature?	No	Yes		
	2. What is the minimum generative time?	>=4 years	2-3 years	1 year	
	3. Is the species able to reproduce asexually (or vegetatively)?	No		Yes	
	4. Can reproductive parts be dispersed by wind, water, or animals such as mammals, insects and birds?	No	Yes	very far	
	5. Is the species able to disperse fast in nature?	Not at all	Slow	Medium	Fast
	6. Is it likely to be dispersed unintentionally?	No	Yes	Easy	
	7. Is it likely to be dispersed intentionally by people?	No	Yes		
II Hereditary traits	1. Is the species genetically stable over 10 generations?	Yes			No
	2. Are there related local weed species or pest species?	No		Yes	
	3. Are there closely related highly valued biodiversity species?	No	Yes		
	4. Is cross pollination or breeding possible with local domestic or wild species?	No	Possible		Proven
III Undesirable traits	1. Is any part of the species (the seed, roots, stem, flower, fruit, and pollen, secretion, excretion, flesh or skin etc.) found to be toxic to wildlife, domestic animals or humans?	No		Yes	
	2. Does the species have any inhibitive effects on other plants, eg. Phytotoxins?	No	Yes		
	3. Is the species parasitic? Are there any potential hosts in China?	No		Yes	
	4. Is the plant known to have negative effects on the environment? (soil, watershed, water table, air, microclimate etc.) ?	No	Unkown	Yes	
	5. Is it able to occur at high density?	No	Yes		
	6. Are there local species with similar feeding methods and food resources? Is the introduced species likely to become the competitor of these species?	No	Yes		

IV Adaptability	1. Is it suited to any local climate?	No	Yes	Highly suitable	
	2. Has it broad climate suitability?	Narrow	Medium	Broad	
	3. Is it able to survive in degraded environments (for instance is it able to endure direct sunshine or polluted environments or grow on infertile soils)?	No	Yes		
	4. Is it able to survive adverse conditions and reproduce rapidly when these become more favourable?	No	Yes		
V Species type	1. Can it survive in water?	No		Yes	
	2. Is it a grass?	No	Yes		
	3. Can it fly?	No		Yes	
	4. Is it micro-organism or virus?	No		Yes	
VI Ease of Control	1. Can the species/plant be easily eradicated by artificial means?	Yes		No	
	2. Are there effective natural enemies locally?	Many	Yes	Not at all	
VII Invasive history	1. Are any close relatives of the species known to be alien invasives?	No	Unknown	Yes	

The score of every single item reflects different aspects of risk posed by the organism in question and collectively indicate its potential to become an invasive pest. If the total score is more than 20 the organism should not to be introduced or released into the wild. If a species has 1 Unacceptable, 4 high, or 10 medium risks, its total score will reach 20 and it should not be introduced. Such species should go on the black list. Those species with a total score of less than 5 can be introduced (white list) and species with scores of 5~10 (grey list) should be restricted with regards to the objective of introduction, region, quantity and time. Those with total scores of 10~20 should, in addition, and be controlled and supervised after introduction and released only after successfully completing field release trials.

Appendix 5: Statement of Risks and Concerns on GMOs

(Institute of Science in Society. 2000. Open Letter from World Scientists to All Governments Concerning Genetically Modified Organisms (GMOs). www.i-sis.org.)

1 Patents on life-forms and living processes should be banned because they threaten food security, sanction biopiracy of indigenous knowledge and genetic resources, violate basic human rights and dignity, compromise healthcare, impede medical and scientific research and are against the welfare of animals. Life-forms such as organisms, seeds, cell lines and genes are discoveries and hence not patentable. Current GM techniques which exploit living processes are unreliable, uncontrollable and unpredictable, and do not qualify as inventions. Furthermore, those techniques are inherently unsafe, as are many GM organisms and products.

2. It is becoming increasingly clear that current GM crops are neither needed nor beneficial. They are a dangerous diversion preventing the essential shift to sustainable agricultural practices that can provide food security and health around the world.

3. Two simple characteristics account for the nearly 40 million hectares of GM crops planted in 1999. The majority (71%) are tolerant to broad-spectrum herbicides, with companies engineering plants to be tolerant to their own brand of herbicide, while most of the rest are engineered with bt-toxins to kill insect pests. A university-based survey of 8200 field trials of the most widely grown GM crops, herbicide-tolerant soya beans - revealed that they yield 6.7% less and required two to five times more herbicides than non-GM varieties. This has been confirmed by a more recent study in the University of Nebraska. Yet other problems have been identified: erratic performance, disease susceptibility, fruit abortion and poor economic returns to farmers.

4. According to the UN food programme, there is enough food to feed the world one and a half times over. While world population has grown 90% in the past 40 years, the amount of food per capita has increased by 25%, yet one billion are hungry. A new FAO report confirms that there will be enough or more than enough food to meet global demands without taking into account any yield improvements that might result from GM crops well into 2030. It is on account of an increasing corporate monopoly operating under the globalised economy that the poor are getting poorer and hungrier. Family farmers around the world have been driven to destitution and suicide, and for the same reasons. Between 1993 and 1997 the number of mid-sized farms in the US dropped by 74,440, and farmers are now receiving below the average cost of production for their produce. The farming population in France and Germany fell by 50% since 1978. In the UK, 20 000 farming jobs were lost in the past year alone, and the Prime Minister has announced a £200m aid package. Four corporations control 85% of the world trade in cereals at the end of 1999. Mergers and acquisitions are continuing.

5. The new patents on seeds intensify corporate monopoly by preventing farmers from saving and replanting seeds, which is what most farmers still do in the Third World. In order to protect their patents, corporations are continuing to develop terminator technologies that genetically engineer harvested seeds not to germinate, despite worldwide opposition from farmers and civil society at large.

6. Christian Aid, a major charity working with the Third World, concluded that GM crops will cause unemployment, exacerbate Third World debt, threaten sustainable farming systems and damage the environment. It predicts famine for the poorest countries. African Governments condemned Monsanto's claim that GMOs are needed to feed the hungry of the world: "We…strongly object that the image of the poor and hungry from our countries is being used by giant multinational corporations to push a technology that is neither safe, environmentally friendly, nor economically beneficial to us… we believe it will destroy the diversity, the local knowledge and the sustainable agricultural systems that our farmers have developed for millennia and …undermine our capacity to feed ourselves." A message from the Peasant movement of the Philippines to the Organization for Economic Cooperation and Development (OECD) of the industrialized countries stated, "The entry of GMOs will certainly intensify landlessness, hunger and injustice."

7. A coalition of family farming groups in the US has issued a comprehensive list of demands, including a ban on ownership of all life-forms; suspension of sales, environmental releases and further approvals of all GM crops and products pending an independent, comprehensive assessment of the social, environmental, health and economic impacts; and for corporations to be made liable for all damages arising from GM crops and products to livestock, human beings and the environment. They also demand a moratorium on all corporate mergers and acquisitions, on farm closures, and an end to policies that serve big agribusiness interests at the expense of family farmers, taxpayers and the environment. They have mounted a lawsuit against Monsanto and nine other corporations for monopolistic practices and for foisting GM crops on farmers without adequate safety and environmental impact assessments.

8. Some of the hazards of GM crops are openly acknowledged by the UK and US Governments. UK Ministry of Agriculture, Fisheries and Food (MAFF) has admitted that the transfer of GM crops and pollen beyond the planted fields is unavoidable, and this has already resulted in herbicide-tolerant weeds. An interim report on UK Government-sponsored field trials confirmed hybridisation between adjacent plots of different herbicide tolerant GM oilseed rape varieties, which gave rise to hybrids tolerant to multiple herbicides. In addition, GM oilseed rape and their hybrids have been found in subsequent wheat and barley crops, which had to be controlled by standard herbicides. Bt-resistant insect pests have evolved in response to the continuous presence of these toxins in GM plants throughout the growing season, and the US Environment Protection Agency is recommending farmers to plant up to 40% non-GM crops in order to create refugia for non-resistant insect pests.

9. The threats to biodiversity from major GM crops that are already commercialized are becoming increasingly clear. The broad-spectrum herbicides used with herbicide-tolerant GM crops decimate wild plant species indiscriminately, they are also toxic to animals. Glufosinate causes birth defects in mammals and glyphosate is linked to non-Hodgkin lymphoma. GM crops with bt-toxins kill beneficial insects such as bees and lacewings, and pollen from bt-corn is found to be lethal to monarch butterflies as well as swallowtails. Bt-toxin is exuded from roots of bt-plants in the rhizosphere, where it rapidly binds to soil particles and becomes protected from degradation. As the toxin is present in an activated, non-selective form, both target and non-target species in the soil will be affected, with knock on effects for species above ground.

10. Products resulting from genetically modified organisms can also be hazardous. For example, a batch of tryptophan produced by GM microorganisms was associated with at least 37 deaths and 1500 serious illnesses. Genetically modified Bovine Growth Hormone, injected into cows in order to increase milk yield, not only causes excessive suffering and illnesses for the cows but increased IGF-1 in the milk, a substance linked to breast and prostate cancers in humans. It is vital for the public to be protected from all GM products, and not only those containing transgenic DNA or protein. That is because the process of genetic modification itself, at least in the form currently practiced, is inherently unsafe.

11. A secret memoranda of US Food and Drug Administration revealed that it ignored the warnings of its own scientists that genetic engineering is a new departure and introduces new risks. Furthermore, the first GM crop to be commercialized - the Flavr Savr tomato - did not pass the

required toxicological tests. Since then, no comprehensive scientific safety testing had been done until Dr. Arpad Pusztai and his collaborators in the UK raised serious concerns over the safety of the GM potatoes they were testing. They concluded that a significant part of the toxic effect may be due to the "[gene] construct or the genetic transformation (or both)" used in making the GM plants.

12. The safety of GM foods was openly disputed by Professor Bevan Moseley, molecular geneticist and current Chair of the Working Group on Novel Foods in the European Union's Scientific Committee on Food. He drew attention to unforseen effects inherent to the technology, emphasizing that the next generation of GM foods - the so-called 'neutraceuticals' or 'functional foods', such as vitamin A 'enriched' rice - will pose even greater health risks because of the increased complexity of the gene constructs.

13. Genetic engineering introduces new genes and new combinations of genetic material constructed in the laboratory into crops, livestock and microorganisms. The artificial constructs are derived from the genetic material of pathogenic viruses and other genetic parasites, as well as bacteria and other organisms, and include genes coding for antibiotic resistance. The constructs are designed to break down species barriers and to overcome mechanisms that prevent foreign genetic material from inserting into genomes. Most of them have never existed in nature in the course of billions of years of evolution.

14. These constructs are introduced into cells by invasive methods that lead to random insertion of the foreign genes into the genomes (the totality of all the genetic material of a cell or organism). This gives rise to unpredictable, random effects, including gross abnormalities in animals and unexpected toxins and allergens in food crops.

15. One construct common to practically all GM crops already commercialized or undergoing field trials involves a gene-switch (promoter) from the cauliflower mosaic virus (CaMV) spliced next to the foreign gene (transgene) to make it over-express continuously. This CaMV promoter is active in all plants, in yeast, algae and E. coli. We recently discovered that it is even active in amphibian egg and human cell extracts. It has a modular structure, and is interchangeable, in part, or in whole with promoters of other viruses to produce infectious viruses. It also has a 'recombination hotspot' where it is prone to break and join up with other genetic material.

16. For these and other reasons, transgenic DNA - the totality of artificial constructs transferred into the GMO - may be more unstable and prone to transfer again to unrelated species; potentially to all species interacting with the GMO.

17. The instability of transgenic DNA in GM plants is well-known(45). GM genes are often silenced, but loss of part or all of the transgenic DNA also occurs, even during later generations of propagation(46). We are aware of no published evidence for the long term stability of GM inserts in terms of structure or location in the plant genome in any of the GM lines already commercialized or undergoing field trials.

18. The potential hazards of horizontal transfer of GM genes include the spread of antibiotic resistance genes to pathogens, the generation of new viruses and bacteria that cause disease and

mutations due to the random insertion of foreign DNA, some of which may lead to cancer in mammalian cells. The ability of the CaMV promoter to function in all species including human beings is particularly relevant to the potential hazards of horizontal gene transfer.

19. The possibility for naked or free DNA to be taken up by mammalian cells is explicitly mentioned in the US Food and Drug Administration (FDA) draft guidance to industry on antibiotic resistance marker genes. In commenting on the FDA's document, the UK MAFF pointed out that transgenic DNA may be transferred not just by ingestion, but by contact with plant dust and air-borne pollen during farm work and food processing. This warning is all the more significant with the recent report from Jena University in Germany that field experiments indicated GM genes may have transferred via GM pollen to the bacteria and yeasts in the gut of bee larvae.

20. Plant DNA is not readily degraded during most commercial food processing. Procedures such as grinding and milling left grain DNA largely intact, as did heat-treatment at 90deg.C. Plants placed in silage showed little degradation of DNA, and a special UK MAFF report advises against using GM plants or plant waste in animal feed.

21. The human mouth contains bacteria that have been shown to take up and express naked DNA containing antibiotic resistance genes, and similar transformable bacteria are present in the respiratory tracts.

22. Antibiotic resistance marker genes from GM plants have been found to transfer horizontally to soil bacteria and fungi in the laboratory. Field monitoring revealed that GM sugar beet DNA persisted in the soil for up to two years after the GM crop was planted. And there is evidence suggesting that parts of transgenic DNA have transferred horizontally to bacteria in the soil.

23. Recent research in gene therapy and nucleic acid (both DNA and RNA) vaccines leaves little doubt that naked/free nucleic acids can be taken up, and in some cases, incorporated into the genome of all mammalian cells including those of human beings. Adverse effects already observed include acute toxic shock, delayed immunological reactions and autoimmune reactions.

24. The British Medical Association, in their interim report (published May, 1999), called for an indefinite moratorium on the releases of GMOs pending further research on new allergies, the spread of antibiotic resistance genes and the effects of transgenic DNA.

25. In the Cartegena Biosafety Protocol successfully negotiated in Montreal in January, 2000, more than 130 governments have agreed to implement the precautionary principle, and to ensure that biosafety legislations at the national and international levels take precedence over trade and financial agreements at the WTO. Similarly, delegates to the Codex Alimentarius Commission Conference in Chiba Japan, March 2000, have agreed to prepare stringent regulatory procedures for GM foods that include pre-market evaluation, long-term monitoring for health impacts, tests for genetic stability, toxins, allergens and other unintended effects. The Cartegena Biosafety Protocol has now been signed by 68 Governments in Nairobi in May, 2000.

26. We urge all Governments to take proper account of the now substantial scientific evidence of actual and suspected hazards arising from GM technology and many of its products, and to impose an immediate moratorium on further environmental releases, including open field trials, in accordance with the precautionary principle as well as sound science.

27. Successive studies have documented the productivity and sustainability of family farming in the Third World as well as in the North. Evidence from both North and South indicates that small farms are more productive, more efficient and contribute more to economic development than large farms. Small farmers also tend to make better stewards of natural resources, conserving biodiversity and safeguarding the sustainability of agricultural production. Cuba responded to the economic crisis precipitated by the break up of the Soviet Bloc in 1989 by converting from conventional large scale, high input monoculture to small organic and semi-organic farming, thereby doubling food production with half the previous input.

28. Agroecological approaches hold great promise for sustainable agriculture in developing countries, in combining local farming knowledge and techniques adjusted to local conditions with contemporary western scientific knowledge. The yields have doubled and tripled and are still increasing. An estimated 12.5 million hectares worldwide are already successfully farmed in this way. It is environmentally sound and affordable for small farmers. It recovers farming land marginalized by conventional intensive agriculture. It offers the only practical way of restoring agricultural land degraded by conventional agronomic practices. Most of all, it empowers small family farmers to combat poverty and hunger.

29. We urge all Governments to reject GM crops on grounds that they are both hazardous and contrary to ecologically sustainable use of resources. Instead they should support research and development of sustainable agricultural methods that can truly benefit family farmers the world over.

Appendix 6: Definition of terms

SSC/IUCN. 2000. IUCN Guidelines for the prevention of biodiversity loss caused by alien invasive species. Gland Switzerland.

English version*: http://iucn.org/themes/ssc/pubs/policy/invasivesEng.htm*

Chinese version*: http://www.chinabiodiversity.com/shwdyx/ruq/ruq-index-cn.htm*

"**Alien invasive species**" means an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity.

"**Alien species**" (non-native, non-indigenous, foreign, exotic) means a species, subspecies, or lower taxon occurring outside of its natural range (past or present) and dispersal potential (*i.e.* outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans) and includes any part, gametes or propagule of such species that might survive and subsequently reproduce.

"**Biological diversity**" (Biodiversity) means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

"**Biosecurity threats**" means those matters or activities which, individually or collectively, may constitute a biological risk to the ecological welfare or to the well-being of humans, animals or plants of a country.

"**Intentional introduction**" means an introduction made deliberately by humans, involving the purposeful movement of a species outside of its natural range and dispersal potential. (Such introductions may be authorised or unauthorised.)

"**Introduction**" means the movement, by human agency, of a species, subspecies, or lower taxon (including any part, gametes or propagule that might survive and subsequently reproduce) outside its natural range (past or present). This movement can be either within a country or between countries.

"**Unintentional introduction**" means an unintended introduction made as a result of a species utilising humans or human delivery systems as vectors for dispersal outside its natural range.

"**Native species**"(indigenous) means a species, subspecies, or lower taxon, occurring within its natural range (past or present) and dispersal potential (i.e. within the range it occupies naturally or could occupy without direct or indirect introduction or care by humans.)

"**Natural ecosystem**" means an ecosystem not perceptibly altered by humans.

"**Semi-natural ecosystem**" means an ecosystem which has been altered by human actions, but which retains significant native elements.

Appendix 7: Activities of the Eco-security Task Force

1 Preparation of Awareness Booklet on Invasive Alien Species in China

A special booklet documenting the threat of Invasive Alien Species in China has been prepared by task force members and printed to promote awareness and attention to this urgent problem. Copies of the booklet are available in Chinese for CCICED members. Only a quick English translation is available for the interest of international members.

2 Preparation of Booklet *Restoration of Natural Vegetation in China*

A special booklet, in Chinese, on restoration of natural vegetation has been prepared and published as a follow up to work completed in 2001 by the Biodiversity Working Group of CCICED. The booklet remains highly relevant to the work of the new task force especially in relation to the re-greening efforts under the Great Western Development programme. Copies are available to Chinese members of CCICED.

3 Holding of 2-day Workshop on Invasive Alien Species

A two day workshop was held at Xiangshan Hotel, Beijing on 23 and 24 October, 2002. The meeting was attended by more than 30 persons comprising members of the task force and invited experts from departments of health, agriculture, fisheries, oceanography, quarantine, SEPA and academic institutes.

The schedule of the meeting is attached as Annex 1 to this report. A number of presentations were made by international visitors and relevant departments. These gave rise to considerable lively debate and discussion.

The participants broke up into three Chinese and one international work groups to draft recommendations to the Chinese Government. These recommendations were amalgamated by the taskforce and are appended to this report as Annexe 2. A summary of conclusions and recommendations is given above.

4 First Meeting of the Eco-security Task Force

The members of the task force met in Xiangshan Hotel on 25th October, 2002 following the conclusion of the two day workshop on Invasive Alien Species.

The Chinese chair of the taskforce welcomed the members and explained the background and history of the first 2 phases of CCICED and the plans for Phase 3.

The members reviewed, revised and prioritised the workplan of the taskforce. The proposed revision is presented above (item 4).

The members discussed the conclusions and recommendations of the Alien Invasive workshop, amalgamated the various recommendations and prepared the summary conclusions and recommendations presented above (item 1).

The members made plans for the next meeting of the working group.

5 Work plans of the Eco-security Task Force

- It is planned to hold the next meeting of the task force in Yunnan during the third week of January 2003. The focus of the meeting will be to examine IAS problems in the field and examine biodiversity threats associated with the Great Western Development Programme.
- Select around 100 serious IAS, and study their origin, reason for introduction, and analysis that if we could find any method to stop their invasion to China. Based on these analysis, we may be able to find some suitable methods to stop invasion.
- Develop a national strategy for the setting up of adequate control mechanisms including training needs for China to deal with the problem.
- Undertake studies on risk assessment methodology, and draft an operational methodology for various sectors. Establish a process for scoring risk category of likelihood of becoming alien

invasive pests. Study on impact of IAS to ecosystem and conduct evaluation from aspect of ecosystem conservation.

- Review the current status of regulations controls and general awareness of GMO threats. Prepare and publish a "*Primer on GMO's*" to educate the public and governmental officials.
- Prepare specific TOR for testing efforts on local environment to be included in risk assessment regulations.
- Evaluate and study on legislation of controlling IAS.
- Expand the Alien Invasive Species Database to include all non-native organisms known to be wild in China. Study on national ecosystem evaluation to map out areas thought to have the highest risks of invasion by GMOs or alien invasives.
- 10-Year Review and Perspective of Biodiversity Conservation
- Best use the chance of Green Olympics to improve public awareness on biodiversity.

6. Revision of the Ongoing BWG/ETF Work Programmes

There are a couple of ongoing projects started in late Phase II of BWG/CCICED which should be continued and completed. The progress of those projects are hereby briefed as follows:

- **China's Red List of Endangered Species** With the support from NORAD and CI, the project is now entering into the final review process of the evaluation of the status of wild fauna and flora. All the wild species of vertebrates and higher plants and selected major groups of invertebrates have been evaluated by using the new IUCN Criteria 2000. A Red List of Endangered Species of China will be formulated by early 2003 for releasing which will be the basis in terms of China's biodiversity conservation.

- **Dujiangyan BSAP** A county level Biodiversity Strategy & Action Plan for Dujiangyan area, Sichuan Province, a new World Heritage site, is coming to the final review which is planned to hold a Final Review Workshop in the upcoming December.

- **China Species Information System (CSIS)** Further development and maintaining of the CSIS is undergoing which can be accessed by the web-site: www.chinabiodiversity.com. Existing information and data on vertebrates are presented, including taxonomic information, distribution, habitats, status and threats, categories of endangerness, conservation measures taken and to be taken, literatures, together with pictures and maps. It can be of reference for conservation actions and legislation, EIA, research priority setting, education and public awareness. It is also functioning for species data and information exchange and communication domestically and internationally.

- **Biodiversity Web-site** A bilingual web-site of "Conserving China's Biodiversity" in Chinese and English www.chinabiodiversity.com was developed during the CCICED Phase II and is now still updating regularly. All the annual reports of BWG together with technical reports resulted from activities by BWG can be accessed on the web-site. In addition, the China Species Information System is also available on the site.

- **China Mammal Guide** Since the ***Field Guide to the Birds of China*** (English and Chinese versions) published in 2000, BWG-ETF has started the compilation of the ***Field Guide to the Mammals of China*** (English and Chinese) especially for those conservation staff based in reserves and national parks, as well as for public education.

7. Pulbications

- ***Invasive Alien Species in China,*** 2002, China Forestry Press, Beijing (Chinese), 230 pages.
- ***Restoration of Natural Vegetation,*** 2002, China Forestry Press, Beijing (Chinese), 58 pages.
- ***World Conservation Information,*** A Chinese Newsletter. Nos. 15/16; 17/18 (Chinese)
- ***China Human Development Report,*** 2002**.** UNDP. (Chinese and English; for "Biodiversity")

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ETF/CCICED IAS Report

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REPORT OF THE CCICED WORKING GROUP ON ENVIRONMENTAL ECONOMICS

By

Working Group on Environmental Economics

Nov., 2002, Beijing

Executive Summary and Conclusions[1]

The General Context

The Environmental Economics Working Group

This report provides summaries of some of the key activities that have occupied the attention of the Environmental Economics Working Group of the CCICED over the ten years since the inception of CCICED in 1992. The studies reported here however represent just the tip of an iceberg, as the actual work involved an extensive series of workshops, training courses, meetings and field work that took place in various parts of China.[2]

A characteristic of this endeavor has been that participants in the program were able to share their ideas and evolution of thinking with a wide cross section of Chinese society, ranging from summary presentations of their work at the annual meetings of the CCICED at which the very highest government officials were present, to workshops at Provincial, Municipal and County levels attended by local government officials, scholars, and others interested in environmental policy matters.

