IAIA

INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT

The 30th Annual Conference, IAIA 2010

SUMMARY REPORT

CONFERENCE PARALLEL EVENT

CHINA DAY

THE STATE OF SEA AND EIA IN CHINA

APRIL 10, 2010
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CONTENTS

目录

IAIA'10

Introduction: SEA and EIA in China

Environmental Impact Assessment (EIA) was introduced to China at the First United Nations Conference on Human Environment in 1972 in Stockholm. One year later, China held the first National Environment Conference where EIA was formally acknowledged as an important process and instrument for environmental safeguards. It marked the first concrete step that China had taken to protect its environment. Since then, China has continued to promulgate environmental laws and regulations, providing environmental protection with a solid legal and institutional footing. March 1994 was a landmark in China's efforts to protect the environment, when it announced plans for pursuing sustainable development in a White Paper entitled "China's Strategy for Population, Environment and Development in the 21st Century." This was followed by the promulgation of "China's Agenda in the 21st Century," which outlines the transition to a strategic and comprehensive environmental management system. In 2002, the Environmental Impact Assessment Law was officially promulgated, providing the legal basis for EIA and Planning Environmental Impact Assessment (Plan-EIA). Further impetus was given to the Law in August 2009 through the release of "Regulations of Planning Environmental Impact Assessment" by the State Council.

China has had several environmental successes in the past 30 years in which EIA, with its framework legislation, procedures and expertise, has played a key role. Efforts over this time have led to considerable results. The implementation of EIA regulations and systems has nurtured a progressive change in the mode of economic growth, which increasingly emphasizes sustainability, prompting an optimization of the Chinese economic and industrial structure. EIA in China has been instrumental in limiting pollution discharge and enhancing development of cleaner production technology; minimizing damage to the ecological environment and reducing use of natural resources; promoting industrial eco-restructuring and optimizing economic spatial distribution; and assuring the adoption of a scientific and participatory approach to environmental decision making.

Nevertheless, huge challenges remain. China has some of the planet's most intractable environmental problems with 22% of the world's population and 9.8% growth per year for the last 30 years. Its rapid economic growth has lifted hundreds of millions of people out of poverty, but with environmental costs, and its future development largely depends on how effectively it is able to address its environmental issues. The Government of China is aware of the environmental challenges that must be met to sustain growth and has chosen to adopt a comprehensive strategy, focusing on innovative management measures, efficient allocation of resources, and integrated planning, which balances economic development with environmental protection, as well as taking a global approach towards attaining sustained development.

Although China has achieved much, some tasks ahead are formidable. At the same time, EIA in China has arrived at a crossroads, calling for more innovative measures for greater effectiveness, increased public engagement, and more effective management of complexities while ensuring that environmental laws and regulations are implemented equitably across society. It is now an opportune time for Chinese practitioners, as well as for all those interested in EIA and strategic environmental assessment (SEA), to examine how they can more effectively contribute to meeting the enormous challenges China is facing, and to explore durable solutions that will guide China's continued development on an increasingly sustainable path. This is why organizers believed it worthwhile to organize a China Day on the state of SEA and EIA in China as a parallel event to the 2010 Annual Meeting of the International Association for Impact Assessment (IAIA).

This event brought together academics, government of-

ficials, practitioners and other interested parties and key stakeholders to discuss, exchange views and share their experiences in the application of SEA and EIA to meet the challenges of sustainable growth and development. The one-day program focused on two critical themes. In the morning session, key presentations on SEA and EIA development and prospects in China were followed by a discussion with international panelists. In the afternoon, the session focused on ongoing SEAs of five mega-regions in China, again followed by discussion with international panelists.