Much has changed in China over the period of this work. The rapid transition from an administered to a market economy continues to be of dominant importance, and rapid strides have been made in implementing economic reforms designed to sustain the extremely high rates of economic growth that have been observed in recent years. At the outset of its work, the Working Group felt it important to emphasize that while market liberalization was a necessary condition for rapid economic growth, it could not necessarily be relied upon to handle all problems, in particular, the two closely interrelated areas of environmental protection and equitable income distribution. In contrast to the general trend established by conventional adjustment policies, government structures in these areas should be strengthened rather than weakened. This initial view set the scene for subsequent work and indeed characterized the whole of the program. In effect much of the concern surrounded policy decisions

[1] Prepared by Li Yining and Jeremy Warford.

[2] Full meetings of the CCICED were held in Beijing, Shanghai and Hangzhou. Working Group meetings took place in Beijing, Yunnan, Anhui, Fujian, Guizhou, Heilongjiang, and Quinghai, while the studies themselves involved case surveys and analyses in numerous locations, as indicated in the relevant reports of the Workgroup.

about the pace of policy reform, particularly in the use of economic instruments as a means of addressing environmental problems in a transition economy such as that in China

When the work started, the study of environmental economics, an immature component of academic endeavor elsewhere in the world, was in its infancy in China, and the first few years were a major experience for all participants, both Chinese and foreign. As predicted however, Chinese scholars soon began to absorb the subject, and are now frequent contributors to the leading academic journals specializing in environmental matters. However, in common with experience in other countries, economic theory in this area has expanded at a much more rapid rate than the application of basic principles. Aware that this might become an issue, the program of the Environmental Economics Working Group was designed from the outset to concentrate on assessment of the relevance of basic principles of Western economics, and their practical application to real issues in the Chinese context. The studies summarized in this report were thus aimed at providing policy-relevant information and ideas for the Chinese government, and were not aimed at advancing theory.

Environmental Impacts of Economic and Sector Policy Reform

The country-wide economic reforms that continue to take place in China, and in particular the country's recent accession to the World Trade Organization, undoubtedly have major implications for the environment. The leverage exerted by sectoral and macro level economic policies as well as other institutional, legal and social policies is of fundamental significance in determining environmentally related behavior. Economy-wide policy reform, and specifically the adjustment process, should therefore be carefully assessed in light of its environmental consequences. However, due to the large number of physical, social, and economic variables involved, these linkages remain imperfectly understood. In the last few years, considerable efforts in China and elsewhere have been made to improve understanding of the ways in which economic incentives impinge upon environmentally-related behavior, with attention increasingly focusing on the impact of macroeconomic and sectoral policies. Nevertheless, much remains to be done.

It is now generally recognized that most environmental problems are less the result of individual large-scale development projects that have gone wrong than the combined consequences of many relatively small-scale activities, such as unsustainable agricultural practices, pollution caused by large numbers of small, inefficient, factories, and decisions made by innumerable companies and individuals to exploit tropical rainforests. Subjecting each such decision to social cost-benefit analysis,

environmental impact assessment or regulation, or indeed to a system of environmental taxes that requires monitoring of individual actions, is rarely administratively feasible.

The foregoing implies the need to search for the underlying causes of such activities, and identify policy interventions (which will often have to be somewhat blunt instruments) aimed at the source, rather than the symptom of the problems. Priority should be given to amending government interventions in the market that are economically and environmentally perverse, and introducing interventions (such as pollution taxes) when market forces are inadequate. These actions should be accompanied by efforts to address underlying causes of natural resource degradation and to improve understanding of what affects the environment and how.

It follows that the traditional project-by-project approach, while important and deserving of more effort, must be supplemented by the integration of environmental management into economic policy making at all levels of government. Policies with a wide ranging impact - i.e. those of a sector-wide or macroeconomic nature - are especially relevant. A variety of government policies may have a profound impact - for good or ill - on the environment. Fiscal, exchange rate, energy and agricultural pricing, or land tenure policies might be expected to have major environmental implications. It follows that not only individual investment projects, but also economic policies should be subjected to environmental evaluation. It is apparent that the sheer scale of the structural changes now taking place in China’s economy makes this task both highly complex and highly important.

Understanding the chain of causality leading to environmental degradation is required. Proximate causes are relatively easy to identify; much more difficult, but of primary importance, is the analysis of underlying causes. Typically these will be found in economic incentives, often combined with a complex mix of social and political factors. For example, it may be easy to identify the source of air pollution as the inefficient productive processes of certain industrial enterprises. It is however more difficult to understand the forces that bring this about, and to determine the policy reforms that will not simply affect individual plants, but have pervasive effects, impacting on a wide variety of industrial operations.

China's reform program recognizes that environmental degradation has often stemmed from market distortions, which may be explained by externalities or "commons" problems. It also recognizes that other problems have been created where those who demand environmental goods are not required to pay for the true social costs involved. This is exemplified by the subsidization of irrigation and municipal water, electricity, and agricultural chemicals.

In the case of public utilities such as water supply and electricity, it is essential that pricing be used as a serious management tool. Artificially low prices encourage wasteful use, and generate inadequate revenues for system operation and expansion. Decline in service quality is accompanied by greater difficulty in raising prices, resulting in a vicious circle of underfunding and shortages. The cost to consumers of a service not being available is often more than the cost of expanding the service, even when costs are rising. Underpricing - or subsidization - of resource use is therefore typically unjustified in economic and financial terms. It frequently has perverse income distributional consequences, places a fiscal burden on government, and is often environmentally unsound as it encourages wasteful use. In such cases, the scope for policy reform with multiple advantages is therefore considerable, but due to an established tradition of subsidizing public services is often difficult to achieve.

Some aspects of China's move toward a market economy, which includes the above type of reform, are therefore likely to be environmentally beneficial. Equating prices to the real economic costs of supply of key natural resources can be expected to yield environmental benefits by discouraging wasteful resource use. Other elements of the reform process such as improved efficiency of credit markets and greater trade openness may also be environmentally benign to the extent that technological innovation and the establishment of cleaner, modern industry, is encouraged.

However, the environmental consequences of China's economic reform process may not always be favorable. It is clear that while "getting prices right", a key element of the adjustment process, is a necessary condition for sustainable development, it is far from sufficient. For example, at the sector level, electricity price reform may not be effective if consumers lack adequate information about energy-saving devices, if industrial management structures do not contain incentives to use resources efficiently, or if in general there are distortions in the prices of substitutes or complements to electricity. Adverse environmental consequences due to inefficiencies or inequities elsewhere in the system, compounded by the scale effects induced by successful economic growth policies, may therefore result. For example, in China the pollution levy system has been in place for a number of years, but until recently price and profit incentives in general did not exist, so they had little effect.

Adoption of "second best" solutions will therefore frequently be required; introduction of price incentives in situations where prices in general do not reflect real resource costs, are likely to have perverse results, and a gradual replacement of command and control mechanisms by price incentives will often have to take place gradually. Considerations of social equity reinforce this conclusion. While extremely rapid, unevenness in the pace of development has meant that the poor have failed to

benefit proportionately. During the on-going transition period from a command and control to a market economy, the economic efficiency and growth objectives must be modified to consider distributional issues.

In the short term, therefore, economic reforms may have unanticipated effects which require complementary or compensatory interventions. In some countries, the very success of the adjustment process in stimulating industrial growth has itself been the cause of environmental problems where pollution control measures have been inadequate. Trade reforms may be of special concern: encouraging exports, if not accompanied by adequate pricing policies in the country concerned, could lead to over-exploitation of underpriced natural resources, such as forests. In such cases, freer trade itself would not be the culprit, but failure to address inefficient conditions prevailing elsewhere in the economy would be. Compensatory intervention may also be required to remedy legal and institutional deficiencies.

Such constraints to the success of economic policy reform are a pervasive problem, and, as observed in other countries, they take many forms. One of them refers to the allocation of property rights, upon which the effectiveness of price reform ultimately depends. Whether in relation to farmers' security of land tenure, or to the right to abstract water by riparian users, uncertainty typically results in environmental degradation. Price reform, if unaccompanied by adequate legal and institutional frameworks, including regulatory capacity, may have perverse results in both economic and environmental terms. This appears to be a particularly important issue in China in its current transition period.

Although reforms might be complicated by the presence of such inefficiencies elsewhere in the system, there are nevertheless many opportunities for policy reform in China. Indeed, environmental considerations typically provide additional reason for policy reforms that are justified in their own right. As noted earlier, improved pricing for electricity and water supply would be justified on environmental and economic efficiency grounds. It also has potentially major fiscal implications, and should be a central element of any policy of "green taxation" aimed at shifting the tax burden from productive activities such as labor and enterprise toward unproductive activities such as depletion of resources and generation of waste.

In principle, the wide-ranging and complex linkages between economic activities and the environment imply that a general equilibrium approach is required if economic policy is to be managed in a sustainable way. However it is already possible to make rough assessments, not simply of the social

and environmental impacts of projects, but also of certain economic and sector policies. The use of standard economic techniques combined with existing natural resource information can improve the way environmental issues are addressed by policies at the sector and macro levels. Where the environmental impact of the economic reform process is potentially adverse, such assessments would form the basis for identifying measures to counteract these effects; where on the other hand they are likely to be positive, complementary measures might be devised to maximize this impact. A conclusion from the foregoing is that, while environmental impact assessments are now conducted routinely for large-scale development projects, it is now even more important to develop institutional capacity to conduct environmental assessment of economic policy reform, with special attention being paid to its income distributional implications.

The Studies

The studies summarized in this report all employ the concept of willingness to pay as a guide to valuation and identification of resource allocation priorities. This is however subject to an awareness of the theoretical shortcomings of this concept, as well as the difficulties involved in its estimation. In each case, it is shown or implied that free market forces must be complemented by public action if socially desirable outcomes are to result. It is convenient to summarize the highlights of the studies' findings under the three generic headings of sector pricing; valuing the environment; and environmental taxation. Explicitly or implicitly, detailed policy recommendations are made in all the above studies. Since the studies took place over a number of years, the cost and other information are sometimes out of date; nevertheless, the general principles and conclusions remain valid.

Sector Pricing

Typically outside of the control of environmental authorities, nevertheless pricing policies in a range of sectors have major impacts on the environment. Specific studies under the program focusing on water supply, coal, timber, rice, fisheries and grasslands, show that environmental and depletion costs are systematically ignored in pricing policy.

The studies show that differences between the true environmental costs of such resources and the prices paid for them are often extremely large, thereby encouraging wasteful consumption and resource degradation. Clearly, energy and water price reform are essential if clean production technology and

energy efficiency is to be achieved; pricing policies are of critical importance in addressing issues such as deforestation and soil erosion. And urban air pollution and traffic congestion are also symptoms of pricing policies that inadequately reflect environmental damage costs.

Valuing the Environment

All aspects of policy making in the environmental field require some notion of the value of the environment, or the cost of environmental damage. This has to be the standard by which pricing of natural resources, as well as environmental taxes, regulations and investments should be measured. The studies acknowledge that it is extremely difficult to place monetary values on the environment; indeed, the most important issues in life are probably not susceptible to monetary valuation. Nevertheless, it is clear that it is a serious mistake to treat, albeit implicitly, environmental damage costs as zero.

One of the studies estimates that quantifiable costs of air and water pollution in China amounted to about ten percent of GDP in the late 1990's. Although undoubtedly a crude estimate, it does indicate the seriousness with which environment should be treated in macroeconomic policy making in China. More detailed evidence, using tourists' estimated willingness to pay to protect the panda, provide some indication of value, and more importantly of a technique of valuation and fund raising that is of more general applicability.

Environmental Taxation

In some way, virtually all the studies address the topic of environmental taxation. The sector pricing studies essentially propose that price increases to reflect differences between production costs and true environmental costs should take the form of taxation. The study on industrial pollution control focuses almost entirely on pollution taxation, although there are references to the role of other market based instruments. However, beyond these sector-by-sector recommendations, the studies also address cross-sectoral issues, specifically concerning the relationships between environmental taxation and more ultimate objectives of development policy, namely poverty alleviation and health. The case for developing a more comprehensive system of green taxation is also considered.

The poverty case study shows that there are circumstances in which some forms of environmental taxation, in this case levied on the consumption of water, transportation and coal, may avoid damage to the poor. This would apply where the poor do not participate in the market economy, or where

compensatory financial mechanisms can be designed. However, this is a complex topic, and there are obviously many cases where these circumstances do not apply; for example, increasing the price of rice to include environmental costs may be expected to be a regressive tax since rice consumption tends to be a much larger item in family budgets for the poor than for the rich. Another study, perhaps of more general applicability, shows that pollution taxes are likely to be good for public health. If indeed the poor tend to live in the most polluted areas, such a policy would also contribute positively to poverty alleviation, certainly within a given urban area.

General Recommendations from the Studies

The following general recommendations emerge from the studies, the details being shown in the relevant reports or research papers of the Workgroup:

- A system should be developed in which pricing of natural resources, and the design of pollution taxes or regulations are based on the principle of full cost recovery, where costs are defined to include all costs incurred by society, including, where appropriate, those of incremental production, environmental degradation, and resource depletion. Prices, taxes and charges are typically too low; on-going reforms should be accelerated, but implementation should still be introduced gradually in light of income distributional implications, and in line with overall trends in market liberalization in China.

- Efforts should be made to develop capacity in relevant government agencies, at all levels, to appreciate the implications of their activities and policies for environment, and to develop incentives for public officials to be environmentally responsible. This applies not only to agencies directly involved in the management and utilization of natural resources, but also to those with responsibilities for strategic economic, sectoral, and financial management. This will be necessary if environmental issues are to be integrated fully into economic policy making.

- Specifically, environmental impact assessment should be applied, not only to individual projects, but also, where feasible, to economic policies in general.

- The sector-by-sector analyses demonstrate the potential role that green taxation can play in China's overall fiscal system. The complex linkages between economic and environmental policies and actions require the development of computable general equilibrium models in

which the impact of green taxation can be assessed.

- Specific skills that need to be developed in public agencies therefore include: (a) economic evaluation of the costs of environmental degradation and of remedial actions, (b) the impact of sectoral policies (particularly pricing) on the environment, (c) the role of environmental taxes, in particular the potential for wide-ranging "green taxation" as an integral element of fiscal policy, and (d) linkages between environment, poverty, and public health.

Building upon these general recommendations, specific priorities for future work in environmental economics in China are proposed below.

Next Steps: Priority Areas for Environmental Economics

Most of the topics listed below have already been identified as of high priority for China, and other scholars and agencies are heavily involved in such work. China has in fact been extremely innovative in the application of economic analysis to the solution of environmental problems, its experimentation with various forms of market-based instruments for industrial pollution control being a case in point. Particularly in light of the lack of co-ordination between external aid agencies, it is difficult to keep pace with these efforts. A useful contribution of the CCICED would therefore be to monitor, synthesize and update results and policy recommendations in a form that is readily accessible to high-level decision makers.

In addition however there may be specific aspects that CCICED may wish to address itself in detail; in particular adding a poverty alleviation dimension to its overall program, and involvement in the multi-faceted aspects of Strategic Environmental Assessment are areas in which CCICED can make a unique contribution.

Environment and the Poor

The Working Group believes that inequitable income distribution and the need to reduce poverty is possibly the most critical economic and social issue facing China today. While on average incomes may be expected to continue to increase in the future, there is no reason to believe that market liberalization will improve income equality. In fact, evidence from other countries undergoing the

adjustment process suggests that the reverse is likely to be true. In China the widening gap between rich and poor is already evident both between regions (with the Western region being left behind) as well as within regions. On grounds of equity and political stability there is a particular need to take measures to ensure that the poorest members of society receive a fair share of the benefits of China's rapid economic growth.

As in the case of economy-environment linkages, much work has been done in recent years by Chinese and development institutions in addressing the relationships between development and poverty, and also as in the case of environment this has been primarily on a project-by-project basis. Much knowledge has been gained but comprehensive integration of income distribution and particularly poverty reduction objectives into overall environmental policy still remains far off. Efforts that have been made to integrate environment into development policy making – itself still unrealized in practice – need to be complemented by the still more ambitious goal of integrating growth, environment and poverty objectives into a comprehensive approach. This has not been achieved satisfactorily in any country to date, but in view of China's observed willingness to take innovative measures in the general area of environmental development, it is believed that the country could become a leader in this area.

It is therefore recommended that the linkages between environment and income distribution should be an absolute priority of the CCICED in its future work. The approach should take two basic forms. First would be the inclusion of a poverty reduction element in all other activities and Task Forces commissioned by the Council, whether they relate to energy, clean production, sustainable agriculture, or any other sector, and including the sector-specific studies referred to in the preceding section as well as in the other cross-cutting activities indicated below, i.e. those referring to valuation, green taxation, and green accounting.

Second would be a series of studies explicitly addressing the linkages between environment, growth and poverty. Building upon and complementing recent work carried out by a variety of external agencies and numerous Chinese scholars, further empirical and analytical work is required on the nature of the relationship between environmental degradation and poverty in China – i.e. who suffers from it and who causes it. Then environmental policy measures need to be designed in a systematic way to take account of their impact upon different income groups, and especially the poor. Case study illustrations, leading to policy recommendations for the general case, may be applied to topics that are especially important in their own right, such as the impacts of environmental policies associated with water resources, urban management, energy, and so on.

The above would be addressed by analysis of national level and selected local level data, probably using household surveys, and certainly involving special attention to the problems facing Western regions of the country.

The importance of this topic can hardly be overestimated. However, both domestic and external researchers who wish to address this issue on more than a project-by-project basis face a number of constraints, not least of which is the large number of constituencies, including government agencies, that are involved. The issue is politically sensitive, value judgments are unavoidable, and empirical difficulties surround the identification of relationships, which vary by sector and region. For example, while it is generally argued that the poor suffer most from environmental degradation, this is not always the case. Within cities probably the poorest suffer most from environmental degradation and thus tend to benefit most from environmental measures, but cities have higher incomes but more air pollution than rural areas. And, for detailed policy-making purposes, there is no simple answer to the question as to whether poverty or wealth is a cause or consequence of environmental degradation; individual case studies may give misleading results for general application.

It is for this reason that the Working Group strongly recommends that a theme that should run throughout Chinese development policy in general and the future work of the CCICED in particular should be to integrate distributional and in particular poverty alleviation objectives fully into ongoing efforts to achieve rapid and environmentally sustainable growth. Indeed, it is considered that CCICED has a comparative advantage in addressing this issue in view of its wide mandate, the fact that its members include Ministers from virtually all key agencies, and that it reports directly to the highest levels of government. It is thus ideally suited to the analysis and development of policies in a multidisciplinary context, and can address and involve multiple constituencies in its deliberations.

Economic Policy and the Environment

Strategic Environmental Assessment. Economic growth and associated changes in the structure of economic activity in China – in particular changes associated with accession to the WTO - are expected to exert a major influence on the environment in future years, and it is possible that environmental constraints may pose a barrier to sustainable and equitable growth. A precondition to the development of appropriate environmental policy responses is thus the need to better understand the structure of economic growth that will take place, and the environmental pressures and constraints that may be

expected to result.

Although efforts should be made to be as rigorous as possible in the use of analytical and empirical tools for predictive purposes, it is important not to lose sight of the fact that the future will remain extremely uncertain. It is important to identify a broad set of priority issues so that institutional and policy reforms as well as strategic investment priorities can be made now. Above all these should be designed to allow the government to be able to respond flexibly, to be able to monitor changes, and to be able to adapt to whatever environmental challenge that may be faced in the future.

In view of the size of the country, initial work in this area should be at the Provincial level, and a Strategic Environmental Assessment (SEA) should be designed to identify the environmental implications of the pattern of economic growth expected at the Provincial level. Important determinants of the scale and structure of economic development include market reforms now underway or proposed both for the Province itself and for China as a whole, as well as a variety of other domestic policy reforms and exogenous influences.

Required studies to achieve the above objectives should be designed to extend the frontiers of what is normally considered feasible for SEA, and should move beyond analysis of the environmental aspects of sector operations to assessment of the implications of more wide-ranging macroeconomic policy reforms for individual sectors and sub sectors. For example, building upon existing knowledge about the industrial and agricultural sectors and of the comparative advantages of the Province, efforts should be made to assess the likely impact of predicted economic growth and macro reforms on industrial and agricultural structures, i.e. what kind of industrial product and crops are likely to be encouraged or discouraged by the reforms. This would be followed by analysis of the pollution loads and pressure placed on natural resources implied by such changes; estimation of pollution control and resource management priorities; and finally, the environmental policy and institutional requirements stemming therefrom. Social aspects are integral to the study.

Analytical work would be comprised of a review of existing macro- and sector-level studies relating to the expected changes in scale and structure of the economy of the selected Province over the next ten years, in particular those that can be used to highlight environmental linkages. This would be followed by estimation of the environmental impacts likely to stem from the predicted pattern of economic growth, and would form the basis for policy conclusions and recommendations.

Estimated changes in the scale and structure of economic activity in the Province over the next ten years should be predicted in order to identify the pressure on natural resources and other threats to environmental quality - primarily urban and industrial pollution – that will be faced. Existing macroeconomic and sector studies should be used as a basis upon which various growth estimates are made. In each case, disaggregation of economic models and definition of sectors should be in terms of their relevance for the environment. Thus while the main expertise to be employed would be macroeconomists or sector specialists, determination of categories for specific analytical attention would be based on advice from environmental specialists.

A key element of the analysis should be to determine the relative emphasis that should be placed upon macroeconomic/general equilibrium, or sector/partial equilibrium analysis. At the sector level, a comprehensive review should be conducted of the various studies which assess current levels of activity, and in particular make predictions of future growth. At the macroeconomic level, review should be conducted of existing econometric and other models to predict economic growth, disaggregated as necessary to facilitate subsequent linking with environmental aspects, in particular identifying the impact upon particular sectors or other impacts which may have a traceable environmental consequence. Computable general equilibrium and partial equilibrium models should be considered, in each case aimed at identifying future trends in things like energy, water resources, demographic and income distributional changes, including urban-rural shifts, regional impacts, changes in the scale of GNP components such as the sources of growth, as well as the impact of decline in some industrial and agricultural sub-sectors. Assessment should be made of the extent to which current models and predictions made by Chinese authorities or external agencies are sufficient to draw conclusions for the environment from predicted growth, and the degree to which new models and data collection are required.

Green Taxation. A particularly important aspect of the foregoing is the potential contribution that environmental taxation can make in an overall fiscal context. Work in this area is particularly opportune in light of the on-going modernization of the Chinese tax system. A good deal of empirical and analytical work has been done in this area in China in recent years. Much of it has taken an essentially partial equilibrium approach, and has encompassed the inclusion of environmental and depletion costs in pricing polices as well as explicit environmental taxes such as the pollution levy system. Recently however, increased efforts have been made to develop general equilibrium models of the Chinese economy; the next challenge is to integrate environmental linkages into such models so that the impacts

of environmental taxes and other environmental policies on economic growth and its distribution can be traced.