In his opening remarks, Prof.Kin Che Lam noted the long history of this event saying that it may surprise some to learn that EIA has been practiced in China for almost 40 years. Now there are nearly 30,000 EIA-SEA practitioners in China and each year thousands of EIA-SEA reports are produced. However, he explained, this is not simply about growth in numbers—over the past 10 years, the EIA-SEA has evolved and developed a different rigor, emphasis and purpose.

ognizing effective practices and readjusting less effective ones. It is of the utmost importance, he emphasized, to recognize that China Day is not a day for China only—but a day for all those who are concerned with the sustainability of humanity. He said that modern technology has shortened distances, and "makes us all one". Prof. Lam warned: "Future generations will not understand if we do not act now to tackle the sustainability challenges."

Dr.Ijjasz-Vasquez pointed out that while the challenges for China, both environmental and social, have a strong local importance, they are also of global significance. He cautioned that the world cannot meet its global environmental objectives without China achieving its local environmental objectives—and that EIA and SEA are crucial tools in this process.

The Ministry of Environmental Protection has been an important partner of the World Bank in China, since the early days of the State Environmental Protection Administration (SEPA). The World Bank, he said, has seen the Ministry

Environmental Landscape in China

It is of additional significance, he observed, that this is happening in a country that is opening up, a country confronted by large challenges, enormous opportunities and a quickening pace of development. Within this fast evolving context, he continued, there is a fervent belief that EIA-SEA can play a pivotal role in placing development in China on the path toward sustainability.

This forum, China Day, is an opportunity for review and reflection, a day for sharing and for learning, a day for recgrow, become strengthened, and move forward with an agenda that is not only important for China as a country, but for the entire world as well. China has made considerable environmental progress in the last few years, but there is much more to be achieved. Dr. Ijjasz-Vasquez emphasized that China Day represents an opportunity to learn about not only the latest developments in EIA and SEA in China, but also for the rest of the world to offer advice, compare opinions and contrast best practice from around the globe.

Agenda

AM Session: SEA and EIA in China: Development and Prospects

Moderators:

Prof. CHEN Jining, Executive President, Tsinghua University, Beijing, China

Dr. Stephen F. LINTNER, IAIA President-Elect, Senior Advisor, The World Bank

Mr. Peter LEONARD, Safeguards Focal Point, World Bank Beijing Office

09:00 – 09:10	**Opening Remarks** Prof. LAM Kin-Che, Director, Centre of SEA for China, The Chinese University of Hong Kong Dr. Ede Jorge IJJASZ-VASQUEZ, Manager, Sustainable Development, World Bank Beijing Office
09:10 – 09:40	**The State of SEA and EIA in China: Recent Progress in Regulation Making and Practices** Mr. ZHU Xingxiang, Director-General, Department of Environmental Impact Assessment, Ministry of Environmental Protection, P.R.C.
09:40 – 10:10	**The Development and Status of EIA Regulation in China** Prof. REN Jingming (ACEE), Ministry of Environmental Protection, P.R.C.
10:10 – 10:30	**The Contribution of EIA in Addressing the Environment Challenges of China: A World Bank Perspective** Dr. Ede Jorge IJJASZ-VASQUEZ, Manager, Sustainable Development, World Bank Beijing Office
10:30 – 11:00	*Coffee Break*
11:00 – 11:20	**SEA of Urban Planning: Methodology and Case Study of Dalian** Prof. LIU Yi, Tsinghua University, Beijing
11:20 – 11:40	**SEA of Basin Hydropower Planning: Present Status and Prospects** Mr. ZHOU Shichun, Planning Department of General Institute of Hydropower and Water Resources Planning & Design, P.R.C.
11:40– 12:00	**SEA and EIA at the World Bank in China** Ms. SUN Chongwu, Safeguards Coordinator, World Bank Beijing Office; Mr. Juan D. QUINTERO, Senior Environment Engineer, East Asia and Pacific Region, The World Bank
12:00 – 13:15	**Panel Discussion: Prospects and Challenges Ahead for SEA and EIA in China** • Ms. Susan E. BROMM, Director, Office of Federal Activities, U.S. Environmental Protection Agency • Dr. Ross MARSHALL, Head of National Environmental Assessment Service (NEAS), United Kingdom • Dr. Hussein ABAZA, Chief Economist, United Nation Environment Programme • Dr. Larry CANTER, President, Environmental Impact Training, USA • Dr. I. Fernando LOAYZA, Senior Environmental Economist, Environment Department, The World Bank
Lunch Break	

PM Session: SEA of Five Mega-Regions in China

Moderators:

Dr. LI Tianwei, Director of SEA Division, Ministry of Environmental Protection, P.R.C.

Prof. CHEN Yongqin David, Chairman, Department of Geography & Resource Management, The Chinese University of Hong Kong

14:30 – 15:00	**SEA of Five Mega-Regions: Background, Framework and Outcomes** Prof. CHEN Jining, Executive President, Tsinghua University
15:00 – 15:20	**Marine Environmental Impact Assessment in Mega-Regional SEA** Prof. HAN Baoxin, SCIES, Ministry of Environmental Protection, P.R.C.
15:20 – 15:40	**Assessment for Sustainable Water Use in Mega-Regional SEA** Ms. WANG Yanan, Environmental Development Center, Ministry of Environmental Protection, P.R.C.
15:40 – 16:10	*Coffee Break*
16:10 – 18:00	**Panel Discussion: Mega-Regional SEAs: Issues and Challenges** • Mr. Rob VERHEEM, Deputy Director, Netherlands Commission for Environmental Assessment, The Netherlands • Prof. Maria Rosário PARTIDARIO, IST – Technical University of Lisbon in Portugal • Dr. Nick TAYLOR, IAIA President, Director, Taylor Baines, New Zealand • Mr. Miles SCOTT-BROWN, Principal, Integrated Environments, Canada • Ms. Charlotte BINGHAM, Former Director of Environment and Social Sustainability, Millennium Challenge Corporation, Washington, DC. • Ms. Shirley LEE, Principal Environmental Protection Officer, Environmental Protection Department, HKSAR Government
18:00 – 18:15	**Wrap Up: SEA and EIA in China – Experiences and Lessons from the Sessions, and Way Forward** Prof. LAM Kin-Che, The Chinese University of Hong Kong Mr. Peter LEONARD, Safeguards Focal Point, World Bank Beijing Office Dr. Ede Jorge IJJASZ-VASQUEZ, Manager, Sustainable Development, World Bank Beijing Office

AM Session
SEA and EIA in China: Development and Prospects

ZHU Xingxiang, the director of the EIA Department, Ministry of Environmental Protection, in presenting the development of and prospects for the EIA system in China, addressed its evolution and main features; its rules and achievements; its recent progress; and possible measures for improving the effectiveness of EIAs. He noted that while China adopted the EIA system as early as 1979, the EIA Law did not come into full effect until 2003. This was followed by the promulgation of the Regulations for Plan-EIA in October 2009.

Mr. Zhu stated that, depending on the subject, EIAs are undertaken at three levels with the highest being the Environmental Impact Assessment Statement. He noted that while most projects have to complete an Environmental Impact Form, fewer need to provide a full statement. Large projects, or those with trans-boundary impacts or projects such as nuclear facilities, are required to submit their EIA reports to the state environmental authority, while projects at the provincial, prefectural or county level can be reviewed by the relevant local government.