Previous and on-going analysis as well as the lessons from actual policy reforms at the sector level is essential in providing the “building blocks” for refinement of such efforts at the aggregate or macroeconomic level. Similarly, the results of recent experimentation with various market-based instruments, such as tradable permits, emission fees, and compensatory payments, also need to be reviewed in order to accelerate the development of more general policies.

Green Accounting. Highlighting the impact of environmental degradation at the national economic planning level is required, since conventional national accounting methods inadequately reflect environmental concerns. For example, expenditures on pollution clean-up programs are treated as additions to GNP, while depletion of natural resources is typically not reflected as an offset to income; increased efforts are required to estimate “genuine” investments, where such depletion is estimated as disinvestment. In recognition of this, many countries are now experimenting with "green" national income accounting. It should however be noted that national income accounts are inadequate in many ways as indicators of human welfare, and will remain so even after such adjustments have been made. In particular, many of the most important environmental impacts are not quantifiable in economic terms, and therefore can never be fully commensurate with traditional components of GNP. Of special concern are the complex interrelationships between income distribution and the environment. Complementing the adjustment of national income accounts themselves, it would therefore be appropriate for China to continue its efforts, already assisted by UNDP, to develop systems of satellite accounts, by which physical changes in the natural environment can be related to conventional national income measures.

Sector-Specific Activities

The emphasis of environmental economics for policy decisions at the sector level in China should correspond to the priority problems themselves, which in practice are determined in large measure on scientific, political and social criteria, with remedial actions being determined essentially in terms of their perceived affordability and administrative feasibility. The application of environmental economics in aiding this process refers mainly to two main aspects of decision-making, namely (a) identification of priority actions, i.e. using valuation techniques to rank the most serious environmental problems and (b) identification of ways to bring about change, including the behavioral and financial aspects of economic incentive systems. Economic analysis is thus necessarily an important component of policy analysis in

all sectors. Indeed, this has been recognized in the CCICED program, in which much of the effort of the Economics Working Group consisted of technical support to other Working Groups in order to achieve overall consistency in policy recommendations.

The whole range of environmental problems is of course evident in China, these being mirrored to some extent in the titles of other CCICED working groups – e.g. energy, clean production, sustainable agriculture, biodiversity, transportation, and so on.. Specific feedback that the Working Group has received from Council members and other high ranking officials in China is that major attention should be paid to the water resources issue. Pricing policy and valuation issues would be of central concern, since water resources tend to be highly subsidized at a time when water scarcity is already threatening economic development in some areas and intersectoral allocation raises major political and social concerns. In addition to intersectoral allocation issues, choices between alternative energy sources require cost comparisons of hydro and thermal projects to be made on a "level playing field" in which environmental as well as other costs are compared on a consistent basis.

Other areas that have been presented to the Working Group as of high priority for economic analysis include valuation and incentive systems for urban traffic congestion and pollution, and the need to promote public transport, as well as the interrelated areas of deforestation, desertification and soil erosion. Means of protecting biodiversity and in particular the development of eco-tourism have also been indicated as priorities.

In view of the strategic importance of the areas concerned, updating of some of the earlier sectoral pricing and taxation studies undertaken by the Working Group should be considered.

Refinement of some of the tools used at the sectoral level, and extension of their use to intersectoral choice and as building blocks for macroeconomic level analysis and policy is also required. Valuation issues, which pose a special problem for environmental policy, require special attention. Almost by definition, monetary evaluation of the services provided by the environment is difficult, since what is defined as "environmental" usually falls outside of conventional markets. And market indicators (willingness to pay) are essential elements of cost-benefit analysis. Considerable work is still needed to improve the use of conventional cost-benefit analysis of environmental impacts in China, but this should be done in full recognition of the shortcomings of the technique as normally practiced. Although monetary indicators alone can never be relied upon, the cost-benefit framework is nevertheless an indispensable discipline in setting out the implications of a policy or investment in a systematic manner

and should remain a central element of multicriteria analysis in which value judgments and assumptions are made transparent. Institutional means of involving concerned stakeholders in this process in an effective way continues to be a priority in China, as in other countries.

Enabling Conditions

Experience in other countries indicates that the success of policy reforms initiated at the central level depends heavily upon the existence of a number of other factors, or enabling conditions. For example, with regard to the reform of pricing policy, there should be an ability to respond to economic incentives in an efficient and well informed manner. This may require the removal of constraints such as access to credit, inadequacy of technical education and public awareness, ambiguous allocation of water and other property rights, or indeed inefficient pricing policies elsewhere. Consequently other reforms of an economic, social or institutional nature may be required in parallel with those identified for environmental policy. Indeed during the early years of the CCICED the Working Group heavily emphasized the need for gradualism in introducing price reforms related to the environment since market imperfections were so prevalent elsewhere in the economy. Clearly however, this issue has become less and less important, although distortions and inequities in the system still provide constraints to rapid improvements.

There remain important issues concerning education. A generic recommendation is that capacity should be developed on a sector-by-sector basis to employ economic analysis relating to environmental aspects of the activities of concerned ministries and agencies. This would involve development of evaluation techniques in order to identify priority actions, as well as the design of economic incentives to achieve cost-effective and equitable solutions to environmental problems and to promote environmentally benign activities. In order for this to be a useful recommendation it is also necessary in parallel to develop a set of incentives and institutional mechanisms for officials in a wide range of public agencies to systematically consider the environmental and social implications of their policies and projects and to take measures that are consistent with the common good.

In practice, the actions of many government agencies whose primary mandates do not refer to the environment may sometimes be even more important for the environment than the actions of agencies (SEPA and EPB's) which have solely environmental mandates. The foregoing suggests continuation of work initiated during the Second Phase of the CCICED by the Task Force on Environmental Management and Economic Planning, which studied the institutional issues associated with the

integration of environment into the overall economic planning process. Paralleling this, SEPA and EPB technical staff themselves should continue to receive training in applied environmental economics along the lines provided several years ago with UK financial assistance.

Environmental economics is spreading rapidly in University faculties of economics, but increased efforts are required to introduce environmental economics as an integral part of business education, as well as in schools of engineering and indeed environment itself.

Exit

Forest and Grassland Task Force Report

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Executive Summary

INTRODUCTION

The Task Force appreciates the opportunity provided by the CCICED to provide an independent evaluation of the National Forest Protection Program and the Land Conversion Program, and to reflect more broadly on opportunities to strengthen the forestry sector. The Task Force applauds the Chinese government's recent efforts to transform the forest sector from a timber production orientation to one that is dedicated to restoring and conserving forest ecosystems and contributing to sustainable development. The Task Force believes that current programs and financial commitment of government are reflection of government's strong commitment to the ecological restoration of Western China while addressing the complex social income and employment implications for the forest-dependent households. These steps have the potential to establish a foundation for sustainable development in Western China and the Task Force wishes to make a positive contribution to this reform process.

This report summarizes the key findings of the Task Force during its second phase (2001-02). These findings were derived from an analysis of the implementation of the Natural Forest Protection Program (NFPP) and the Sloping Land Conversion Program (SLCP) conducted during the first phase; a set of policy studies commissioned in late 2001, and from the series of workshops and conferences conducted during this second phase. These findings are summarized and presented to the Council as a comprehensive framework for policy improvement and reform. This set of recommendations is intended to assist the Chinese government to improve the performance of the forest sector and achieve its goal of sustainable development while ensuring sustainable livelihoods for millions of forest-dependent people.

The recommendations[1] are organized into two parts below: (1) those directly pertaining to the NFPP and SLCP; and (2) those that pertain to the broader forest sector. The second set covers five policy areas recognized to be most critical to China's forest development: (1) forest governance and public administration; (2) taxation and fiscal policies; (3) forest tenure and ownership; (4) approaches to regulate forest harvesting and; (5) forestry and trade agreements. For each key policy area the framework presents: (1) existing policy issues; (2) policy reforms that can be implemented in the very short-term; and (3) research priorities.

This paper first reviews the key findings and recommendations regarding the implementation of the NFPP and the SLCP. It then presents recommendations to improve and reform critical forest sector policies.

[1] These findings and recommendations described in much greater detail in the ten case studies, the proceedings of the Workshop on Public Payment Schemes held in Beijing in April 2002, the proceedings of the International Forum on Chinese Forestry Policy held in Beijing in June 2002, as well as the new book entitled Implementing the National Forest Protection and Land Conversion Programs: Impacts and Lessons.

IMPLEMENTATION OF THE NFPP AND THE SLCP: FINDINGS AND RECOMMENDATIONS

The Government introduced the NFPP and SLCP to restore natural ecosystems and diminish negative impacts off-site such as flooding, sedimentation of reservoirs, and dust storms. In its second year of operation the Government added to its goals the desire to achieve these environmental objectives in a manner that reduced poverty and contributed to local development.

Task Force studies have found that the two programs have undoubtedly had a huge environmental impact, although the environmental benefits of these programs have not yet been fully evaluated. The logging ban has dramatically reduced exploitation in vast areas of natural forest and the conversion program has planted trees and grasses on hundreds of thousands of hectares of sloping agricultural land. In general, this reduced pressure and new vegetation will help restore ecosystem health, although environmental gains would be enhanced in many cases with better, more ecologically appropriate, land use technologies. In the meantime, the Task Force studies also found the programs have generated a host of unintended, and adverse, social consequences: including dramatic increases in poverty, diminished fiscal incomes, greater tenure insecurity, and accelerated increases in timber imports from other countries.

In the case of the NFPP in particular, and despite the subsidies provided, the impacts on local livelihoods are extensive and, in many cases, severe. Even the state-owned forestry enterprises and their staff, which have received the bulk of the compensation provided by the NFPP, crisis-level impacts are occurring in a many areas. Perhaps most importantly, the logging ban was arbitrarily extended in many areas of the country to collective forests, which since the tenure reforms of the 1980s have become more productive than state-owned forests. Denying these communities the right to benefit from their investments in their forests not only contradicts existing legislation but compounds tenure insecurity and diminishes incentives to invest in forest restoration and management.

Regarding the SLCP, there is no evidence that the SLCP has directly led to increases in poverty, but there is evidence that food subsidies have distorted local markets and put downward pressure on prices, therefore decreasing incomes for farmers who still rely on crop production. In the short term, many local economies might suffer setbacks due to the downsizing of agriculture and its induced decline of agricultural input supply and agricultural product processing industries.

Given these lessons the Task Force recommends the following actions to improve the contributions of the NFPP and the SLCP to government goals of restoring forests and grasslands and improving rural livelihoods:

- NFPP
    - Remove the ban on logging from all collectively-owned forests;
    - Develop a strategy to drop the logging ban from state-owned forests. This ‘exit strategy’ would include a forward-looking plan for restructuring public forest administration, the identification of permanent protected areas and new strategies to conduct sustainable forest management on state-owned forests; and

    - In the interim, compensate collective forest holders for losses caused by the ban and increase the level of compensation to those impacted by the logging ban on state-owned forests.
- SLCP
    - Develop a strategy to engage other sector agencies in reducing sedimentation from engineering works;
    - With the active participation of local officials and representatives of stakeholders, improve the targeting and implementation of the program – by adopting specific environmental targeting criteria and more market-based mechanisms such as bidding; and
    - Develop a "sustainability" strategy to continue the positive benefits of the program following the end of the subsidies. This 'sustainability' strategy would include an aggressive piloting and advancement of alternative funding sources for these payments for ecosystem services, including a redesigned Ecosystem Compensation Fund and promotion of new markets and payment schemes for carbon sequestration.

FINDINGS AND RECOMMENDATIONS FROM POLICY STUDIES

1. Forest Sector Governance and Administration

Key Policy Issues. The forestry sector has lagged behind others in reforming and adjusting to the new market orientation of the government. Field studies and policy analyses demonstrate the need to rethink the role of the government in governing the sector and to adjust the scope of authority of State Forestry Administration accordingly. There are basically two categories of issues: those related to reconsidering how the government manages publicly-owned forests, and that related to how the government guides, monitors and encourages private forest owners and forest enterprises to manage sustainably and develop according to national goals. In the first category, the government needs to restructure public forest management and decentralize state-owned enterprises.

In the second category, the work of the SFA needs to be re-oriented towards guiding, monitoring and regulating private actors and away from implementing investment and development programs. A key to success will be devolving functions to the private sector and decentralizing authority to lower levels of government consistent with the need to ensure that national (i.e. State) forest management and protection objectives can be ensured. Once the goals and strategies of devolution and decentralization are in place, the government will need to organize a coherent strategy to manage these transitions, balancing the interests of the different sectors of society and the needs of the nation.

Priority Policy Reforms in the Short-Term:

- Establish one or more multisectoral task force(s), with representatives from key constituencies, to lead the process of restructuring public forest management and the role of the government in guiding private actors. This second task will entail harmonizing bureaucratic structures and decentralizing authority in public forest administration;
- Establish independent systems to monitor and evaluate performance of

government and private forest managers at different levels
- Set up pilot projects to test institutional innovations in three areas: public forest management; decentralized public administration of private sector forest management; and devolved responsibility from public to private actors.

Priorities for Policy Research
- Identify innovative decentralization and devolution approaches to manage state forests and govern private sector operations;
- Identify lessons from managing forest sector transitions from other countries;
- Disseminate national and international lessons to debate across all levels of policy making bureaucracy and private sector constituencies;
- Explore options to increase public awareness of forestry policy options and increase private and civil sector participation in policy design, monitoring and setting new standards for the forest sector
- Devise options to rationalize the public forest estate: allocating forest to protected areas and collectives what would be appropriate and devising new institutional arrangements to manage the rest for multiple use by public forest agencies.

2. Taxation and Fiscal Policies

Key Policy Issues. Sector performance is now constrained by high levels of taxes – especially as compared to the agricultural sector. In addition, the large number of entities that have authority to tax and the variability of tax levels by year create great uncertainty in the tax burden. Local governments need tax revenues to monitor and regulate the sector, but lower and more predictable levels will greatly improve sector performance. Key issues include identifying what agencies at what levels of government should have authority to set taxes, what the tax levels should be, and how the transition to a new tax regime would be best undertaken.

Priority Policy Reforms in the Short-Term
- Rationalize taxes, simplifying the system and reducing the uncertainty, yet ensuring that local government costs are adequately financed, accompanied by substantive administrative and regulatory reform.

Priority Policy Research Issues
- Investigate tax disincentives to allow for competitive forest industry investment and development;
- Study the impact of reduced taxes and deregulation on forest productivity growth and fiscal performance;
- Study the impact of upcoming international and domestic mechanisms of carbon trading on forest investment, ecological protection and poverty alleviation.

3. Forest Land Tenure and Ownership

Key Policy Issues. The overall lack of respect of property rights and the divergence between de facto and de jure rights creates uncertainty, discourages investment and undermines respect for the law. The extension of the NFPP to collective forests reverses the gains made by the HRS at a time when the production from those forests is increasingly important to the national timber supply. The many, confused and

overlapping land regulations further discourage efficiencies of land use and the land market. The lack of independent and credible bodies to mediate land disputes and weak judicial institutions are critical constraints to a robust forest sector.

Priority Policy Reforms in the Short-Term

- Strengthen property legislation pertaining to collective forests in accordance with the new land contract law, identifying due process for government takings and procedures for valuation and compensation in cases of imminent domain;
- Deregulate controls on private land use, shifting towards a strategy of incentives and payments to ensure the production of publicly valued ecosystem services; and
- Pilot the devolution of forest resource management of state owned forests exploring new arrangements such as household based forest management, management concessions to forest enterprises, auctioning of afforestation projects, harvesting contracts, etc.).

Priority Policy Research Issues

- Investigate and develop best practices of internal property rights systems for collective ownerships; and
- Explore different tenure arrangements for state forests and implications on efficiency, productivity and resource use behavior change.

4. Approaches to Regulate Forest Harvesting

Key Policy Issues. The dramatically declining flows of timber from public forests over recent decades and the recent political reaction to ban logging in public forests demonstrate the ineffectiveness of the existing system for setting the annual allowable cut (AAC). Furthermore, the centralized system of setting AAC for all forest jurisdictions in all of China, regardless of ownership, is an unnecessary intrusion on the rights of private and collective forest owners. International experience provides proven options to promote sustained yield on public and private forests without infringing on private rights.

Priority Policy Reforms in the Short-Term:

- Eliminate mandated AAC quotas from collective and private forests, limiting quotas to public forests.

Priority Research Issues

- Investigate modern methods to set harvest levels on public forests, including an analysis of methods used in major forested countries that have a proven record of sustainable forest management;
- Explore voluntary and regulatory approaches to encourage sustainable forest management on private and collective forests. Approaches used in other countries that merit serious study include the code of harvesting practices from FAO, and the voluntary approaches to encourage the adoption of Best Management Practices in some States in the U.S, among others.

5. Forestry and Trade Agreements

Key Policy Issues. Membership in WTO and APEC has potentially dramatic implications for China's forestry sector. The most important issue is not the reduction of tariffs, since they are already low and within the required range, rather the host of rules limiting government authority to subsidize particular sectors. This "second wave" of trade issues has yet to be assessed as they apply to China and the Government has yet to begin to adjust it's forest policies accordingly. One the other hand, the importance of the awarness of Chinese government on the impacts of its forest policy change in the world has dramatically increased.

Priority Research Issues

- Assess the implications of WTO/APEC trade liberalization on China's forest industry and existing forest policies;
- Assess the impacts of China's policy change on world market and resource management.

The Report

I. Introduction

The CCICED Western China Forest and Grassland Task Force was established in the summer of 2000, in response to the Government's increased policy emphasis on both forests/grasslands management and on the economic development of Western China. The Task Force has two-year duration. It was approved by the 2nd phase of CCICED and extended for the 3rd phase of CCICED.

The multi-disciplinary, multi-national Forest and Grasslands Task Force, led by co-chairs Shen Guofang of the Chinese Academy of Engineering and Uma Lele of the World Bank, is intended to support the Government in the ecologically, socially, and economically sustainable development of forests and grasslands in Western China. The Task Force's aim is to identify and address the relevant knowledge, policy, planning, and implementation gaps; integrate and build upon recent and on-going quality work; and to provide independent, quality advice to the State Council, China's highest policy making body, as well as policy makers at other levels.

The Task Force appreciates the opportunity provided by the CCICED to provide an independent evaluation of the National Forest Protection Program and the Land Conversion Program, and to reflect more broadly on opportunities to strengthen the forestry sector. The Task Force applauds the Chinese government's recent efforts to transform the government forest sector from a timber production orientation to one that is dedicated to restoring and conserving forest ecosystems and contributing to sustainable development. The Task Force believes that current programs and financial commitment of government are reflection of government's strong commitment to the ecological restoration of Western China while addressing the complex social income and employment implications for the forest-dependent households. These steps have the potential to establish a foundation for sustainable development in Western China and the Task Force wishes to make a positive contribution to this reform process.

During its first year, the Task Force focused its efforts on the Natural Forest Protection Plan (NFPP, or the "logging ban") and the Land Conversion (to Forests and Grasslands) Program (SLCP). Through a series of ten case studies in nine of western China's Provinces, the Task Force gathered detailed information on implementation of these policies at the local level. As an example of the scale of this work, a total of over 1400 surveys were conducted at the household level alone. Synthesis of the results of the ten case studies generated recommendations on both of the policies; and these were presented to the CCICED at its October 2001 meeting.

Year Two Task Force work built on the results of Year One, but focused on the underlying policy issues revealed by the case studies. This reflects the belief of the Task Force that examination of NFPP and SLCP alone is not sufficient for the long term. Alternatives and solutions for achieving sustainable forest and grassland management in the long term are also needed. Thus, in addition to completion of the work on these policies, Year Two work focused on analysing key policy and technical issues identified in Year One as being fundamental to reforming China's forest and grassland sectors. Work was conducted in a manner that builds constituencies for policy reforms, strengthens China's capacity for policy analysis, and helps establish a basis for future forest/grasslands-related research and policy in China beyond the life of the Task Force.

The scope of Year Two work may be categorized into two areas: (1) assessing the impacts and lessons learned from field studies of the implementation of the NFPP and the SLCP; and (2) conducting new studies of key policy issues underpinning the forestry sector.

Much synergy has been found between the Task Force framework of policy study and the ongoing SFA Study on Sustainable Forestry Development Strategy of China. In particular, the Task Force found its work and findings consistent with SFA's new strategic study to provide a new vision for the forest sector, increasing its contribution to achieving the goal of sustainable development:

- Environmental protection
- Poverty reduction
- Development of national forest industries

II. Activities and Products in Phase II

The Task Force has been active in the following areas: (1) designing, organizing and commissioning thematic studies on ongoing national policies; (2) fostering policy dialogues between researchers and government (decision making and project implementing) agencies; (3) holding high level policy workshops to exchange and disseminate research information and products on critical current policy issues; (4) disseminating research findings through formal publications, policy briefs, newsletters and other fora. This section reviews the key activities and products of Phase II.

Policy Dialogue on the Implementation of the NFPP and SLCP

A technical meeting to review and discuss the findings from the case studies of program implementation was held December 2001 in Kunming. Case study teams met with SFA officials, to report their findings on socio-economic impact of NFPP and SLCP, and to receive feedbacks from the relevant agencies and officials. The discussion was very hot and remarks by SFA officials were positive. The officials were impressed by the household level survey and the rich information generated from the case studies. The case studies, as commented by one official, provided very different information that traditional official survey was not able to generate. The case studies raised concerns that were shared by the officials and other scholars and point out possible solutions that the officials and scholars welcomed.

Workshop and Conference

The Task Force sponsored a workshop and conference with the active participation of a wide array of Chinese and external experts. In the April workshop on public payment schemes, 88 international and domestic participants were present. Domestic participants included Vice Administrator of SFA, DGs of SFA's policy department and several other departments. Many came from provincial level forestry agencies and local universities. As an important follow-up event, SFA and CCAP will co-sponsor a workshop and a training course on international carbon trading at the end of year 2002.

The Task Force sponsored an international conference, entitled the International Forum on Chinese Forestry Policy in June 2001 and both Administer Zhou Shengxian and Vice Administer Zhu Lieke attended. Mr. Zhu came at the first morning and gave a presentation on SFA's ongoing strategic study. Mr. Zhou attended the Forum's conclusion session. After listening to the recommendations by the Task Force representative on Chinese forestry policy, Mr. Zhou provided warm response and delivered a speech on his vision of Chinese forestry development. More than 160 attendees, from both international and domestic, Beijing and local agencies, participated the two day conference and enjoyed hot debate during the meeting.

Studies, Expert Investigations and Publications

The Task Force conducted new forest policy studies on the following topics:

- Forest policy development and implementation for an economy in transition and undergoing restructuring
- The role of the state in the forestry sector
- Forest land tenure

- Forest taxation and fiscal policies,
- Forest resource management and marketing regulations,
- Regional and international impacts of current policy and opportunities

Expert led investigations. From April 21 to 30, 2002, Professor Shen Guofang led a team of experts and carried out an investigation of progress in NFPP and SLCP, in Sha'anxi, Ningxia and Gansu. This was the second time that the Task Force had expert team visiting the program sites and re-investigate the ecological, social and economic impacts of the two programs. Recommendations from this survey were presented in the Task Force's June conference, by Professor Shen, and have been incorporated into the Task Force report. A policy brief was published by Chinese Academy of Engineering.

Publications:

- Published books socio-economic impact and policy implications of NFPP and SLCP, and the finalized case studies
- Proceedings for the Workshop on public payment schemes, with topics as follows: (1) international experiences with public payment schemes for environmental services; (2) guidelines for monitoring and evaluation in public compensation schemes; and (3) the Chinese Ecological Compensation Fund
- Proceedings for the International Forum on Chinese Forestry Policy, with topics as follows: (1) Forest policy framework for economy under transition; (2) forest and land tenure rights and tenure insecurity of collective forests; (3) impacts of the existing forest resource management system and recommendations for reform; (4) forest tax and fiscal policy options for reform; (5) the role of the state in forest administration and governance; and (6) Chinese forest industry under logging ban and WTO.
- Policy Briefs, Newsletters and Web Site.

Media Exposure. The two conferences raised attention among forestry communities and media. They were reported in China Green Times in large volumes. Papers were solicited by journals and newspapers. Some were published in China's "International Economic Review", "Forestry Economics", and "Forestry Science and Technology Management", etc.

III. Indicative Impacts of Phase II

Of the eight recommendations forwarded by CCICED to SFA from the June conference, five of them prepared by the Forest and Grassland Task Force, were paid high attention. SFA assigned thematic study groups for each recommendation to develop understanding and prepare response. A monitoring and evaluation program was under consideration by SFA to improve implementation of NFPP and SLCP, an area of activity that that the Task Force has provided very strong inputs. The SLCP Center and the Task Force have co-sponsorship on the newly finished report with regard to improving monitoring and evaluation of SLCP policy. Socio-economic impact and regular-based rural household survey approach will be explored by SLCP Center of SFA, another important area that the Task Force has had pioneered. CCAP has been contacted by SFA to participate in the future socio-economic impact study along the course of the program implementation.

One policy brief has been submitted by the Secretariat of the Task Force to the leader of CAS on how to improve China's ecological benefit compensation system. Policy briefs have also been solicited by SFA to provide updated information with regard to the progress and lessons in the ongoing NFPP and SLCP.

IV. Review and Recommendations on NFPP and SLCP

NFPP

Task Force studies have found that the NFPP has undoubtedly had a huge environmental impact, although the environmental benefits of this program have not yet been fully evaluated. The logging ban has dramatically reduced exploitation in vast areas of natural forest. In general, this reduced pressure will help restore ecosystem health, although environmental gains would be enhanced in many cases with active management aimed at restoring forest ecosystem health.

In the meantime, Task Force studies also found that negative socio-economic impacts are extensive. Even for state-owned forestry enterprises and their staff, which have received the bulk of the compensation provided, crisis-level impacts are occurring in certain cases. Important issues that emerge are the problems with a blanket ban for enterprises that are resource rich, and the question of whether alternative management regimes that allow selective logging may be more appropriate for such enterprises. A blanket ban also rules out possibilities in many places for measures such as health tending and thinning, which are considered important to the health of forests. Another emerging issue is the need for greater attention to diversification initiatives. In terms of local governments and quasi-public provision of public goods and financial services, it appears that, at least in the short-term, local governments that were previously highly dependent on the timber economy will need outside help with their public finances at a greater level than is currently being provided. Finally, impacts on rural households outside the state sector reveal a devastating picture that draws attention to the fact that these stakeholders have not been included in any substantial way in the compensation scheme. Impacts on rural households that previously had access to community forests raise a host of very critical issues with regard to sustainable management regimes and tenure

Key issues limiting program effectiveness and efficiency mostly pertain to inadequate design and targeting and the centralized nature of implementation. For example, studies have shown that engineering infrastructure contributes as much or more to stream sedimentation as does hillside agriculture. Natural forest and grassland regeneration is often much more effective than planting exotic, fast growing trees.

Specific areas of concern include:

1. The Task Force found that funding has not been sufficiently prepared by central and local government, resulting in severe negative social and economic impacts, such as:

    - Lack of compensation for collective forests included in the logging ban;

- Lack of aid for communities in the natural forest areas, leaving the communities suffering economic loss due to loss of economic opportunities.

- Lack of a system that can help local communities to shift from being forest dependent to alternative economic activities; Establishing appropriate system, such as micro credit, technical assistance, is of necessity.

2. The legal issue of imposing logging ban on collective forests is not resolved. Its impact to reduce private sector incentive to invest in long term forest operations contradicts the goals of the NFPP. Initiatives to remove the logging ban from collective forests, such as is being undertaken in Sichuan, should be encouraged.

3. Study of best practice in natural forests should be put on agenda. Priority should be given to exploring ways to reform current state own forest enterprises in order to establish a system that work to the objective of sustainable forest management in China. Code of forest harvesting proposed by FAO should be studied and tested in China. Experiences existing in state forest enterprises in alleviating economic burden, raising income for enterprises and employees without degrading forest resources, enhancing efficiency and productivity in forest industy, etc, should be promoted. Experimenting in increasing private sector participation in natural forest management, utilization and investment should be encouraged. Examples include household based forest management responsibility system initiated in Heilongjiang Forest Industry Bureau, auctioning of forest harvest concession (reduced harvesting cost and compliance with harvesting code, etc.), and development of private processing industry in the state owned forest regions, etc. These experiments are promising initiatives that demonstrate optional approaches to manage state forests in sustainable manner.

SLCP

1. Funding for implementation was found insufficient. This inadequate funding, combined with the stringent requirement on quality and timing, created incentives among implementation agencies for lower quality of seedling supply and reduced quality of afforestation work.

2. Task Force studies also found that short-term impact on local economy is negative in many cases, especially in the sectors that provide production inputs and in the sectors that process agricultural products. Regional economies might suffer temporary setback due to the agricultural downsizing. Greater subsidies to alleviate this type of hardship should be in place, together with other arrangements, such as micro credit and extension and training programs.

3. Monitoring and evaluation of the impact of SLCP project in representative areas, to make sure the projects meet the objective of ecological improvement (soil and water conservation), poverty alleviation and economic structure adjustment, should be conducted in a regular basis. Policy adjustment should be made if warranted by information from the appropriately designed monitoring and evaluation process.

4. Tenure issues, after the conversion of agricultural land into tree crops, should be studied carefully in order to ensure the sustainability of the project outcomes.

5. Even if the outcome of land conversion is stabilized, there still exists the possibility of, in the case of price increase and food shortage, the clearing of new land in a different location. This has happened in the pasture area. When pasture land was closed from grazing, herders tend to shift some of the grazing activities to other locations (e.g. from Qinghai to Sichuan). Therefore, implementation of the land conversion program should be conducted in coordination with other programs that aim to generate off-farm employment and restructure rural economies.

Recommendations to Improve the NFPP and SLCP

1. NFPP
    a. Remove the ban on logging from all collectively-owned forests;
    b. Develop a strategy to drop the logging ban from state-owned forests. This 'exit strategy' would also include a forward-looking plan for restructuring public forest administration, the identification of permanent protected areas and new strategies to conduct sustainable forest management; and
    c. In the interim, compensate collective forest holders for their losses caused by the ban and increase the level of compensation to those impacted by the logging ban on state-owned forests.
2. SLCP
    a. Develop a strategy to engage other sector agencies in reducing sedimentation from engineering works;
    b. Improve the targeting and implementation of the program – by adopting specific environmental targeting criteria and more market-based mechanisms such as bidding, with the active participation of local officials and representatives of stakeholders;
    c. Develop a "sustainability" strategy to continue the positive benefits of the program following the end of the subsidies. This 'sustainability' strategy would include a aggressive piloting and advancement of alternative funding sources for these payments for ecosystem services, including a redesigned Ecosystem Compensation Fund and promotion of new markets and payment schemes for carbon sequestration.

Above all, Task Force research on the NFPP and the SLCP revealed significant weaknesses and gaps in the policy framework necessary for sustained protection and production in the forest and grassland economies, and the inability of government subsidies to override those constraints. Tenure insecurity, high tax rates, subsidies that favour state enterprises over private, and a host of government distortions all diminish land holder incentives to restore their forests and grasslands and manage them in a sustainable manner. Poor public forest management is due to history of incentives to over-harvest – not a lack of subsidies.

V. Recommendations to Improve Forest Sector Policy Framework

The following recommendations are synthesis of three tracks of information:

(1) Thematic policy studies commissioned by the Task Force;
(2) International experiences presented by international experts, prepared for the Task Force and its policy workshops;
(3) Summaries of group discussions from the policy workshops.

Policy Development and Implementation for an Economy in Transition

Chinese economy is under transition toward an increasingly market-oriented system. The society benefits tremendously from the reform for higher economic efficiency, more products, better services, and so on. China's forest sector, on the other hand, has lagged behind in terms of promoting market and grass-root participation. Consequently, forest sector may miss the opportunity to benefit from increased demand and trade liberalization.

Achieving the goals of environmental protection and improved rural livelihoods will require urgent attention to those fundamental policy constraints that distort the incentives of both public and private land managers. Looking deeper, Task Force studies reveal a concept of the role of the state centered on redistribution of resources and direct control over land use regardless of ownership. This concept not only contradicts existing law—as it pertains to private and collective landholders—but is out of step with modernization reforms in other sectors of the economy and the stated aspirations of the government.

Reform in China's forest sector has moved the farthest on collective forest tenure change with an iterative process. In forest resource management system, and in China's state owned forest areas, reforms are relatively slow.

To establish a sustainable forest sector, there is a need for a coherent policy framework. This framework should avoid any conflict among different forest policies, and should avoid conflicts between policies made for forestry and policies made for other sector (i.e. Law of Grassland, Water and Soil Conservation Law, and Forest Law, etc..)

Based on international experiences and domestic lessons, there is also an urgent need to coordinate actions among different sectors. There should be some recognition that policy change outside the forest sector might have bigger impact on forestry sector policy. On the other hand, when forest sector is taking on bigger responsibility now than before, it should recognize the value of existing experiences, lessons and scientific knowledge accumulated from other relevant sectors. Currently there is no mechanism to systematically and independently learn from the lessons of experience and reflect them in finetuning policy or implementation. A mechanism (Task Force) that facilitates exchange of knowledge and coordinate acts between sectors would greatly reduce the chance of failure and shorten time of learning.

While existing forestry problems call for a systematic reform in China's forest sector, there is no readily available model in the world that can be directly borrowed. However, learning from international experiences is still very important. Studying what already exist and tried out in forest areas by forest farmers, rural communities, and state owned

forest enterprises is also very important and is the only way to find direction for future policy reform.

Governance and Administration of the Forest Sector

Field studies and policy analyses demonstrate the need to rethink the role of the government in governing the sector and to adjust the scope of authority of State Forestry Administration accordingly. There are basically two categories of issues: those related to reconsidering how the government manages publicly-owned forests, and that related to how the government guides, monitors and encourages private forest owners and forest enterprises to manage sustainably and develop according to national goals. In the first category, the government needs to restructure public forest management and decentralize state-owned enterprises.

In the second category, the work of the SFA needs to be re-oriented towards guiding, monitoring and regulating private actors and away from implementing investment and development programs. A key to success will be devolving functions to the private sector and decentralizing authority to lower levels of government consistent with the need to ensure that national (i.e. State) forest management and protection objectives can be ensured. Once the goals and strategies of devolution and decentralization are in place, the government will need to organize a coherent strategy to manage these transitions, balancing the interests of the different sectors of society and the needs of the nation.

The transformation of forest sector's focus from marketable products (timber, etc.) to ecological services should not lead to a bigger forest administration and wider scope of government intervention in forest management.

The stated 6 major programs at SFA will help the forest authority to be more focused and maybe more effective in achieving its set goal of ecological improvement in the near future, but this newly set focus should not be used to compete away financial resources otherwise available for the private sector.

In many areas the prive market is more effective and cost efficient than governments even in supplying public goods. Bidding and auctioning approach proved in many sectors to be effective to ensure cost efficiency and maintain high quality. They should be used in the implementation of key forest projects, in the area of afforestation, road construction, inputs supply as well as harvest concession.

Not only a bidding and auctioning system should be in place, but also a wide array of entities should be allowed to participate in the design, implementation and management of forest project. Of the entities, rural communities should be given opportunity and authority in participating in the decision making process and their property right over local forests should be secured and enhanced, and their customary rights over local natural resources should be respected.

An independent system of monitoring and evaluation should also be a priority in order to reduce management cost and increase effectiveness of project implementation.

Priority Policy Reforms in the Short-Term:

- Establish one or more multisectoral task force(s), with representatives from key

constituencies, to lead the process of restructuring public forest management and the role of the government in guiding private actors. This second task will entail harmonizing bureaucratic structures and decentralizing authority in public forest administration;
- Establish independent systems to monitor and evaluate performance of government and private forest managers at different levels
- Set up pilot projects to test institutional innovations in three areas: public forest management; decentralized public administration of private sector forest management; and devolved responsibility from public to private actors.

Priorities for Policy Research

- Identify innovative decentralization and devolution approaches to manage state forests and govern private sector operations;
- Identify lessons from managing forest sector transitions from other countries;
- Disseminate national and international lessons to debate across all levels of policy making bureaucracy and private sector constituencies;
- Explore options to increase public awareness of forestry policy options and increase private and civil sector participation in policy design, monitoring and setting new standards for the forest sector
- Devise options to rationalize the public forest estate: allocating forest to protected areas and collectives what would be appropriate and devising new institutional arrangements to manage the rest for multiple use by public forest agencies.

Taxation and Fiscal Policy

Unreasonably high taxation is common knowledge in China's forest sector. In China's collective forest area, tax distortion is even more serious, taking up 40-70% of the timber sales. There is no argument that this significantly reduces commercial timber sector's comparative advantage and places huge disincentive to forest investment, something that works against the main goal of forest sector in China.

Large taxes and fees are not without its institutional basis. China maintains heavy regulations over forest resource management and utilization, even in what has been classified as collectively owned forests. On the other hand, forest projects still remain largely government action. These activities require a large forest administrative force. However, budget to feed this large force is far from sufficient. The need to maintain the large administrative force creates needs for increasingly higher taxes and charges over timber sales.

This being known, taxation reform has to start with institutional reform. Downsizing government direct project, reducing regulatory distortion hence the need for large administrative force is the key to reduce the tax and fee distortion.

As for the fiscal policy, the allocation and use of program funding and the performance of forest program can be improved when objective, independent monitoring and evaluation mechanism is established. The M&E system should be run by teams outside the implementation agency and should target more on the social and economic aspect of the project implementation.

New opportunities, such as Carbon Trading mechanism, should be paid bigger attention. In the future, participating in carbon trading can potentially earn Chinese forest sector tremendous amount of credit and consequently large financial in-flow. Proper utilization of the mechanism will greatly enhance forest sector's financial performance, therefore enhance the incentives of forest producers for more investment and better management.

Priority Policy Reforms in the Short-Term

- Rationalize taxes, simplifying the system and reducing the uncertainty, yet ensuring that local government costs are adequately financed, accompanied by substantive administrative and regulatory reform.

Priority Policy Research Issues

- Investigate tax disincentives to allow for competitive forest industry investment and development;
- Study the impact of reduced taxes and deregulation on forest productivity growth and fiscal performance;
- Study the impact of upcoming international and domestic mechanisms of carbon trading on forest investment, ecological protection and poverty alleviation.

Forest Land Tenure and Ownership

Stability, predictability and consistency in the dejure and defacto land tenure and transparency in its implementation is critical. Forest land tenure reform has been very active. Land tenure arrangement varies significantly across regions and over time. The success of the land tenure reform also varies.

Forestland tenure reform, mainly decentralization of collective forests, was mostly influenced by the Household Production Responsibility System (HPRS), adopted by the agricultural sector in early eighties. Counterpart reform in the state forest areas, like household based natural forest management and agricultural land contracting system inside state forests, has also been attributed to HPRS influence. It is conceivable that future forestland tenure reform will still follow the lead of rural agricultural reform.

The active forestland reform contributed greatly to the formation of current forest landscape. When investment is available, productivity of afforestation projects is much higher, which explains China's recent success in plantation development and give the government confidence in its grand ecological projects. On the other hand, the rapid growth of economic forests, bamboo forests are also consequences of the increased land use rights by farmers due to the tenure reform.

What separate forest sector from the others is the importance of tenure security. Tenure insecurity will increase the risk of forest operation, therefore imposing disincentive for rural households and private investors to commit long term resources in forestland management. China's experience is a prove of it. Although forestland tenure is being constantly decentralized, in many places it is subject to administration's will for adjustment. Existing harvesting regulation and market distortion compound the negative effect. The consequences are: farmers have very little incentive to invest in afforestation and reforestation, especially in those of ecological importance. Farmers are more inclined to plant economic forest crops, bamboo forests, and cropland, which give farmers short term benefit but may not fit the government's goal of ecological protection.

There is tremendous need for a legal framework to secure tenure: to avoid administrative intervention in forest use and violation of tenure arrangement, customary rights, etc. and depriving of use right (i.e. logging ban).

While logging ban in natural forest is clearly beneficial for the rehabilitation of the depleted natural forest ecosystem, extension of the ban into collective forest areas, not only is a violation of collective forest tenure rights, but also a huge blow to the development of forest resources in the collectively owned forestland.

In NFPP, property rights of collective forest owners must be respected and protected. Compulsory shutting down of farmers' production activities in collective forests are in principle against forest law and should be reversed, unless reasonable compensation was provided. Logging ban in collective forests damages farmers ' and private sectors' trust toward government policy, causing disincentive to invest in forestry, therefore should be lifted immediately or a compensation mechanism has to be established immediately..

In the forest areas with marginal ecological significance, tenure rights should be granted to local community and rural household from state sector (state farms, enterprises) for better management and to increase economic situation of the local community. There are trials in the state forest enterprises in contracting out forest management right to workers family. The recent observations are that certain experiments create opportunities for workers to generate greater income from managing non-timber forest products. The trials also show promising trend in behaviour change in terms of resource use and provide possible solution for transforming state forest industry into an efficient and sustainable sector. The experiences should be closely examined.

Priority Policy Reforms in the Short-Term

- Strengthen property legislation pertaining to collective forests in accordance with the new land contract law, identifying due process for government takings and procedures for valuation and compensation in cases of imminent domain;
- Eliminate compulsory land use changes and deregulate controls on private land use, shifting towards a strategy of incentives and payments to ensure the production of publicly valued ecosystem services; and
- Pilot the devolution of forest resource management of state owned forests exploring new arrangements such as household based forest management, management concessions to forest enterprises, auctioning of afforestation projects, harvesting contracts, etc.).

Priority Policy Research Issues

- Investigate and develop best practices of internal property rights systems for collective ownerships; and
- Explore different tenure arrangements for state forests and implications on efficiency, productivity and resource use behavior change.

Regulation of Forest Harvesting

Chinese government uses harvesting quota and logging ban to control timber production. The main purpose of these regulations has been to prevent existing forest resources from declining. The expectation is, timber harvest regulation together with government's

increasing investment in afforestation, would achieve the goal of stabilizing and expanding China's forest resources.

The harvesting quota system was established in Forest Law 1984, but officially put into practice in 1987. The principle of the system is the volume of timber harvest can only be set below the volume of timber growth. It is the central forestry authority to set the national table of harvesting quota for all regions and provinces. Provincial level forestry authorities then redistribute the quota to subordinate regions, so on and so forth.

The global experiences indicate that harvesting quota system, or what is conventionally called annual allowable cut system, is implemented where the state and government have property rights. It is more often applied to the protected forests under public ownership. Private forest owners should have rights to decide when, how and how much to cut and utilize their own forests. When the state has stake in the forests under non-state management, the benefit sharing system should be established. Once private forests are required to provide public services, a reasonable compensation scheme should be in place.

Where the logging quota system is enforced, it imposes restriction to the ability of forest producer to generate maximum economic return from their operations, therefore damages producers' incentive to re-invest in the forests. The consequences include declining quality of existing forests due to inadequate maintenance, conversion of forestland into cropland and other more economically viable land use, and insufficient private investment in reforestation and afforestation. The implementation of logging ban in China's state owned natural forest areas proves the failure of current yield regulation system including logging quota.

For the last several decades, there are a number of countries adopting practices of logging ban. This global experience indicates that logging bans are relatively ineffective instruments for maintaining/improving conservation/environmental values; they have been shown to have had negative social and economic consequences in China in the absence of alternative strategies for compensation and wood supply. The farmers running private forest operations inside the logging ban areas and the rural communities living around state owned forests suffer the most setback in economic term, due to downsizing of the timber economy. These setback encountered by the rural communities have been neglected in the compensation policy. On the other hand, neighbouring countries face tremendous threat of deforestation due to China's increased domestic demand after logging ban.

The Task Force strongly recommend that an exit strategy to replace logging bans with harvest allowable under sustainable forest management regimes is a high priority. While the logging ban provides opportunity for state owned forest enterprises to rearrange their operation and employment, it is important to utilize the opportunity to explore new regimes in afforestation, forest management, forest resource harvesting, processing and marketing. Experiences accumulated in the past when these enterprises suffered severe economic hardship but managed to survive should be studied.

Institutional innovations in state forest enterprises include decentralized forest management, auctioning of harvesting and afforestation, development of joint or private processing facilities, etc. The innovations resulted in higher efficiency of forest

operations, higher productivity of forest management and use, and higher income for forestry employees. They should be thorough studied, further experimented and promoted. Furthermore, the centralized system of setting AAC for all forest jurisdictions in all of China, regardless of ownership, is an unnecessary intrusion on the rights of private and collective forest owners. International experience provides proven options to promote sustained yield on public and private forests without infringing on private rights.

Priority Policy Reforms in the Short-Term:

- Eliminate mandated AAC quotas from collective and private forests, limiting quotas to public forests; and
- Initiate projects in representative forest areas of the country to determine the discrepancy between official forest inventory statistics and reality.

Priority Research Issues

- Investigate modern methods to set harvest levels on public forests, including an analysis of methods used in major forested countries that have a proven record of sustainable forest management;
- Explore voluntary and regulatory approaches to encourage sustainable forest management on private and collective forests. Approaches used in other countries that merit serious study include the code of harvesting practices from FAO, and the voluntary approaches to encourage the adoption of Best Management Practices in some States in the U.S, among others.

Forestry and Trade Agreements

Membership in WTO and APEC has potentially dramatic implications for China's forestry sector. The most important issue is not the reduction of tariffs, since they are already low and within the required range, rather the host of rules limiting government authority to subsidize particular sectors. This "second wave" of trade issues has yet to be assessed as they apply to China and the Government has yet to begin to adjust it's forest policies accordingly. One the other hand, the importance of the awarness of Chinese government on the impacts of its forest policy change in the world has dramatically increased.

Priority Research Issues

- Assess the implications of WTO/APEC trade liberalization on China's forest industry and existing forest policies;
- Assess the impacts of China's policy change on world market and resource management.

VI. Conclusion

The CCICED has been a unique mechanism that cannot be found anywhere in the world. It facilitates conversations between sectors, disciplines and countries and provides Chinese government with timely, objective and high quality information to support its decision in developing Chinese society in a sustainable way.

Members of the Task Force on Forest and Grassland are proud of the opportunity they have been given to contribute to the course of sustainable development of China, particularly Western China. Under the leadership of CCICED secretariat, Co-chairs Professor Shen Guofang and Dr. Uma Lele, the Task Force members worked diligently for over two years. To its satisfaction, the Task Force has been able to generate timely and objective information to evaluate the social and economic impacts of ongoing government programs and policies, and provides recommendations to improve the program implementation. Along the course achievements have been made in the areas of dialogue between academia and government agency, the awareness of the importance of independent monitoring and evaluation system, opportunities for improving ecological compensation system, etc.

There are still large room to improve program implementation and policy development. Attention should be given to the socio-economic impacts of government programs and policy change. An independent monitoring and evaluation system should be in place. Market instruments should be introduced into more aspects of the government program implementation. A system of secured tenure rights in forests should be high priority in the future policy development.

Improvement in policy design, implementation and analysis depends on improvement in capacity. Capacity building at all levels of government agencies and research institutions should be given high attention. Building up strong and independent policy research institutions seem to be particularly important at current time in China.

There is also large gap in the Task Force's work and in the society's understanding of grassland restoration and sustainability. The Task Force notices that the government has made several major policy changes to improve grassland management. Nevertheless, scientific studies and sound policy research in sustainable grassland utilization and management remain insufficient. This Task Force strongly recommends continuation of CCICED's support in grassland study and perhaps an establishment of a Task Force on Sustainable Grassland Management.

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Exit

The First Meeting of the Third Phase
China Council for International Cooperation
on Environment and Development

CHINA AND THE WORLD TRADE ORGANIZATION: A SUSTAINABLE DEVELOPMENT PERSPECTIVE

An Issues Paper

by

Task Force on WTO and Environment

November 23-35, 2002

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CHINA AND THE WORLD TRADE ORGANIZATION: A SUSTAINABLE DEVELOPMENT PERSPECTIVE

An Issues Paper

1. China's Accession to the WTO: Environmental Issues

China's accession to the World Trade Organization (WTO) is a major step both for China and for the WTO. It is widely expected that WTO accession, specifically the bilateral agreements between China and many WTO members that preceded accession and the adjustment of the Chinese economy to the requirements of the WTO agreements, will have a significant impact on the Chinese economy. This impact is expected to manifest itself both in growth and in structural economic change. Certain sectors of the Chinese economy are projected to grow rapidly while others will either contract or need to change their mode of operation fundamentally. While the economic growth effect is expected to dominate, the adjustments to the structural changes are expected to be demanding—and will in turn have notable social consequences. This process is expected to last many years as the agreements are phased in and initial response is followed by further adaptation as additional agreements are concluded within the WTO. Because China will be in the adjustment process for several years additional obligations need to be carefully weighed since they will take effect on top of a continuing substantial change process.

1.1. Why is WTO Accession Significant from an Environmental Perspective?

Environmental policy measures create structural economic change as certain kinds of environmentally less damaging economic activities are advantaged while environmentally harmful activities are rendered economically less attractive. This can be achieved by command and control measures that limit the use of certain substances, control discharges, or impose operational requirements. Economic incentives can be used to promote certain activities or to render others more costly. At the same time an entirely new source of economic growth—environmental goods and services—is being created. Many years of analysis have shown that environmental policy measures reduce neither economic growth nor employment but that they do lead to structural economic change.

Conversely, structural economic change that is caused by other factors such as innovation or trade liberalization measures usually has environmental consequences, depending on the environmental impacts of economic activities that are growing and contracting. Rapid growth of environmentally damaging activities involves the threat of serious environmental harm—unless appropriate measures are taken to limit it. Similarly contraction of these activities lessens environmental pressures. It is consequently well established that a changing economy requires continuous adjustment of environmental policy to benefit from new opportunities and to limit changing threats. This is a complex process, and the outcome is determined by the ability to recognise positive developments and to avert environmental threats in a timely

manner. Economic growth certainly facilitates the necessary adjustments since it ensures that resources are available to take necessary measures. However, competition for these additional resources remains fierce, in particular in a country with large unmet needs for social improvements and infrastructure investment. Only vigorous public policies will ensure that resources from economic growth are used to mitigate environmental problems associated with that growth.

Since WTO accession is expected to result in dramatic structural change of the Chinese economy it also represents both an opportunity and a challenge to environmental policy-makers. This will require continuous monitoring of the changes that will occur to ensure that needed environmental measures can be put in place in a timely manner. Some of the environmental impacts are quite predictable and policy-makers should act now to avoid problems later. Other environmental impacts may prove unexpected and policy-makers should be ready to act quickly once they become evident.

1.2. Sectors to Monitor

Most economic activities involve some degree of environmental threat. Even service sectors that are widely considered environmentally benign frequently involve products that require the use of toxic substances, demand large amounts of paper and packaging, or generate rapid growth in transportation needs with the attendant environmental consequences. Most sectors of the economy are associated with identifiable environmental threats that are by now well known. While the environmental consequences of economic growth in general are diffuse and almost impossible to predict, it is possible to identify the environmental threats associated with certain sectors fairly accurately. In many instances, effective measures exist to limit these threats—but they must be adopted before irreversible effects can occur.

A substantial number of studies have been undertaken to assess the likely areas of growth and contraction in the Chinese economy. These studies permit the identification of several sectors that will require particularly close monitoring.

1.2.1. Agriculture. No other human activity changes the environment as fundamentally and as permanently as agriculture. The environmental impacts of agriculture have been difficult to manage in most countries, precisely because they are so widespread and so intimately linked with actual production of crops that provide for human food, clothing, and shelter. Among the issues that can arise are soil erosion and soil fertility loss, pollution by pesticides and fertilisers, the introduction of plastic foils into the natural environment, water use and salinization through irrigation, water runoff and retention, impacts on wildlife and biodiversity including the introduction of alien species. This list of issues underlines how important it will be to monitor changes in agriculture attributable to WTO accession.

“Agriculture” is a complex phenomenon that can be broken down regionally or by crop. For some crops—cotton for example—regional differences are significant, reflecting environmental conditions and cultivation practices, so that differentiation is necessary both by region and crop. Moreover, WTO accession can be expected to impact different regions differently, for example on account of availability and cost of transport. Regions close to the

coast, with efficient ocean transport, will be exposed more quickly and more directly to world market prices than interior regions.

For many years, China has pursued a food self-sufficiency policy. This inevitably involves the acceptance of higher than world market prices in return for independence from imports. This policy is liable to be modified step by step as the consequences of WTO accession become effective. The result is expected to be a restructuring of the agriculture sector, together with notable gains in welfare for urban populations that obtain access to agricultural products at lower prices.

In general, WTO accession is expected to favour labour-intensive crops such as livestock husbandry, tree crops, or vegetables and to put pressure on crops where mechanization is advanced and other technology-based inputs are important, such as cotton, wheat, corn, canola, or soy. In areas where China enjoys comparative advantage, this frequently also manifests itself in relation to developing countries, which are seeking to enter the same markets.

Rice represents a special case because it is closely integrated with rural diets. An unknown quantity remains in the subsistence economy, never reaching any market where competing foreign products may be available.

Most countries have experienced significant levels of rural-urban migration as part of modernization of agriculture and manufacturing. Stability of the rural population is of particular importance in China on account of the number of persons who continue to live in the rural environment. Any significant level of rural-urban migration will also have major environmental impacts as the rural environment adjusts to reduced population pressure combined with increased production pressure and the urban environment is impacted by high rates of population growth, with consequences for water demand, water pollution, air pollution, housing and transport.

1.2.2. Automobiles. The automobile industry has a dual environmental impact—through the location of its production facilities and through the use that is made of its products. China's automobile production is extremely fragmented and not as innovative as automobile manufacturing in many other countries, in particular developed countries. It is expected that automobile manufacturing will be consolidated in a limited number of production facilities, optimally sited to serve the major markets around Beijing and Shanghai and in the Southwest of the country. Most of these facilities will be linked to internationally established brands. It is anticipated that the current production facilities will be devoted primarily to service and repair activities.

The explosive growth of the automobile park in China makes the adoption of the most advanced fuel efficiency and pollution control standards a necessity. This growth is expected to be driven by economic growth, which will enable more Chinese consumers to afford automobiles, and the restructuring of the automobile industry which will generate efficiency gains leading to reduced prices. It is important that China remains in close touch with the most advanced developments in the automobile sector.

China has generally been quite successful at removing older vehicles from the roads, certainly in highly polluted urban areas. The replacement of older vehicles by new ones that are more fuel efficient and less polluting represents one of the most important aspects of any attempt to improve air quality in a rapidly growing domestic economy.

1.2.3. Textiles. Even as cotton production is expected to decline because imported cotton is less expensive, the textile industry is expected to expand rapidly. China is already the largest textile exporter in the world. Expansion of the textile industry poses several environmental challenges, many of which are well understood but all of which require careful policy attention. These are measures that must be adopted in close co-operation between local and provincial authorities, and frequently also with the affected enterprises.

The various phases of textile manufacture—ginning, spinning, weaving, sizing, dyeing, and production of the end product—pose notable environmental problems, in particular of water pollution control. Extreme levels of surface water pollution can result unless the necessary infrastructure exists and is operated reliably.

Some of the highest value markets, into which China will be exporting, notably in Europe, are increasingly demanding in terms of the environmental aspects of production. This includes changes in dyes and other chemicals that are employed and the need to show the existence of an environmental management system, for example through ISO 14 000 certification. These requirements create pressures on Chinese producers. Those that can adjust and comply may gain access to particularly attractive markets, but those who cannot or do not adjust will find it increasingly difficult to compete in high value markets. The changes that are involved can be difficult to undertake, not unlike the need to adjust to liberalized conditions of trade. The outcome can also be very desirable as manufacturers impose fewer burdens on the environment in China and are able to pass any resulting costs on to consumers in the importing countries. Nevertheless careful monitoring of regulatory changes in key markets is vital. WTO membership will significantly enhance the ability of China to undertake such monitoring since it will benefit from the rules governing transparency as well as the provisions of the relevant agreements, in particular the Agreement on technical Barriers to Trade (TBT) and the Agreement on Sanitary and Phytosanitary Standards (SPS).

Textile markets in developed countries remain difficult to access. The Agreement on Textiles that was part of the Uruguay Round Agreements established a ten year process of opening these markets but the commitments were “back-loaded” that is the most important opening measures were delayed towards the end of that period, which runs until 2005. Effective compliance with the commitments undertaken in the Textile Agreement will be a major touchstone of the implementation process of the Uruguay Round, and a critical factor in determining the success of negotiations following the Doha Ministerial Declaration.

Even after textile markets have been more effectively opened, competition between developing countries for these markets is likely to be fierce. The global adjustment process in this sector has only just begun.

1.2.4. Forestry. The forestry sector in China has experienced significant changes in the past few years as deforestation has been recognized as an important threat to environmental security. The emphasis has shifted away from the supply of forest products towards reforestation. This meshes closely with the prospects of WTO accession as China will turn increasingly to other countries to supply its forest products. This process poses environmental challenges that are particularly difficult to assess, since the benefits of reforestation will be felt in China while the risks of increased deforestation will occur in other countries, primarily of South East Asia.

It is expected that the increase in forest cover will bring significant environmental benefits to China. The assessment of the environmental consequences of a shift in supply to meet China's demand depends critically on the nature of the forests that are being harvested, the forest management practices that are followed, and the manner in which harvesting occurs. It is conceivable that the forest products imported by China from South East Asia are sustainably produced. It is virtually certain that some of them will not be sustainably produced. In this manner China will need to confront the dilemmas associated with any attempt to obtain more information about process and production methods of products being imported. Even if no attempt is made to influence these methods any attempt to properly assess the environmental consequences of changes in domestic forestry policy in connection with WTO accession requires this kind of information.

The challenges that China faces in ensuring that its domestic measures to promote reforestation do not result in serious environmental damage elsewhere are an indicator of how pervasive the issue of "process and production methods" (PPMs) is. Once viewed as primarily a matter of concern to wealthy developed countries it is likely that further development of the trade and sustainable development agenda will reveal how widespread the need to address PPMs really is.

1.2.5. Energy. If agriculture has the greatest environmental overall impact, current practices in the energy sector cause the most serious environmental damage. China's economy has been growing faster than energy consumption, implying that its relative energy efficiency has improved. Yet the increases in efficiency have not kept pace with overall economic growth, that is energy demand in China has also been growing. Older energy facilities offer quite dramatic opportunities for improving energy efficiency, indeed many such measures are economically attractive.

Domestic energy resources are dominated by coal, in many ways the most problematic of the fossil fuels. Its combustion can contribute not only to global warming but also to local and long range pollution by sulphur compounds that are precursors of acid rain, and by various trace elements that are typically present in coal. WTO accession should improve China's access to fossil fuels other than coal, that is oil and gas, as well as to technologies that can reduce the environmental impacts of coal. Local and long-range pollution is largely controllable by technological means.

The emission of carbon dioxide is all but unavoidable in connection with coal use and represents a continuing challenge to move to renewable energies. The overlap between the

climate regime and the trade regime appears to be a matter of time, in particular if investment negotiations are launched. As climate change takes hold, pressure on developed countries to act will continue to mount, but so will pressure on developing countries, making for a very difficult constellation.

In many instances the technologies to reduce environmental impacts of energy production and use are well known—or at least there are numerous technologies that offer significant scope for improvement.

1.3. The Development of Integrated Environmental Assessment of Trade Agreements

As the complex relationships between trade and environment became more obvious, policy makers sought tools to permit a more systematic analysis of the issues. The relationships are multi-dimensional, involving many aspects of trade policy and most environmental media and including both positive and negative impacts in both directions. There are trade impacts that improve environmental quality by increased efficiency and by the resources that become available through economic growth and there are trade impacts that are negative, by overwhelming environmental management structures or by undermining them. There are environmental policy impacts on trade that are positive, most often by creating entirely new markets for sustainably produced goods and for goods and services related to environmental management, and there are environmental measures that create barriers to trade or are captured by protectionist interests.

From the earliest stages of the trade and environment debate, certainly since the NAFTA negotiation in North America, attempts have been undertaken to develop integrated environmental assessments of trade agreements. This remains an important area of policy-related research but the task has proven much harder than anticipated. Trade policy uses powerful modelling tools to project its economic impacts. While the models never have predictive force they have come to enjoy widespread credence, even though they tend to model only those areas where comparative advantage leads to economic growth in one country (through increased exports) and increased welfare in another (through falling prices). Even trade in services has not been reliably modelled, and no models exist for such new issues as investment or competition policy. Environmental policy has long known the tool of environmental assessment, which was originally developed in relation to specific projects to identify environmental issues that required policy attention. The environmental assessment tools have been extended to assess policies and programs but the methodological problems grow very rapidly as the issues are less precisely defined in relation to a specific environment and the likely outcomes of policies and programs are less easy to identify.

These problems have proven more difficult to solve than anticipated. No integrated assessments of specific trade agreements have been undertaken in a manner to actually inform policy-making. At the same time there has been considerable progress in methodological development, supported in particular by numerous countries, the OECD and UNEP. A large number of sectoral assessments have been undertaken because a sectoral approach reduces the number of variables that need to be considered. Some of these studies have shown quite striking results. Thus a number of studies of economic liberalization and

the environment undertaken for UNEP have indicated that the entire economic gains from liberalization can be dissipated by increased environmental costs if appropriate measures are not taken. It appears that this conclusion is true in particular for developing countries that have an insufficiently developed environmental policy-making structure in place before liberalization occurs.

It remains important to increase the chances for anticipating environmental issues arising from trade liberalization. In recent years there is evidence that the necessary expertise is rapidly evolving in developing countries. Since China expects to experience some of the most dramatic economic and social changes arising from WTO accession, this is an area of great significance for the Chinese government.

2. Environment and Sustainable Development in the Doha Round

The environment has become an integral part of the Doha Round. China will need to address the full range of environmental issues identified in the Doha Ministerial Declaration. As with most issues on the WTO agenda, successful negotiations will depend on forging alliances between developed and developing countries around a common agenda. China can play an important role in this area. It is an opportunity to strengthen environmental protection and to promote sustainable development. It is important to keep in mind that some of the most important negotiations from the perspective of environment and sustainable development will occur in areas that have not been explicitly identified as forming part of the environmental agenda.

2.1 Environmental Issues for Negotiation (Para. 31)

There are several mentions of the environment in the negotiating agenda of the Ministerial Declaration; some concern issues for negotiation, and some the negotiation process itself. The negotiation items form part of the "single undertaking," that is nothing will be considered finalized in the negotiations unless everything has been agreed, including the environmental items.

2.1.1 Multilateral Environmental Agreements (MEAs). The most specific negotiating mandate on trade and environment in the Doha Ministerial Declaration concerns the relationship between the multilateral trading regime and MEAs. It includes two elements: negotiations to clarify the relationship between "existing WTO rules and specific trade obligations set out in MEAs…" and "procedures for regular information exchange between MEA Secretariats and the relevant WTO committees, and the criteria for granting observer status."

The first part of this mandate is closely limited to exclude the problem of countries that are members of the WTO but not of the MEAs, most significantly the United States. It contains a clause protective of US rights under the WTO in relation to the action of MEAs. There exists a significant risk that such negotiations will actually limit the scope of current interpretation

of WTO rules, following the Appellate Body report on the shrimp/turtle dispute. On the basis of this report it could be assumed that actions based on the decisions of parties to MEAs will enjoy the protections of GATT Art XX (that provides exceptions to the principle of non-discrimination), and thus can be applied to WTO members who are not party to the MEA in question.

Since the ability to create both positive and negative economic incentives for non-parties to join or to at least respect MEAs can be an important part of their effectiveness, such negotiations give rise to some environmental concerns if they are not properly balanced. China will need to ensure that the WTO does not release members from their joint and differentiated responsibility for international environmental issues.

The section on the establishment of information exchange is both welcome and intriguing. It can be interpreted as suggesting that the relevant WTO committees may find it appropriate to develop rules of procedure that are specific to the trade and environment interface and thus without prejudice to the remaining WTO committees. Such an interpretation may permit the development of pragmatic and appropriate procedures without having to engage in wholesale change of WTO procedures.

2.1.2. Environmental Goods and Services. Paragraph 31 of the Doha Declaration also envisages negotiations on "the reduction or, as appropriate elimination of tariff and non-tariff barriers to environmental goods and services." This goal is the result of searching for "win-win" solutions for trade and for the environment. It seems like a natural goal but it is worth underlining that no group of products and services has been thus singled out before. It remains to be seen whether any significant commercial interests in some countries are affected negatively and thus may attempt to derail this process. In terms of the negotiation itself—and its impact on China—the most important decisions will occur in determining what are in fact "environmental goods and services." Many such goods and services are closely integrated with other goods and services in ways that may make it difficult to develop sufficiently precise distinctions that can broken down in the customs classification system. There will probably be a debate about whether products that have been produced in an environmentally sound or sustainable manner qualify under the mandate.

2.1.3. Fisheries. The Doha Ministerial Conference saw the emergence of novel alliances within the WTO trading system. The landmark decision on TRIPS and public health was initially promoted by an alliance of southern governments and northern nongovernmental organizations, an alliance that proved able to overcome the strong resistance to such a decision from many pharmaceutical companies and the countries where they are domiciled. Similarly the inclusion of fisheries subsidies as a subject for negotiation can be seen as the result of an alliance between a group of developed and developing countries and some large northern environmental organizations. Like the decision on environmental goods and services it represents the fruit of a search for "win-win" solutions, where trade measures would both contribute to liberalization (by removing distorting subsides) and to environmental conservation (by protecting fish stocks, including some endangered species). The fisheries negotiations will be of concern to countries that have large fish stocks or that fish in regions with severely depleted fish stocks. China is affected from both points of view.

Negotiations on fisheries subsides are mentioned in paragraph 31, but the actual mandate is lodged in the section on Rules. It is widely assumed that the negotiations on fisheries subsidies will not occur in the negotiating committees established to address the environmental issues but rather in the Rules segment. This links them to some of the most controversial aspects of the Doha negotiations, namely the application of anti-dumping rules. It suggests that success or failure of the fisheries negotiations will be closely linked to success or failure on other Rules issues that have the potential to become the focus of the final stages of negotiation at high level.

2.1.4. TRIPS Art 27.3(b) and the Convention on Biodiversity. (CBD). For several years, concern about the relationship between TRIPS and CBD has been an important part of the environmental agenda of developing countries. The inclusion of this item on the Doha agenda (as part of the TRIPS negotiations rather than within the environment section) represents a success for developing countries and illustrates that the concern for trade and environment is no longer just a northern issue.

At issue is the need to ensure that plant varieties essential for the maintenance of biodiversity and traditional knowledge associated with plants that have commercially useful properties are appropriately protected within the TRIPS system. The difficulty lies in the fact that such plants and knowledge is typically to be found in developing countries while the ability to commercialize them is often to be found in developed countries.

The resulting rules have the potential to be of particular significance for systems of medicine, such a traditional Chinese medicine, that rely on plant and animal parts and socially evolved knowledge concerning their most effective uses for purposes of human health.

2.1.5. Process Issues. In addition to identifying the particular needs to ensure communication between MEA Secretariats and the appropriate WTO committees, the Doha Declaration includes some striking provisions concerning the role of the Committee on Trade and Environment (CTE) and the Committee on Trade and Development (CTD). The penultimate paragraph (51) of the Declaration specifies that the CTE and the CTD are to "act as a forum to identify and debate developmental and environmental aspects of the negotiations, in order to help achieve the objective of having sustainable development appropriately reflected." This is a procedure without precedent so it is impossible to predict its impact. In principle CTE and CTD are being given a mandate to review the entire negotiation, without any limit, so as to ensure that the result reflects the objective of sustainable development. This unusual provision is justified by the fact that sustainable development is included in the Marrakesh Agreement establishing the WTO as the only substantive criterion for the work of the organization. Its impact is of course mitigated by the fact that the CTE and the CTD, like virtually all other organs of the WTO, are only committees of the whole of the General Council. It assumes that the members will be able to review their own work critically through this mechanism. Nevertheless it expresses an unusually clear commitment to sustainable development as an underlying principle of the negotiations, giving practical substance to the otherwise declaratory language on sustainable development in the opening sections of the Declaration. The existence of such implementing

provisions lends additional weight to the preambular language. Moreover the special role of the CTE gives greater significance to the provisions in paragraph 31 concerning communication with Secretariats of MEAs.

It is worth underlining that this innovative option exists only when the CTE and the CTD are able to work together. It puts a premium on focussing on sustainable development rather than just environment (or development) and creates interesting options for developed and developing countries alike.

2.2. Items that Are Being Considered for Negotiations (Para. 32)

In addition to identifying a number of issues that are to become part of the single undertaking, the Doha Ministerial Declaration also listed further issues of environmental concern that call for additional consideration to determine whether the basis for productive negotiations exists.

2.2.1. Environmental Measures and Market Access. Market access is the most important outcome of trade liberalization for countries that have comparative advantage for certain goods and services (for countries that provide market access, the outcome is an increase in welfare by increasing the purchasing power of consumers). For developing countries in particular, the relationship of environment and market access has been of vital concern as there was continuing fear of protectionist capture of the environmental agenda, in which case market access would be limited rather than enhanced. The resulting debate has been vigorous and rendered more difficult by three factors.

Distinguishing legitimate environmental measures from protectionist ones is very difficult. This requires a degree of environmental expertise combined with specific trade expertise that is not generally available. Experience with a number of important WTO disputes, notably shrimp/turtle and asbestos, indicates how difficult these questions are.

Equally important is the difficulty in assessing the full economic impact of legitimate environmental measures. These result in structural economic change, as does trade liberalization, so it can prove difficult to identify the effect of either policy area on the other. Moreover environmental measures can shift the balance of comparative advantage not only between countries but also within countries. In other words some exporting firms may be disadvantaged but other exporting firms may benefit and situations may exist where there are net gains yet the disadvantaged firms may make it difficult to recognize these.

Finally the economic concerns with environmental measures may have more to do with the ability to recover additional costs from markets rather than just with market access. Changes in environmental measures may be desirable if the importing country markets provide the necessary resources to protect the environment of the exporting country. In that case there is both economic and welfare gain in the exporting country. On the other hand if costs rise but markets do not provide the necessary resources there will be welfare loss.

The stakes are particularly high for developing countries that depend on the export of commodities. Commodity markets exhibit fewer rents than markets for specialty products, for example those protected by intellectual property rights. Producers must be concerned about any measures that increase production costs without offsetting price increases. On the other hand if solutions can be found that permit funding environmental protection expenditures connected to commodity production without changing relative market position, the potential gains for developing countries would be significant.

These questions are difficult to address and appear not to be sufficiently understood to permit actual negotiations to take place. Because of their potential significance it is just as important not to make mistakes through the outcome of negotiations as it is to negotiate to change current rules.

2.2.2. Other TRIPs Issues. In addition to its affirmative language on negotiations concerning TRIPs and CBD, paragraph 32 of the Doha Declaration instructs the CTE to give special attention to "the relevant provisions of the Agreement on Trade-Related Property Rights (TRIPs)." The CTE considered this issue on the basis of a working paper prepared by the Secretariat in 1995. It appears unlikely that this topic will be ready for active consideration in the negotiations.

2.2.3. Labelling. The issue of labelling has been one of the most difficult facing the Committee on Trade and Environment. Labels—or "eco-labels"—provide product information to the user who unpacks them. Labels are not able to convey complex analytical information but must respect a highly formalized presentation to ensure that a maximum of information is imparted—and to avoid labels that can give rise to misunderstandings. Labels are typically designed to provide information on hazards associated with a product and with basic information relating to the product's consumption, for example the kinds of fibre employed in manufacture or the nutrients contained in food.

"Eco-labels" are designed to provide environmental information to consumers. They have been controversial because the information they can include is inevitably partial relative to complex environmental considerations. Life cycle analysis of a product can involve hundreds of factors. A description of the environmental conditions of production can be no less complex. Yet labels attempt to encapsulate all this information in a few synthetic values and expressions—and how these are selected can have dramatic impacts on the competitiveness of products. It is possible to have an ecolabel for paper that emphasizes the raw materials that have been used (for example virgin or recycled), the energy that was used (for example fossil fuels or renewables), or the bleaching process (with or without chlorine). These factors are quite diverse and it is not possible to express them in a single product designation. Yet labels that contain too much information are known to confuse consumers. There is consequently a significant level of conflict surrounding the formulation and use of eco-labels.

Within the WTO the questions begin with consideration of which WTO Agreement applies. Several developed country delegations have argued that the TBT and its relatively permissive procedural requirements apply. Those are designed to deal with more technical matters and are not certain to be sufficiently open and flexible to cover the needs of eco-labelling.

Developing countries have been concerned about the openness and cost of certification required for some eco-labels.

This is an issue that is unlikely to go away. If there are no negotiations on it within the Doha framework it is likely that there will be negotiations when the next round of trade talks are launched.

2.3. Other Negotiation Issues that are Significant for Environment and Sustainable Development

Some of the most important sustainable development issues will arise in relation to negotiations that have not explicitly been identified as "environmental."

2.3.1. Agriculture. It is hard to overstate the importance of agriculture for sustainable development. But it is also increasingly hard to overstate the importance of environment and sustainable development for agriculture negotiations. The stark reality is that agriculture is not possible in many developed countries without subsidies, and that the opposite of over-supply induced by subsidies is famine caused by market fluctuation. These two realities have long made agricultural trade negotiations different from any others.

There is no doubt any more that the subsidies that have been put in place by the wealthiest countries, the United States and the European Union in particular, cause enormous damage to the people and economies of many developing countries. These subsidies, in particular export subsidies of all kinds, have to be changed. Yet the need for some subsidies remains very strong in many developed countries. Thus the debate is slowly shifting away from an attempt to eliminate all subsidies to a debate about which subsidies are most harmful. In this context, subsidies designed to support conservation in the rural environment, and subsidies that stabilize rural populations and communities, in other words subsidies for sustainable rural development, are emerging as one area where important social objectives can be achieved even while stabilizing international agricultural markets.

China is bound to become a key actor in the agriculture negotiations. As discussed above, some of the most important impacts from WTO accession are expected in agricultural markets. As production intensifies, China will confront the same issues of rural conservation that had to be addressed in developed countries. And China has an overriding interest in sustainable development of rural communities as an alternative to uncontrolled urban expansion. In these respects China's interests are different from but not necessarily contrary to those of the European Union or developed countries in Asia.

The Uruguay Round Agreements included the Agreement on Agriculture (AoA), which for the first time brought agriculture under the GATT rules. The preceding years had been dominated by the debate about the need to include agriculture in the GATT. Since the end of the Uruguay Round, the WTO debate has focussed on the need to eliminate subsidies, and the Doha Declaration contains language that for the first time envisages "reductions of, with

a view to phasing out, all forms of export subsidies." It is likely that the debate will increasingly shift to the equally difficult and complex subjects identified as the long-term objective of the AoA, namely "to establish a fair and market-oriented trading system through a programme of fundamental reform encompassing strengthened rules and specific commitments on support and protection in order to correct and prevent restrictions and distortions in world agricultural markets." This is a task that will take many years to accomplish, one that is of central concern from the perspective of sustainable development, and one in which China has a very large stake.

2.3.2. General Agreement on Trade in Services. The General Agreement on Trade in Services (GATS) was also one of the major achievements of the Uruguay Round. The GATS is constructed as a "bottom up" agreement, that is only those services are covered country by country that countries have specifically listed as included. This renders any general statements about the relationship of the GATS to sustainable development very problematic.

There is no doubt that many services are of crucial significance for sustainable development, including but not limited to banking and insurance, transport, tourism, and environmental services. As always, liberalization can be expected to have complex environmental and sustainability consequences. While closed or otherwise distorted services markets are unlikely to contribute to sustainable development it is not obvious either that liberalization will bring only benefits. These are matters that need a good deal of further analysis.

GATS negotiators have been addressing issues related to the regulation of services, that is training, certification, and licensing. These are areas that provide fairly obvious opportunities for the creation of a variety of barriers to market entry so the concern for these regulations is understandable. Yet any negotiations that seek to establish general principles for domestic regulation are potentially significant from the perspective of sustainable development.

The distributional effects of liberalizing services are not well understood. While the principle of comparative advantage applies to services, market position is often determined by factors other than price. Moreover many service industries require training, certification, and licensing, all of which can impact on the distribution of benefits that may be generated by liberalization. Indeed, thus far it has not been possible to model the growth impetus from services liberalization in the same manner as has occurred for trade in goods.

In light of the numerous uncertainties that continue to exist in the area of trade in services it is difficult to identify the interests of China and developing countries. In general, developed countries have been making a transition towards economies, in which services have become a vital source of growth and wealth creation. The economies of many developed countries are by now dominated by service industries. No developing country has made a comparable transition, so it must be assumed that developed countries will be exporters of services and developing countries importers. The advantages to exporters of services are fairly obvious. Yet the welfare gains by developing countries are not as clear-cut. On the one hand many of the services that are exported are fundamental to the development of an internationally competitive economy so that access to these services is almost a condition of development. On the other hand the provision of these services gives a significant measure of influence, not

to say control, over the domestic economic affairs of the country concerned. It is consequently essential to ensure that service providers also act in the interests of their hosts.

It has often been remarked that it is difficult for developing countries to assess the advantages and disadvantages of complex trade negotiations. This observation is particularly true for services where the stakes are high yet analytical support for particular negotiating positions can be difficult to come by. It is critical to ensure that the GATS negotiations reflect an appropriate balance between the interests of service providers and host countries.

2.3.3. Trade Related Intellectual Property Rights (Implementation and Geographical Designations). Intellectual property rights are important wherever innovation represents a significant factor of development, and where it is important to protect goods that incorporate social investments, such as certain wines or traditional knowledge. The TRIPS Agreement represented an initial compromise between the countries that were contracting parties to the GATT at the time of the Uruguay Round. New members of the WTO have accepted this compromise as a condition of membership. Nevertheless the balance between benefits and costs of an international intellectual property regime is bound to be dynamic and may shift in light of experience with the existing TRIPS Agreement. The Declaration on the TRIPS Agreement and Public Health, adopted at the Doha Ministerial Conference, is an example of this learning process. It also illustrates the manner in which the TRIPS Agreement can become entwined with the pursuit of major policy objectives, such as public health—or sustainable development.

2.4. Sustainable Development Dimensions of New Issues

Ministers in Doha agreed that negotiations will take place on several issues on the basis of a decision to be taken at the Fifth Session of the Ministerial Conference. The status of these issues within the negotiations initiated at Doha remains ambiguous. The language used to describe the prospect of negotiations is identical for all four issues: “Recognizing the case for a multilateral framework [for investment, competition, government procurement, trade facilitation] , and the need for enhanced technical assistance and capacity-building in this area …, we agree that negotiations will take place after the Fifth Session of the Ministerial Conference on the basis of a decision to be taken, by explicit consensus, at that Session on modalities of negotiations.” On the face of it this language agrees to negotiations but leaves the definition of modalities to the next Ministerial. Yet different interpretations abound, ranging from insistence that nothing has been decided to insistence that nothing remains to be decided.

All four issues can be of great importance to achieving sustainable development.

2.4.1. Investment. The stakes in an investment agreement are very high.. The future of every economy depends on investment. Only through investment will it be possible to move from a less sustainable to a more sustainable economy. Many developing countries depend on foreign investment to augment an inadequate domestic stock of capital. At the same time foreign investors may exert undue influence on these countries or may not contribute

adequately to their domestic development priorities. The prospect of negotiations on investment presents both risks and opportunities from the perspective of development.

Investment agreements have become increasingly controversial in developed countries. The interests of individual developing countries vary widely, depending largely on their existing ability to attract foreign direct investment (FDI).

The Uruguay Round set out some initial markers for an investment agreement in the WTO through the investment provisions of the General Agreement on Trade in Services (GATS) and the Agreement on Trade Related Investment Measures (TRIMS). Following conclusion of the Uruguay Round, negotiations were launched within the OECD for a Multilateral Agreement on Investment (MAI). The MAI was modelled on the investment provisions of the North American Free Trade Agreement (NAFTA)—at that time the most recent and most highly developed multilateral investment agreement.

The MAI included provisions designed to ensure non-discrimination (most favoured nation treatment and national treatment), prohibitions against certain "performance requirements," rules on minimum international standards of treatment and expropriation, and an investor-state dispute settlement procedure that utilized existing commercial arbitration institutions (ICSID and UNCITRAL). The MAI attracted unexpected attention, triggered by environmental concerns. As public unease increased so did the realization among negotiators that the stakes were higher than anticipated. The number of exceptions grew very large. The MAI negotiations were abandoned when France withdrew, largely because of its desire to shield its cultural institutions.

All the above agreements and processes focused on the rights of the foreign investor and the obligations of the host state. There have also been attempts to develop international agreement on the obligations of foreign investors, but these have not been linked to the investment agreements in a binding way. The UN Centre on Transnational Corporations (UNCTNC) spent several years negotiating a Code for transnational corporations but had to abandon the effort in light of unremitting opposition from developed country enterprises. The OECD has a set of Guidelines for Multinational Enterprises that were recently revised.

Since the collapse of the MAI negotiations there has been some uncertainty just how to proceed, with most advocates of a multilateral agreement assuming that the WTO was the appropriate forum for negotiations on investment. Resistance to such negotiations has come from a small group of developing countries.

It remains unclear what a WTO agreement on investment would look like. Working this out is the primary task of the Working Group on the Relationship Between Trade and Investment. Issues for the Working Group to consider include:

- the definition of an investment and an investor -- the Doha text speaks of “long term” investments, implicitly excluding the portfolio investment that would have been covered by the MAI, but this issue has not yet been finally settled;
- transparency of government activity and minimum standards of treatment for foreign investors;
- non-discrimination;
- market access for investment;
- special provisions for developing countries;
- exceptions and balance-of-payments safeguards;
- consultation and the settlement of disputes between Members.

This listing appears to exclude some of the more controversial elements of the NAFTA/MAI approach, most notably the inclusion of portfolio investment and the investor-state dispute settlement process. Yet there is no guarantee that the process of negotiation will not lead right back into the quagmires of the MAI and NAFTA. For example, one would anticipate rules on expropriation to be included, as they are in almost all other investment agreements, even though this is not expressly stated. It is widely assumed that the lessons from the MAI failure and the ongoing NAFTA controversies will be learned—but what the lessons are still depends on whom you talk to.

There has not been much discussion about the purposes of an investment agreement. It is assumed that a non-discriminatory regime will lead to the better allocation of scarce capital and that a reduction of political risks will permit investment at lower rates of return. But there is little empirical evidence that the existing investment agreements have made any difference, let alone promoted more efficient use of capital. The available evidence supports the prohibition of performance requirements as economically inefficient instruments, but not much more.

Yet the consequences of an effective investment agreement are potentially enormous. They differ dramatically between developed and developing countries. An international agreement must interact with domestic institutions to balance investor rights and public goods. In most developed countries these institutions involve highly developed procedures for the administrative review of projects and for regulatory or policy decisions impacting investments, followed by several layers of judicial review in cases of disputes. If an international regime is to involve itself in these sensitive matters, it will require more sophisticated international institutions than have been envisaged in most investment agreements. In developing countries the task is to develop the institutional capability to properly assess, regulate and work constructively with investment projects in light of the public interest and the protected private rights. Ideally an international agreement should promote the development of domestic capability not preempt it.

Investment negotiations in the WTO are still at an early stage but the decisions that are taken in the coming months to frame those negotiations will largely determine the direction that

they will take in the future. An investment regime that promotes sustainable development would be very welcome—but one that fails to do so can give rise to significant levels of conflict.

Because the issues for an investment agreement have not been clearly articulated many developing countries have not been able to consider what is in their best interests. Many have tended to respond to the expression of interest, in particular on the part of the European Union, rather than determine their own approach to these matters.

2.4.2. Competition Policy. The Doha Agenda proposes further trade and investment liberalization, with a continued process for reducing non-tariff barriers to trade and opening domestic markets to foreign investment and service providers. The continued trend towards liberalization places increased pressures on monitoring and preventing anti-competitive practices that distort and may even reverse the intended benefits of liberalization.

The competition dossier looks remarkably like the investment one: it requires extraordinarily sophisticated domestic institutions and appropriate international cooperation. Replacing these by an international regime makes little sense—except for those specific cases where the markets that are being cartelized are international in nature. But even then, perhaps the response should be cooperation between competition authorities rather than a new WTO agreement.

Varying degrees of competition principles and rules already exist in certain WTO agreements such as the Anti-dumping Agreement, in the North American Free Trade Agreement (NAFTA), and in the Canada- Chile Free Trade Agreement (CCFTA). In addition, the OECD has produced a number of non-binding instruments dealing with hard-core cartels, cooperation and pre-merger notification and reporting of mergers. Competition authorities around the world are increasingly involved in formal and informal cooperation with foreign counterparts to address the impacts of globalization on competition at a global level. International negotiations on anti-competitive behavior would internationalize competition policy enforcement to ensure cooperation among competition authorities and to prevent jurisdictional conflicts.

It is a complex agenda. The Working Group on the Interaction between Trade and Competition Policy set up in Doha will focus on clarifying

> "core principles, including transparency, non-discrimination and procedural fairness, and provisions on hardcore cartels; modalities for voluntary cooperation; and support for progressive reinforcement of competition institutions in developing countries and least-developed country participants and appropriate flexibility provided to address them."

The objectives and goals of competition law, like investment, are actually very different from trade law. The competition legal agenda is about protecting open competition processes, not defending wronged individual competitors. Many competition authorities are highly independent, and have the power to directly review, investigate or sue private corporations. As such, rather than negotiating a comprehensive multilateral agreement on competition

policy in the WTO, there is a push for a TRIPS-style agreement, with consensus on core elements or provisions to establish baseline operating conditions. An agreement on anti-trust law (or TRAMS- Trade-related Aspects of Anti-competitive Measures) would probably only contain basic principles and procedural safeguards. For procedures, some countries have also proposed support mechanisms, such as a peer review process (or Competition Review Mechanism modeled on the Trade Policy Review Mechanism), which could provide countries with an objective review of their compliance and enforcement records while also fostering transparency. Some of these mechanisms might be possible without launching an ambitious program of negotiations.

The impact of an international agreement on competition policy on sustainable development remains difficult to assess, since the impacts of economic development or developing countries is also not known. Obviously anti-competitive behaviour causes economic harm and corporations that have acquired excessive market power are presumably more difficult to discipline from the perspective of sustainable development. Yet the restraint of such behaviour does not deliver obvious benefits from the perspective of environment and sustainable development, and enterprises have been quick to argue that they are unable to comply with environmental requirements because of the pressures of competition. In light of these uncertainties few developing countries have strongly articulated positions on the issue of competition policy.

2.4.3. Government Procurement. The Agreement on Government Procurement (1994) (GPA) is the third in a series of agreements in the GATT/WTO dealing with government procurement. Over twenty years, these agreements have developed some ground rules for government procurement, based on three essential characteristics:

- Like the GATT, the core principle of the GPA is non-discrimination, achieved by most favored nation treatment, national treatment, transparency, and dispute settlement, but there are some differences among the formulations of these principles.
- Like the General Agreement on Services (GATS), but unlike the GATT, the GPA applies only to jurisdictions and products explicitly listed by each country in a series of Annexes. Countries can also specify thresholds below which the GPA does not apply.
- Unlike most WTO agreements, the GPA is a “plurilateral” agreement. Members of the WTO do not automatically become members of the GPA.

The GPA contains extensive provisions governing tendering procedures, selection procedures, submission, receipt and opening of tenders and awarding of contracts, as well as negotiating procedures. In this manner it outlines a desirable system of government procurement.

As of late 2001, there were 28 members of the GPA, with seven further applicants to join and 23 observers. China does not currently participate in the GPA process.

Governments have not been environmentally conscious consumers. Even while public

entities typically represent 10-15% of the domestic markets of most countries, there are actually very few instances where government agencies have been path-breaking purchasers of environmentally sound goods and services. This has been the case in particular where there are no domestic suppliers or where suppliers of environmentally friendly goods compete with less environmentally friendly domestic goods. Governments have largely avoided using environmental characteristics to distinguish between suppliers, precisely because this represents an effective screen and entails the risk of a challenge from suppliers who have been implicitly excluded. Moreover the articulation of environmental criteria will sometimes entail the "risk" of favoring non-domestic suppliers over domestic ones.

There is a clear case to be made for governments to articulate strong environmental requirements when purchasing goods and services. The government procurement market is sufficiently large to impact the overall market for certain goods and services. Yet governments are unlikely to engage in the development of environmental standards for their procurement needs—in other words they would need to utilize standards that are already available. Internationally agreed standards would be preferable, since there are obvious chances that voluntary standards developed by domestic suppliers will contain protectionist elements. Even international standards may face questions over legitimacy, given the lack of developing country input in their development.

There are two key questions facing developing countries in relation to the GPA: first, should they accede to the Agreement; and second, are there elements of an Agreement, or policies at the national level, for which they should be pushing even if they do not choose to accede?

On the first question: given that the GPA is a plurilateral, the question whether or not to accede must be answered in large measure by a mercantilist assessment of national interest: will accession benefit domestic producers more than foreign ones? It is likely that the answer for most developing countries is "no," but the final answer in each case will have to await an assessment that will involve at least some measure of private sector consultation.

Whether signatories to the agreement or not, developing countries' exports will be affected by it to the extent that they are competing for sales to signatory governments. So they have a stake in ensuring that the rules push for specification of standards that are non-discriminatory. International environmental standards tend to be less suspect on this score than those – such as domestic ecolabel schemes – developed at the national level. In the area of domestic policy, the ability and increasing inclination of OECD governments to include environmental criteria when purchasing gives exporting governments more reason to pursue an industrial strategy that facilitates the export of "greener" products.

2.4.4. Trade Facilitation. Trade facilitation (TF) is defined by the WTO as "the simplification and harmonization of trade procedures, with trade procedures being the

activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade."

Business groups, several inter-governmental organizations and most developed countries are supportive of such negotiations going forward. Developing countries, while not opposing the concept of trade facilitation, generally oppose the negotiation of legally binding rules subject to dispute resolution in this new area. The issue in WTO terms, therefore, is whether such an agreement will be forthcoming, and what it might look like if it is. The issue in a sustainable development context is whether increased attention to trade facilitation would be supportive of a development and sustainability agenda for trade policy.

Several international organizations have been considering TF issues, some for as long as thirty to forty years. The United Nations Economic Commission for Europe plays a lead role within the UN system on this issue, while UNCTAD, the World Bank, OECD and others are also involved. APEC appears to play a leading role integrating developed and developing country interests in TF into a single, but voluntary process. APEC has identified several principles for focusing capacity building activities and regulatory reform initiatives associated with TF. These include:

- Transparency
- Communications and consultations
- Simplification, Practicability and Efficiency
- Non-discrimination
- Consistency and Predictability (includes integrity)
- Harmonization, Standardization and (Mutual) Recognition (of standards)
- Modernization and use of new technology
- Due process
- Cooperation

The APEC, as well as WTO and UN processes all recognize that implementation of such principles will require both national policy and capacity development as well as international cooperation.

Several developing countries have made submissions to the WTO that support further work on TF. However, developing countries continue to be extremely concerned with the assumption of new legally binding requirements linked to the dispute resolution mechanism when many have been unable to meet existing requirements, and even unable to develop a sound understanding of all their obligations.

In addition, some developing countries remain skeptical about the potential benefits of a broad TF program, especially in the context of their own development priorities. Here, the

link to developed country just-in time production and retail strategies as a motivator for a broad TF agreement raises questions as to the scope of realistic mutual benefits. With the reduction in tariffs, the movement of goods through borders has become a more poignant issue. Mainly UN and WTO studies suggest addressing this issue can boost development opportunities, and it seems intuitive that this would be the case. However, this assessment does not weigh the potential benefits of a focus on trade facilitation strategies as opposed to other development priorities. This need to weigh priorities is intensified if an agreement on TF is made legally binding and subject to dispute settlement with its attendant potential consequences of punitive tariff measures. The extent to which a capacity-building component can override this priority setting question is, at best, unclear.

To the extent that addressing TF issues in a concerted way would force participants to address corruption related issues, this would also be a positive development benefit.

If addressing TF issues were to have the magnet effect for investments that its proponents suggest, this could help spread investment and improve utilization of resources in a more sustainable way. However, at least two potentially negative relationships may be noted. First, the TF related focus on harmonization of standards should not intrude upon the guarantees for the setting of national standards already set out in he TBT and SPS Agreements. TF should not reduce the scope for appropriate environmental, human health and other public welfare legislation and regulation.

Second, it must be recognized that many multilateral environmental agreements, as well as agreements relating to illicit drugs, organized crime activities and so on relay upon measures at the border to detect and prevent illegal activities. In he environment context, this includes such critical agreement as the Basel Convention on hazardous wastes, the Montreal protocol on ozone depleting substances, and others. TF issues should not become a barrier to the effective implementation and further development of such agreements.

2.5. Need for Technical Assistance and Capacity Building (Para 33)

The need for technical assistance is repeated over and over again in the Doha Ministerial Declaration. In many ways this represents the most tangible development dimension of the Declaration, since all other issues of concern to developing countries and to sustainable development are left to the negotiation process. The term “technical assistance” is used 21 times and the term “capacity building” 18 times.

The concern for technical assistance and capacity building reflect several considerations. Important among them is the realization that the multilateral trading system has become very complex and that a growing number of countries are overwhelmed by the task of meeting its requirements, let alone participating in negotiations to modify them. The lack of capacity has become a threat to the credibility of the system.

There is also growing realization that significant investments in infrastructure and the capacity to operate it efficiently are required if a country is to benefit economically from the process of trade liberalization. This reflects a certain degree of uneasiness with the results of the Uruguay Round and the growing evidence that more developing countries than initially anticipated failed to realize significant benefits from it. It has been argued that the lack of effective institutions has contributed materially to this unwelcome result, so that capacity building is seen as a necessary adjunct to the process of liberalization.

Despite the extraordinary emphasis on technical assistance and capacity building in the Doha Declaration there has not been a vigorous public debate about the goals of this effort and the methods by which these goals may be achieved. The WTO is not an organization that has experience with capacity building, other than providing courses on how to fulfil the requirements of the Agreements and how to better manage the trade process, essentially trade facilitation. In fact technical assistance and capacity building are complex processes, closely linked to the education and training system of a country, and it does not appear likely that anything short of a concerted, long term investment in these activities will generate the kinds of benefits that are sought.

3. The Importance of a "Sustainable Development Agenda" for the WTO

"Sustainable development" is more than "development." The WTO has embraced the agenda of sustainable development but it is not clear exactly what this will entail. That is not surprising: sustainable development is a remarkably ambitious goal and the task of operationalizing it is one that will require generations rather than just years. Sustainable development clearly includes the macroeconomic policy goals that have been pursued by the Bretton Woods institutions and that have been central to the work of the GATT and now the WTO. As has been emphasized several times in this paper, amcroeconomic instability not only does not promote sustainability, it is an obstacle to its achievement. Yet the converse is not true: macroeconomic stability ion no way guarantees sustainable development. This difference is at the heart of the WTO environment and sustainable development agenda.

3.1. Elements of a Sustainable Development Agenda

3.1.1. The "Development" Round. The negotiations that are to follow the Doha Ministerial declaration have often been called a "Development Round." This appellation is more an aspiration than a specific set of negotiating objectives. It also recognizes the problems that have been encountered in ensuring that the benefits of trade liberalization are widely spread. Too many developing countries have not benefited sufficiently from the Uruguay Round Agreement. Characterizing the Doha negotiations as a "Development Round" is one way to indicate awareness of this particular issue.

From the perspective of development objectives, achieving growth of GDP in developing countries is the most basic of objectives. The question remains how that growth is distributed,

who benefits and to what extent it is utilized to ensure longer term growth through prudent investment. While these are not matters for negotiation within the WTO they nevertheless are of great significance to the perception of citizens everywhere as to the equity of the outcomes of such negotiations.

Thus far the goal of development is primarily reflected in a massive declaratory commitment to technical assistance and capacity building. While this commitment is certainly a precondition for moving towards the goal of development for the poorest countries it is also unlikely to be a sufficient response. Just as "sustainable development" remains an unclear objective for the WTO, "development" is hard to bring into focus in the kind of process that is characteristic of the organization. It will take the concerted effort of developing countries in alliance with those interests in developed countries that are committed to more development and greater equity to work out practical steps to move the outcome of the Doha negotiations in the direction of development, let alone sustainable development.

3.1.2. Implementation Issues. Implementation issues played an important role in the preparations for the Doha Ministerial. These were issues raised by developing countries in the process of implementing the Uruguay Round Agreements. They included a request for derogations from certain obligations or for extended implementation deadlines. In some instances they also sought the acceleration of implementation on the part of developed countries, in particular in the area of textiles.

These issues were only partly resolved before the Doha Ministerial and are a critical part of the current process at the WTO. The challenge is to rebalance an agreement as complex as the Uruguay Round Agreements. Yet this process is vital in showing that the WTO is capable of learning from past experience and adjusting obligations to achieve greater equity of outcomes.

One of the difficulties that exist in this area, as in relation to the principle of special and differential treatment for developing countries (S&D), concerns the difficulty in determining which changes will actually promote economic growth or greater welfare in developing countries. After all the theoretical basis of the entire WTO process is that liberalization generates economic benefits while limiting liberalization reduces them. Yet both the implementation and the S&D discussions are aimed precisely at agreeing exceptions to rules that are widely viewed as beneficial. The result is a very difficult process of analysis and action that promises to become much more central as the complexity of WTO agreements increases. It is also a matter of great concern with respect to sustainable development, which is after all even more demanding than the traditional processes of trade liberalization.

3.1.3. Institutional Development. One of the more surprising areas of convergence between the traditional WTO agenda and the demands of sustainable development is the need for institutional development. Institutional development is vital both from the perspective of the current and future agreements that are negotiated within the WTO and from the perspective of sustainable development. This applies equally to international and national institutions. In the case of sustainable development the need extends to the local and regional level within many countries. Without adequate institutions it will be equally impossible to implement the

existing WTO Agreements or to identify and implement the steps that are required to shift the economy to a more sustainable pathway.

3.2. Current negotiations and positions of WTO members on trade and environment.

Since the Doha Ministerial Meeting the WTO's Committee on Trade and Environment (CTE) has held three special sessions back to back with its regular meetings. These special sessions are designed to clarify the positions of various countries as the negotiation process has gotten under way. In many respects it is still too early to identify clear positions of individual countries. This process will continue until the next Ministerial Meeting in Cancun when the pattern of negotiations will be much clearer. Like other areas, negotiations on trade and environment have focused on "modalities," that is how an agreement or a negotiating agenda might be structured, which then determines the nature of proposals that can be made. As a result there have been a dozen of proposals submitted by individual countries and groups of countries.[1]

3.2.1. *Issues to be negotiated.* The three special sessions of the Committee on Trade and Environment focused on three issues that are slated for negotiations set out in Paragraph 31 (i) to (iii) of the Doha Declaration, including *WTO and MEA*; *Information exchange and criteria for observer status* and *Environmental Goods and Services.*

With respect to the relationship between existing WTO rules and specific trade obligations set out in MEAs, several countries proposed it is essential to clarify the definitions for "MEAs," "specific trade obligations" (STOs)[2] and the WTO rules that are relevant.[3] On MEAs, comments were made on whether the term should include regional environmental agreements or those that have not yet entered into force. On STOs, both narrow and broad interpretations were tabled. Discussions focus on the nature of the trade measures in MEAs stating STOs should meet three criteria – (1) specific; (2) trade related; and (3) an obligation. The discussions in the CTE special sessions show that there is a need to define the different categories of specific trade obligations set out in MEAs. This requires a detailed analysis of these categories to establish the distinction between specific trade obligations and non-specific trade obligations. On the substantive issue (the relationship between the WTO rules

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[1] Up to the third Special Sessions on October 10-13, 2002, 15 proposals on three issues to be negotiated and other proposals have been submitted to the Committee on Trade and Environment.

[2] Existing multilateral environmental agreements (MEAs) have adopted a variety of trade measures to achieve different objectives of global environmental protection. These include mandatory and volutory trade measures, as well as trade measure that are not mandated as 'obligations' in MEAs, but are encourage to take or are taken by countries volutory to implement MEAs. It is not clear which of these trade measures should be viewed as "specific trade obligations."

[3] These countries include EC, Argentine, Switzerland, Australia, Japan, Taiwan, New Zealand and Korea.

and STOs in MEAs), Switzerland proposed to adopt an interpretative decision to clarify the relationship between WTO rules and STOs in MEAs, favouring that the relationship between the WTO rules and STOs in MEAs be governed by the general principles of no hierarchy, mutual supportiveness and deference. Developing countries remain primarily concerned to ensure that MEAs do not create unnecessary barriers to trade.

With respect to *Information exchange and criteria for observer status*, two proposals submitted addressing this issue (US and EC). The Secretariat document (TN/TE/S/2) also outlined exiting mechanisms for cooperation and information exchange between UNEP/MEAs and the WTO. The needs to institutionalize and regularize the past cooperation and information exchange practices between UNEP/MEAs and the WTO and to strengthen joint technical assistance activities between the WTO, MEAs and UNEP, were stressed. On the issue of observer status, most members maintain that the criteria should be decided by the Trade Negotiation Committee, but these criteria should be specific and precise.

On *environmental goods and services*, the major issue is the definition of these goods. The proposal submitted by New Zealand reflected the Asia Pacific Economic Cooperation forum's proposal on accelerated tariff liberalization. APEC had used the definition of the environmental industry by the Organization for Economic Cooperation and Development. Most developing countries are seeking a narrow definition that focuses on goods and services that contribute directly to environmental management. Some developed countries have suggested that negotiations should also include goods produced in an environmentally responsible manner but this position has not found favour with developing countries.

3.2.2. *Issues to be considered*. Meanwhile, the CTE's regular meetings focused on three issues that will be considered for negotiations under Paragraph 32 – *environmental measures and market access, other TRIPs issues and labeling for environmental purposes* - with an aim to report to the next Ministerial Meeting as to what action should be taken..

On environmental measures and market access, developed country Members generally hold that the protection of the environmental and the promotion of the sustainable development are a justified course for the world. Environmental considerations increasingly become a market reality. They also realize that developing countries, in particular, the least developed countries, have difficulty in meeting environmental standards in developed countries. These environmental measures may jeopardize developing countries' market access. They maintain that the solution is not to lower standards, but rather to enable developing countries to meet the requirements through technical assistance and capacity building. Many developed countries expressed their willingness to provide technical assistance in this area.[4]

[4] The WTO Secretariat, *Trade and Environment Bulletin* (Press/TE.038), 4 April 2002.

Developing countries and least developed countries, led by India, noted emerging environmental requirements could, and increasingly would, have significant adverse effects on the market access of developing counties. They stressed the need to maintain market access in the face for increasing environmental related, non-tariff barriers to trade. Ensuring greater market access for exports from developing countries is the key to meeting the objectives set out in the Marrakech Agreement that established the WTO. To safeguard developing country interest, developing countries should be enabled to respond to environmental regulations. Efforts should focus on information dissemination about new environmental requirements and on developing country early participation in the development of standards, and on granting longer time frame to developing countries for compliance with the new standards. In formulating and implementing environmental measures, developed countries should consider developing countries' special needs for development, finance and trade, and ensure not to create trade barriers. Environmental measures should be based on the principles of science, transparency and equity as well as compatible to the open and non-discriminatory multilateral trading system; they should not impose unwarranted economic and social costs to developing countries. Capacity building, technology and financial transfer and technical assistance are essential to reduce the costs of compliance with environmental regulation. Some countries remain that it is vital to focus on the development and environment – sustainable development aspects - of the WTO negotiations.

On the relevant provisions of the Agreement on Trade-Related Intellectual Property Rights (TRIPs), Members pointed out that some related articles under TRIPs have a close relationship with the Convention on Biological Diversity (CBD), and they should be mutually supportive. A number of developing countries (including India, Brazil and Pakistan) proposed to amend the TRIPs to ensure the consistency between both agreements. Many Members expressed their concerns about genetically modified organisms (GMOs), alien species invasion and biodiversity conservation, and wished to continue the discussion on these issues.

With regard to labeling requirements for environmental purposes, Canada proposed to look at the issues from the perspective of implementation of the TBT Agreements. Switzerland proposed that the CTE discuss the definition of 'eco-labeling' and analyze specific trade issues in relation to environmental labeling before the decision was made as to what action to be taken. Some Members maintained that the labeling issue is anther form of "process and production method" issue, and needs to be further discussed.

Members also discussed technical assistance, capacity building and environmental reviews pursuant to Paragraph 33; and how to appropriately reflect sustainable development in the negotiations pursuant to Paragraph 51.

3.2.3. *Others.* In addition, in the critical area of agriculture it is still too early to identify the key positions. Recent decisions within the European Union to adjust the Common Agricultural Policy to the needs of an expanding membership have created a situation where internal subsidies are now scheduled to be reduced. This in turn opens up opportunities for accommodation within the WTO context. The overall volume of export subsidies and the rules that will govern "non agricultural issues" in the rural environment remain highly controversial. There is slow recognition that developing countries face essentially the same problems of conservation in the rural environment as developed countries but without being able to make the same resources available to producers. Among developing countries the essential divisions remain between those with agricultural surpluses to export, which wish to see a reduction in subsidies that depress world market prices, and food importing countries that benefit from such subsidies.

Developing countries remain reticent with respect to investment negotiations, even though only India has been adamant in its opposition. Ultimately no country wishes to suggest that it does not want more foreign investment—even though there is no empirical evidence to shows that existing international investment agreements have actually contributed to the volume and direction of investment. At a recent meeting, however, several major developing countries—including India and Brazil—submitted a proposal that would have limited the scope of the existing Agreement on Trade Related Investment Measures (TRIMS), let alone envisage entirely new negotiations.

In practice many of the most important environmental issues have been assigned to negotiating bodies other than the CTE, even some that have been mentioned explicitly in the Doha Declaration as being part of the environment agenda. Thus fisheries subsidies are being considered in the Rules Group and the relationship between TRIPS Art. 27.3 and the Convention on Biodiversity in the TRIPS Group.

Although the development aspect of the negotiations has been stressed by some countries o, the issues related to development, implementation and institutional development have not yet been coherently addressed so far in the negotiating process.

3.3. Co-operating to Develop the Agenda: China's Interest and Role

China has placed environment and sustainable development as an important matter on its agenda. As the fastest growing economy and the largest developing country in the world, China supports a fair, equitable and rational international economic system that promotes sustainable development. China needs to cooperate with other WTO members to develop the trade and sustainable development agenda. The overall objective for the WTO negotiations should be to obtain a more open, equitable and reciprocal global market in goods and services. Effort should be made to ensure that negotiations address "sustainable

development” issues rather than mere “environment,” making sure that the needs for development in developing countries including China are given adequate consideration and the principle of common and differentiated responsibility with respect to environmental protection is reflected, and ensuring the outcomes of the negotiations are forward-looking and balanced, and support development in developing countries. There is also a need to stress that environmental measures should not used as disguised trade barriers. It is vital to ensure that transparency, advanced notice and technical assistance already embedded in the WTO agreements be properly implemented.

Exit

The First Meeting of the Third Phase
China Council for International Cooperation
on Environment and Development

CHINA'S WTO ACCESSION AND SUSTAINABLE DEVELOPMENT

2002 Report to the China Council for International Cooperation on Environment and Development

by

Task Force on WTO and Environment

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I. Key issues for China as a WTO member

1. WTO Accession and Environmental Consequences

China's accession to the World Trade Organization (WTO) is an important event for both China and the WTO. Accession will accelerate and modify the processes of structural economic change that have characterized China's economy for the past decade. It is well established that these processes create major environmental challenges. Indeed China's environmental policy over the past decade has largely developed in response to the changes that have occurred in China's economy. WTO accession will intensify these changes in ways that are not entirely predictable, because they will respond not only to the continuing growth dynamic of China's economy but also to the adjustment of that economy to the rules of the WTO and to the provisions of numerous bilateral agreements that preceded accession. In many ways it represents the most dramatic change ever undertaken in a large economy.

The uncertainty that characterizes the anticipated environmental consequences of China's accession to the WTO should not lead to the assumption that these consequences will be minor. It is unfortunately not possible to predict with a high degree of certainty what they will be. It is, however, possible to identify a number of sectors where environmental consequences are most likely to occur. These include agriculture, automobiles, energy, fisheries, forestry, and textiles. Agriculture may prove to involve several distinct products or groups of products such as cotton, grains, fruits and vegetables, or animal husbandry. China needs to monitor closely developments in these sectors and the resulting environmental consequences.

Over the past years, several countries and some international organizations have been working intensively to develop methodologies for the environmental assessment of trade agreements. These have proven most productive when applied to individual sectors of an economy rather than attempting to assess all sectors simultaneously. This is also due to the fact that the environmental impacts of different sectors are distinctive and that no

reliable methods have emerged to undertake a quantitative assessment of these environmental impacts.

The expectation of significant environmental challenges that will arise as China's economy adjust to the requirements of the WTO and of bilateral agreements preceding WTO accession also has important implications for China's environmental management system. This will need to be able to respond quickly and decisively as environmental impacts become visible. Since many of these impacts are liable to occur in the countryside because many of the affected sectors involve commodity production, China's environmental management system must be particularly responsive to changes in the rural environment, in addition to its traditional focus on pollution impacts in the urban environment.

2. WTO Accession and Policy Implications

Chinese laws, regulations and policies; the governmental regulatory regime; the administrative ideology and behaviors have long been developed under the Chinese planned economy system in the past. Many of them are inevitably incompatible with commonly-accepted international norms under a market economy. WTO accession will require significant changes in China's governmental administration, and its regulatory regime. Although China has established its legal system in response to its transition from a planned economy to a market economy since its economic reform in the late 1970s, such a regulatory regime is still falls short of the WTO requirements.

Under the Protocol on China's WTO Accession, China needs to review and revise its laws, regulations and measures that have trade effects, and they should be universally implemented nationwide, and be consistent with the principles of transparency and non-discrimination. China needs to set up and designate one official publication to publish trade-related laws, regulations and measures; it should also designate a single consultation focal point to provide information to individuals, enterprises and WTO Members. These WTO consistency requirements apply to not only trade policy, but also environmental policy as well.

The WTO essential mandate is to promote trade liberalization; its fundamental principle is non-discrimination, achieved through most favored nation treatment, national treatment, transparency decision making and dispute settlement. Several of the WTO agreements contain environment related provisions. Under these provisions China retains its right to develop and implement its environmental policy. It can choose the appropriate level it deems necessary to protect its environment and natural resources. Such measures taken by a government have to: 1) fall into the scope of Article XX(which sets the general exceptions from the WTO's basic non-discriminatory principles) and be necessary for the protection of the life and health of humans, plants and animals, exhaustible natural resources; 2) not contravene the GATT core principles of most-favored nation and national treatment, and be the least trade restrictive measure; 3) meet the requirements of the opening paragraphs of the article (the *chapeau)*, which require that a measure not be arbitrarily or unjustifiably discriminatory, or constitute a disguised restriction on trade; 4)

be transparent in rule-making; 5) adopt international standards as much as possible; and 6) be based on scientific evidence and risk assessment.

To ensure that its laws and regulations meet the WTO requirements, China has taken some measures to meet the challenges of WTO accession. The State Environmental Protection Administration has started an overall review of Chinese environmental policy and regulations aimed at identifying and correcting any WTO inconsistency.. Any laws and regulations found inconsistent with the WTO rules need to be altered. Any new environmental rules formulated in the future will also have to meet the scientific evidence, risk assessment, and least trade restrictive requirements.

Transparency in rule-making is one of the most important requirements under WTO rules. China promised in its protocol of accession to the WTO to publish its laws and regulations and to provide a reasonable commentary period before such measures are implemented. This includes environmental laws and regulations, trade laws and regulations, environmental standards and other technical standards as well as sanitary and phytosanitary measures that aim to protect the life and health of humans, plants and animals. To fulfill China's WTO obligation on transparency, China has established an official China-WTO Notification and Information Enquiry Centre under the Ministry of Foreign Trade and Economic Cooperation. The Centre aims to provide information on Chinese laws, regulations and measures concerning trade in good and services, customs and foreign exchange, etc.

3. WTO Accession and Market Access: Trade and Environment Interface

The relationship between trade and the environmental has been gradually recognized. Trade development and environment protection are the most important aspects of social and economic development, and are closely linked to each other. Trade growth will accelerate the development of environment protection to a certain extent. Strengthening environment management will bring tremendous trade opportunities to many products, including environmentally friendly products. However, trade and environment may be irreconcilable under certain conditions. On one hand, environmental protection raises new requirements to trade development; environmental laws and regulations prevent some products from being traded internationally. On the other hand, rapid trade growth can have significant adverse impacts on the ecological environment.

With rapid economic development and globalization, the protection of the environment has been a subject of continuous government attention. The development of international environmental law has evolved to include trade-related measures, which play an important role in promoting the objectives of multilateral environmental agreements (MEAs). The interface between the multilateral trade system and the common commitment and responsibility to the conservation and sustainable use of ecosystems and natural resources is complex. Although no trade-related measure has yet been challenged in the WTO , potential conflict exits with the increased use of trade-related measures in multilateral environmental agreements.

Environmental measures that would have impacts on international trade also include domestic environmental laws, regulations, standards, sanitary and quarantine measures, as well as voluntary environmental measures, particularly those adopted in developed countries. Increasingly stringent environmental standards for products, especially the requirement on process and production methods impose restrictions on market access, in particular, from developing countries.

Given that environmental standards and environmental management in developing countries are generally lower than those in developed countries, higher environmental standards and management measures in developed countries could become potential green barriers to the trade of developing countries. Compared with many developed countries, there are certain disparities in environmental standards for many Chinese products. After China's WTO accession, the perception is that with trade barriers reduced, non-trade barriers (including those for the purpose for environmental protection) will increase. China needs to monitor the trend, and develop appropriate strategies to address the issue of market access.

However, stringent environmental measures in developed countries may also bring trade development opportunities to China. They can accelerate trade development n new areas, including markets for green products, cleaner production technology, environmental technology and equipment and environmental services, etc. Thus, from a positive perspective, stricter environment management requirements will prompt domestic enterprises to strengthen their environment management, to adopt new technologies and processes, to lower energy and raw material consumption, and to develop green products. This will ultimately increase the competitiveness of their products. It is not only conducive to overcoming green barriers to trade, but also compatible with China's sustainable development strategy.

4. Sustainable Development in the Doha Negotiations

4.1. Trade and Environmental vs. Trade and Sustainable Development: the importance of the World Summit on Sustainable Development

For several years, the debate at the WTO has focussed on the links between trade and the environment. This has led to the widespread perception that the issues at stake are principally of concern to developed countries. Recent developments indicate that developing countries also have concerns linking trade and environment, but that they need to balance these carefully against other priorities such as development and poverty alleviation. In other words the concern of developing countries is the link between trade policy and sustainable development.

The past year has been characterized by a series of major international conferences, which have the potential to form a positive progression from thee perspective of sustainable development.

The *Doha Ministerial Conference* showed that there is scope for new negotiations within the WTO, and that sustainable development can play an important role in these negotiations. The preamble to the Declaration emphasizes once again that sustainable development is a goal of the WTO, repeating the corresponding declaration in the Marrakech Agreement that established the WTO. Some observers, including the new Director General of the WTO, have even suggested that this will be a "Development Round".

The *Monterrey Conference on Financing for Development* underlined the importance of maintaining positive net flows of development assistance as a complement to foreign direct investment, which has been growing in importance.

The *World Summit on Sustainable Development* in Johannesburg turned the focus on the balance of the Doha agenda. After intensive negotiations WSSD decided not to take a position on the balance between trade, environment, and economic development. It also recognized that this entailed issues that transcend the WTO without specifying exactly how the international community can best address these issues. WSSD demonstrated how difficult it will be to make real progress on the trade and sustainable development agenda. It also showed, however, that scope for such progress exists and that the private sector is engaged in the sustainable development agenda as never before.

The *Cancun Ministerial Conference of the WTO* still lies ahead of us. It is scheduled for July in Mexico. It will be as important as the Doha Ministerial Conference in setting an agenda for trade negotiations and determining whether that agenda has a robust sustainable development dimension.

The full range of issues included in sustainable development confronts China. Accession to the WTO will certainly entail specific environmental consequences, as outlined above, but it will also create opportunities for development and significant challenges to ensure that poverty alleviation moves forward. This is particularly important in relation to rural communities, where many of the commodities likely to be affected by WTO accession are produced.

To ensure that the sustainable development dimension is adequately addressed, China needs to take additional measures to fully integrate environmental considerations into all phases of economic policy making.

4.2. Negotiations on trade and environment in the Doha Round

Sustainable development can become one of the central concerns of the trade negotiations that are to flow from the Doha Ministerial Declaration. The Declaration contains numerous explicit references to both environment and development but it refers to sustainable development only in paragraph 51, which assigns an overview function to the Committee on Trade and Environment (CTE) and the Committee on Trade and Development (CTD) without, however, providing for coordination of this work.

The Doha Declaration sets a trade and environmental agenda for the new round of negotiations, which signifies that for the first time environmental issues have been formally included in multilateral trade negotiations. The Doha Declaration contains two paragraphs that explicitly deal with the environment. They cover a number of important issues. Three are slated for negotiation, while a further three will be considered.

The three issues are slated for negotiations are:

WTO and Multilateral Environmental Agreements (MEAs) (scheduled for negotiation). The relationship between the WTO and MEAs has preoccupied legal experts for the past decade. This is, however, an issue on which the WTO has made significant progress, primarily through the dispute settlement system. Negotiators will need to explore whether additional clarifications are needed. The position of countries that are Members of the WTO but not members of certain MEAs, the United States in particular will require careful consideration.

Cooperation with International Environmental Organizations (scheduled for negotiation). Various efforts to develop pragmatic solutions to the relationship between the WTO and international environmental organizations, including the United Nations Environment Programme and the secretariats of MEAs, have not led to satisfactory solutions. Consequently this issue is being submitted to negotiation.

Environmental Goods and Services (scheduled for negotiation). The Doha Declaration proposes an agreement to free environmental goods and services from all barriers to trade. This would indeed provide significant support for sustainable development. The principal difficulty will be the definition of "environmental goods and services," in particular whether this includes goods produced in an environment-friendly manner.

The three issues that will be considered for negotiations are:

Environmental Measures and Market Access (to be considered). Market access has been a dominant concern of developing countries in relation to environmental measures by developed countries that are viewed as creating additional barriers to trade. An agreement to negotiate in this area must be viewed as a concession by developed countries.

Other TRIPS Issues (to be considered). Following the groundbreaking Declaration on TRIPS and Public Health that was adopted in Doha it has been assumed that similar issues might arise in relation to TRIPS and sustainable development. This issue has, however, not been well developed by prior discussion, for example in the CTE.

Labeling (to be considered). The issue of labeling is closely related to the issue of market access. The question is whether the WTO needs an additional agreement defining criteria and procedures to be applied in developing labels, and eco-labels in particular, or whether these can be adequately covered by existing agreements, those on Technical Barriers to Trade (TBT), Sanitary and Phytosanitary Standards (SPS) and TRIPS in particular.

In addition to the explicit mention of environment and development, there are a number of items that have been slated for negotiation or for possible negotiation that do not actually mention either goal but that will certainly have significant bearing on the ability of countries like China to move towards more sustainable forms of development. Indeed, from the perspective of sustainable development some of the most important decisions that may flow from the negotiations that were launched in Doha are to be found in sections that do not explicitly mention environment, development, or sustainable development.

Agriculture. Agriculture will be at the heart of the post-Doha negotiations, and sustainable development will be at the heart of the agriculture negotiations. It is hard to overstate the importance of agriculture for sustainable development. Agriculture involves the intentional modification of the natural environment to favor certain outputs while suppressing all competitors. The result is massive modification of the environment. At the same time, poverty is concentrated worldwide in the rural environment so that changes in agricultural production can have major consequences for the alleviation of poverty—or lack of it. Moreover many countries have been experiencing high levels of migration from rural into urban areas with major implications for sustainable development. It is by now well established that subsidies in OECD countries, and export subsidies in particular, contribute to the problems many developing countries experience in the area of agriculture. Finally several OECD countries have already indicated that they wish to discuss "non-agricultural issues" in the rural environment, environment and community development in particular. It is fairly obvious that all of these issues are of significant concern to China. It is therefore important to ensure that the preparation of negotiations within China takes all of these matters into account properly.

Fisheries. Among the more surprising decisions of the Doha Ministerial Declaration was the determination that negotiations should be undertaken on fisheries subsidies. Like the Declaration on TRIPS and Public Health, this was the result of an unusual alliance between developing and developed countries and some major nongovernmental organizations. While the harmful effects of fisheries subsidies on fish stocks and the marine environment are well documented it will prove challenging to forge an effective consensus on this issue within the framework of trade negotiations.

TRIPS Art. 27(c)3 and the Convention on Biodiversity. Developing countries have pressed to include negotiations on TRIPS Art 27(c)3 (concerning the protection of) and the Convention on Biodiversity. At issue is the need to ensure that plant varieties essential for the maintenance of biodiversity and traditional knowledge associated with plants that have commercially useful properties are appropriately protected within the TRIPS system. The difficulty lies in the fact that such plants and knowledge are typically to be found in developing countries while the ability to commercialize them is often to be found in developed countries. In China, the practice of traditional Chinese medicine adds a further dimension of complexity to this issue.

Investment. It remains unclear whether negotiations on investment will proceed within the Doha agenda. If they do, they will have significance for sustainable development and

it is important to ensure that this dimension of the issue is adequately reflected in the process. It is by now well established that numerous existing economic activities are unsustainable and need to be replaced by others that are both profitable and more sustainable. In a market economy, investment is the tool to achieve this transformation. For this reason any investment agreement that is negotiated will have significant implications for sustainable development. Such an agreement can actively promote investment in more sustainable forms of economic activity, in which case it would be very welcome or it can fail to do, in which case it would contribute to the perpetuation of unsustainable activities. Moreover the history of multilateral negotiations on investment is fraught with conflict revolving around thee need to achieve an appropriate balance between the private rights of investors and the obligation of governments to protect public goods—essential for the promotion of sustainable development. Striking the right balance on this issue is extremely demanding and will represent the biggest challenge facing negotiators in the area of investment.

4.3. Current negotiations and positions of WTO members on trade and environment

Since the Doha Ministerial Meeting the WTO's Committee on Trade and Environment has held three special sessions back to back with its regular meetings. These special sessions are designed to clarify the positions of various countries as the negotiation process has gotten under way. This process will continue until the next Ministerial Meeting in Cancun when the pattern of negotiations will be much clearer. Like other areas, negotiations on trade and environment have focused on "modalities," that is how an agreement or a negotiating agenda might be structured, which then determines the nature of proposals that can be made. As a result there have been a dozen of proposals submitted by individual countries and groups of countries.[1]

On the substance, the special sessions of the Committee on Trade and Environment and Members' proposals focus on three issues that are slated for negotiations set out in Paragraph 31 (i) to (iii) of the Doha Declaration, including *WTO and MEA*; *Information exchange and criteria for observer status* and *Environmental Goods and Services.*

With respect to the relationship between existing WTO rules and specific trade obligations set out in MEAs, discussions largely focused on the definitions for "MEAs," "specific trade obligations" (STOs) and the WTO rules that are relevant. Switzerland proposed to adopt an interpretative decision to clarify the relationship between WTO rules and STOs in MEAs, favoring that the relationship between the WTO rules and STOs in MEAs be governed by the general principles of no hierarchy, mutual supportiveness and deference. Developing countries remain primarily concerned to ensure that MEAs do not create unnecessary barriers to trade.

With respect to *Information exchange and criteria for observer status*, members stressed the needs to institutionalize and regularize the past cooperation and information exchange practices between UNEP/MEAs and the WTO and to strengthen joint technical assistance

[1] Up to the third Special Sessions on October 10-13, 2002, 15 proposals on three issues to be negotiated and a number of other proposals have been submitted to the CTE and other relevant committees.

activities between the WTO, MEAs and UNEP. Most members maintained that the the Trade Negotiation Committee should decide the specific and precise criteria for the observer status.

On *environmental goods and services*, the major issue is the definition of these goods. Most developing countries are seeking a narrow definition that focuses on goods and services that contribute directly to environmental management. Some developed countries have suggested that negotiations should also include goods produced in an environmentally responsible manner but this position has not found favor with developing countries.

Meanwhile, the CTE's regular meetings focused on three issues that will be considered for negotiations under Paragraph 32 – *environmental measures and market access, other TRIPs issues and labeling for environmental purposes* - with an aim to report to the next Ministerial Meeting as to what action should be taken.

On environmental measures and market access, developing countries noted emerging environmental requirements could, and increasingly would, have significant adverse effects on the market access of developing counties. They stressed that ensuring greater market access for exports from developing countries is the key to meeting the objectives set out in the Marrakech Agreement that established the WTO. To safeguard developing country interest, developing countries should be enabled to respond to environmental regulations. Environmental measures should be based on the principles of science, transparency and equity and should not impose unwarranted economic and social costs to developing countries. Capacity building, technology and financial transfer and technical assistance are essential to reduce the costs of compliance with environmental regulation. Some countries stressed that it is vital to focus on the development and environment – sustainable development aspects - of the WTO negotiations. Some developed countries realized that developing countries, in particular, the least developed countries, have difficulty in meeting environmental standards in developed countries and these environmental measures may jeopardize developing countries' market access. They maintained that the solution is not to lower standards, but rather to enable developing countries to meet the requirements through technical assistance and capacity building. Many developed countries expressed their willingness to provide technical assistance in this area.[2]

On the relevant provisions of the Agreement on Trade-Related Intellectual Property Rights (TRIPs), a number of developing countries proposed to amend the TRIPs to make it consistent with the Convention on Biological Diversity (CBD). Many Members expressed their concerns about genetically modified organisms (GMOs), alien species invasion and biodiversity conservation, and wished to continue the discussion on these issues.

With regard to labeling requirements for environmental purposes, Canada proposed to look at the issues from the perspective of implementation of the TBT Agreements.

[2] The WTO Secretariat, *Trade and Environment Bulletin* (Press/TE038), 4 April 2002.

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Members also discussed technical assistance, capacity building and environmental reviews pursuant to Paragraph 33; and how to appropriately reflect sustainable development in the negotiations pursuant to Paragraph 51.

In addition, in the critical area of agriculture it is still too early to identify the key positions. The overall volume of export subsidies and the rules that will govern "non agricultural issues" in the rural environment remain highly controversial. There is slow recognition that developing countries face essentially the same problems of conservation in the rural environment as developed countries but without being able to make the same resources available to producers. Among developing countries the essential divisions remain between those with agricultural surpluses to export, which wish to see a reduction in subsidies that depress world market prices, and food importing countries that benefit from such subsidies.

Developing countries remain reticent with respect to investment negotiations, even though only India has been adamant in its opposition. Ultimately no country wishes to suggest that it does not want more foreign investment. At a recent meeting, however, several major developing countries—including India and Brazil—submitted a proposal that would have limited the scope of the existing Agreement on Trade Related Investment Measures (TRIMS), let alone envisage entirely new negotiations.

In practice many of the most important environmental issues have been assigned to negotiating bodies other than the CTE, even some that have been mentioned explicitly in the Doha Declaration as being part of the environment agenda. Thus fisheries subsidies are being considered in the Rules Group and the relationship between TRIPS Art. 27.3 and the Convention on Biodiversity in the TRIPS Group.

Although the development aspect of the negotiations has been stressed by some countries, the issues related to development, implementation and institutional development have not yet been coherently addressed.

II. Policy Options for the Chinese Government

The Chinese Government has already indicated that it intends to play an active role in the post Doha trade negotiations. This implies the rapid development of basic Chinese positions on the key issues of environment and trade. The options presented below by the Task Force range from simply treating trade and environment as technical issues and developing the capacity to analyze them, all the way to playing a leadership role on these issues.

Option One Deal with Trade and Environment Primarily as Technical Issues

This option consists of four major recommendations:

Recommendation 1 Monitor and assess environmental consequences of WTO accession

The certainty that WTO accession will have environmental consequences together with the uncertainty as to exactly what these consequences are liable to be make a powerful case for an active and well-resourced effort to monitor this process.

Efforts need to made to 1) identify the structural economic change attributable to WTO accession in sectors that are of significance in terms of environmental protection and sustainable development (such as energy, forestry, agriculture, fisheries, automobiles and textiles) and significant environmental impacts of such changes; 2) identify mitigation options and relevant policy measures that can reduce the negative impacts on the environment and to promote sustainable practices in these sectors; 3) define a set of concrete and practical policy recommendations for the Chinese government with respect to appropriate strategies and measures to address environmental challenges arising from WTO accession,; 4) contribute to the provision of information to Chinese decision-makers and negotiators on the environmental impacts of further trade liberalization after China's accession to the WTO.

Recommendation 2 Address the market access issue

In many countries consumers' concerns about the environment are on the rise, and environmental considerations have gradually become a market reality. China is increasingly facing environment-related technical requirements ("green barriers").

To address 'green barriers' the relevant WTO rules with respect to TBT and SPS should be used to define whether an environmental measure is justifiable. Transparency and special and differentiated treatment including technical assistance should be respected to enable developing countries to respond to increasingly stringent environmental standards.

However, the key solution for addressing 'green barriers' is to upgrade the nation's environmental standards and bring them in line with international standards; to strengthen environmental management of enterprises, improving their technological renovation and management skills and thus gaining competitive advantage to increase their share in environmentally conscious markets. The government should encourage industry to obtain ISO 14000 environmental management certification and eco-labeling certification, promote international cooperation and exchange on standards development and move towards harmonization and mutual recognition.

Recommendation 3 Establish a technical support system

Effective participation in the new round of negotiations needs strong technical support. It is necessary to establish a number of technical advisory groups (preferably under the

leadership of the central government's trade and environment coordinating body) in accordance with various negotiating topics, such as WTO and MEAs, environmental goods and services, TRIPs and CBD, environmental measures and market access, eco-labeling, agriculture, and investment, etc. The advisory groups should be comprised of experts of the issues in question, representatives from relevant government departments, the industry and other relevant organizations; have defined objectives and plans; and undertaken in-depth, issued-specific and forwarding research and analysis aimed to provide advice to decision-makers and negotiators in respect to measures and positions to be taken at the negotiation tables.

Recommendation 4 Enhancing capability

Negotiations will involve a wide range of issues including various WTO rules regarding GATT, TBT, SPS, GATS, TRIPs, agriculture, fisheries, investment and so on. Like many developing countries, China lacks necessary knowledge and experience to deal with such a wide spectrum of issues simultaneously. A great deal of effort needs to be made to enhance awareness and understanding of the trade and environment relationship and the issues that are likely to arise in the course of the new round of negotiations; to exchange views among relevant departments, between the central and local governments on issues related to trade and environment in the country's context; to understand trade and environmental implications of China's further trade liberalization; to mobilize the existing forces in China to help identify China's interests in sustainable development in the negotiations; and to undertake research and analysis on the WTO rules and their related trade and environmental issues. There is also a need to draw out from existing research studies and their conclusions and recommendations, in particular, the work done in the past by the Working Group on Trade and Environment, and from domestic experience to deal with environment-related technical barriers to trade. Efforts should also be make to strengthen international cooperation with other countries in information exchange and capacity building.

Option Two Link Trade and Environment to China's Sustainable Development Effort

This option suggests that China should not only deal with trade andenvironment issues, but from a broad perspective of sustainable development. It should link trade and the environment to China's sustainable development effort domestically. In the WTO Doha negotiations, efforts should also be made to address not only environmental issues in a narrow sense, but look into sustainable development aspects in the Doha Round of negotiations. This option consists of the four recommendations above in Option One and two other recommendations.

Recommendation 5 Strengthen the implementation of sustainable development and improving policy and institutional coordination

WTO accession will have widespread effects on China's economy and society. In addition, the Doha Ministerial Conference launched an ambitious program of further trade negotiations. This will impact a wide range of important policies and China needs

to take the necessary steps to ensure further implementation of sustainable development and proper coordination between policies.

To ensure the successful implementation of sustainable development, China should seize the opportunity of its WTO accession and the potential global 'win-win-win' opportunity for trade, environment and development; strengthen and improve its national and local mechanisms to implement the sustainable development strategy; search for sustainable development indicators to measure the progress; and gradually move towards undertaking integrated sustainable development assessment of the country's major national economic, trade and social development policies. China also needs to adjust its industrial policy to optimize its industrial structure; develop high tech and its tertiary industry; undertake technical renovation in its traditional industries and upgrade them to a new technology level that will use national resources economically and efficiently; address environmental pollution problems previously created by irrational industrial structure. Efforts should be made to ensure China's further trade liberalization is not achieved by sacrificing its environment and sustainability.

To ensure mutual supportiveness of trade, environment and development and to seize the win-win-win opportunities, China should establish an integrated policy-making mechanism to address trade, environment and sustainable development issues under the principle of sustainable development. This mechanism should aim to coordinate various activities at the interface of development, trade and environment. It should ensure that environmental and sustainable development assessments on major trade policies are undertaken with a view to integrate the principles of national environmental security and sustainable development into trade policies. Such coordination will improve the environmental management system; and actively use trade measures to promote environmental protection and sustainable development.

Successful policy coordination requires effective institutional coordination. In the area of trade and sustainable development this involves strengthening the ability of environmental authorities to participate in trade negotiations in a meaningful manner and strengthening the ability of trade negotiators to obtain relevant environmental information in a timely manner. It is important to establish an effective coordinating body among relevant ministries and commissions, central and local government agencies, in particular among those of foreign trade, environment and quality control.

Recommendation 6 Fully understand sustainable development aspects in the Doha Round and Identify negotiating objectives and principles

The sustainable development agenda embedded within the Doha Declaration is far more comprehensive and demanding than the narrowly-defined environmental agenda set in Paragraphs 31 and 32. China's ability to identify its interests with respect to the agenda of sustainable development will in large measure determine whether China derives additional benefits from these negotiations.

It is important to fully understand not only environmental and but also sustainable development issues in the Doha Round, including the issues to be negotiated, the issues to be considered for negotiation and other environmental and sustainable development issues in other negotiation sectors. There is also a need to understand and analyze the interface between the WTO rules and trade measures taken pursuant to multilateral environmental agreements and their sustainable development aspects; to understand the work being done by the WTO Committee on Trade and Environment in the past; and to be aware of the positions from other countries including major developed countries and developing countries and carefully analyze their proposals and justifications. These efforts will help decision-makers to formulate the strategies for negotiations.

It has increasingly been recognized that trade is a necessary means of implementing sustainable development. China has placed environment and sustainable development as an important matter on its agenda. As the fastest growing economy and the largest developing country in the world, China supports a fair, equitable and rational international economic system that promotes sustainable development. China is still a country with a large population living under the poverty line. The overall objective for the WTO negotiations should be to obtain a more open, equitable and reciprocal global market in goods and services. Effort should be made to ensure that negotiations address "sustainable development" issues rather than mere "environment," making sure that the needs for development in developing countries including China are given adequate consideration and the principle of common and differentiated responsibility with respect to environmental protection is reflected, and ensuring the outcomes of the negotiations are forward-looking and balanced, and support development in developing countries. There is also a need to stress that environmental measures should not used as disguised trade barriers. It is vital to ensure that transparency, advanced notice and technical assistance already embedded in the WTO agreements be properly implemented. It is also China's interest to promote the sale of China's green products and services.

Option Three — Build Coherent Trade and Sustainable Development Action Domestically and Seize the Opportunity for International Leadership

This option takes Options Two one step further. In addition to addressing trade and environment issues from a broad sustainable development perspective domestically, China should also seize the opportunity for international leadership in developing international rules government the relationship among trade, environment and development, in order to build international consistency on the regime for trade, environment and sustainable development. This option consists of all the six recommendations in Options One and Two, and one additional recommendation.

Recommendation 7 — Seize the opportunity for international leadership in developing international rules governing the relationship between trade and sustainable development

In Doha, the world's trade ministers reaffirmed the WTO's commitment to the objective of sustainable development. In Johannesburg at the World Summit on sustainable

Development (WSSD), the world's leaders reaffirmed the importance to strengthen the mutual supportiveness of the three pillars for sustainable development – economic growth, social development and environmental protection – at national and international levels. They recognized that poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development were 'overarching objectives of, and essential requirements for sustainable development.'

The Summit has also been seen by some as a signal for governments to integrate sustainable development consideration into WTO negotiations. Trade has been recognized as a "means' of implementing a wider sustainable development objective, which signifies that the trade agenda has now been more politically integrated with the global agenda. "Means of Implementation Paragraph 91(a) in the Implementation Plan adopted at the WSSD calls on the WTO's CTE and the Committees Trade and Development (CTD), to promote the objective of 'achieving an outcome [of the Doha Round] which benefits sustainable development,' a mandate less emphasized by the Doha Declaration.

If properly carried through, the 'win-win-win' opportunities for trade, environment and development could become the mainstream course arising from trade liberalization and globalization. This may bring opportunities and challenges for individual countries to implement sustainable development. China regards sustainable development as its basic national policy as well as its long-term development strategy, and has actively taken measures to achieve this objective.

Current negotiations and positions of WTO members on trade and environment have so far been focused on the narrowly defined environmental mandate set in Paragraphs 31 and 32. Although the development aspect of the negotiations has been stressed by some countries, the issues related to development, implementation and institutional development or broad sustainable development aspects have not yet been coherently addressed. It is in China's interest to promote the 'win-win-win' opportunity for trade, environment and development. China should seize the opportunity for international leadership, linking trade and the environment with its sustainable development effort domestically and at the same time taking the leadership role in developing international rules governing the relationship among trade, environment and development.

III. Proposed Future Work

Given high stakes of trade, environment and sustainable development issues in the wake of China's WTO accession, the Task Force on WTO and Environment has identified two priority areas for further work. The proposed work aims to help China to enhance its ability to address environmental and sustainability issues while it further opens its markets, taking advantage of "green trade" opportunities but not sacrificing its environment or natural resources.

The first priority area will involve assessment of the environmental consequences of China's WTO accession with a view to developing appropriate strategies and policy measures to support sustainable trade. To date a number of developed countries have conducted national environmental assessments of trade policy and trade liberalization. Undertaking such an environmental assessment of trade policy and further trade liberalization will be useful to the development of its own trade and environmental policy.

The second priority will involve capacity enhancement to address environmental issues in the new Round of WTO negotiations. The agenda set for the upcoming new Round trade negotiations by the Doha Ministerial Declaration requires serious commitment to address issues at the trade and environment interface. As a significant player in the WTO, China could play a leadership role in the development of the environmental agenda in the upcoming WTO trade negotiations. The task force will work closely with the Chinese trade and environment related departments to enhance awareness and understanding of the trade and environment relationship, to identify China's interests in sustainable development in the upcoming negotiations, and to help policy-makers and negotiators develop positive views and positions in the environmental negotiations, so as to contribute to the development of the WTO rules governing the relationship between trade and the environment.

APPENDIX

Member List
Task Force on WTO and Environment

Chinese Members

YE Ruqiu (Co-Chair)	Senior Advisor and former Deputy Administrator, State Environmental Protection Administration (SEPA), China
CHEN Wenjing	President, Chinese Academy of International Trade and Economic Cooperation (CAITEC), Ministry of Foreign Trade and Economic Cooperation (MOFTEC)
XIA Guang	Director, Policy Research Center for Environment and Economy, SEPA
YU Jianhua,	Deputy Director General, Department of WTO Affairs, MOFTEC
ZHANG Shigang	Deputy Director-General, Department of International Cooperation, SEPA

International Members

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Thomas Cottier	Professor of Law and Director, World Trade Institute, University of Bern, Switzerland
Simon Tay	Professor of Law, National University of Singapore, Chairman of Singapore Institute of International Affairs and Chairman, National Environmental Protection Agency
Laurence Tubiana	President of Institute of Sustainable Development, Paris, France, and former Conseillere pour l'environmmement, Premier Ministre of France,
Konrad von Moltke	Senior Follow, IISD and Professor of Free University, Amsterdam, the Netherlands
Victor Lichtinger (Honourable Member)	Minister of Environment and Natural Resources, Mexico

Advisor

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Team Leaders

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HU Tao	Senior Fellow, PRCEE, SEPA
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