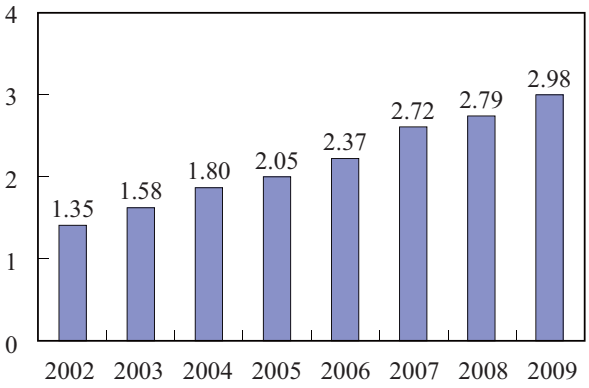
He noted that Plan-EIAs are classified into 10 categories. For comprehensive plans, only environmental chapters or impact forms are required. However, if the plan includes significant environmental impacts, it is necessary to carry out an EIA. He emphasized that projects which consume a high level of energy or resources and produce substantial amounts of pollution now have stricter controls exerted over them. Indicative of this trend, he said, are statistics showing that in 2008 and 2009, 223 such projects were refused. In addition, he also pointed out that measures to reduce pollution have resulted in strict controls over the emission of two substances in particular: nitrous dioxide and sulfur dioxide.

A protest in Fengxiang county, Shannxi caused by the Children's blood lead exceeding the healthy standard, owning to accumulated emissions of the metallurgy factory near the village.

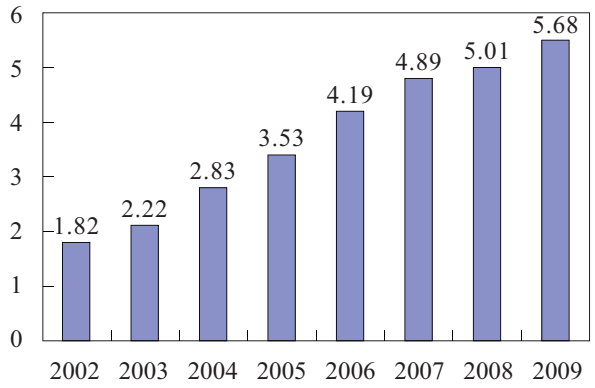
Mr. Zhu then addressed the need to continue to strengthen public participation saying that this is an important means to safeguard environmental rights. It is, he observed, crucial to maintain social stability and because pollution has adversely influenced people's daily life, it is necessary to consider potential conflicts that may result from environmental issues.

Public participation is playing an increasingly important role in environmental planning in China: "Nowadays, if the public says no to the project, then the project can be held up and it may not be approved. This is not a theoretical issue anymore". He cited the PX project in Xiamen, Fujian Province, which was stopped because of public rejection, as well as an incinerator project in Panyu in Guangzhou, Guangdong Province. Public participation, Mr. Zhu stressed, is now required at a very early stage and has been regulated since 2006. Every project requires three stages of public participation. He then described the promulgation of the Plan-EIA Regulations on October 1, 2009 as a milestone for the development of Chinese SEA. He contended that the Regulations have already led to instances in the five mega-regions where the provincial government asked the environmental authority to investigate specific issues, such as industrial layout, more carefully. This demonstrates that the local government realizes the potential of Plan-EIA.

Mr. Zhu argued that it is necessary to continue to progressively adjust the industrial structure in order to reduce pollution. He noted that priority has been given to key environmental issues such as pollution from the electricity sector—a serious issue arising from the amount of electricity produced by thermal power plants and the limited use of hydro- and nuclear-generated electricity. He added that the production of crude steel consumes a large amount of energy and resources. These are, he said, important and strategic tasks for SEAs as well as project EIAs.



The volume of electricity (thousand billion KWH) generated from 2002 to 2009



The volume (100 million tons) of crude steel produced from 2002 to 2009

Mr. Zhu maintained that the next important step is to incorporate SEA findings in the 12th Five-Year Plan. He believed that the experience from the SEAs in these five mega-regions will provide important lessons for environmental assessment for the upcoming Five-Year Plan.

He concluded by recommending the following six points to improve the effectiveness of environmental assessment in China: (i) strengthen environmental assessment and better integrate it into decision making; (ii) introduce stricter approval standards for projects, as well as continued adjustment of the industrial structure; (iii) enhance supervision of the entire process of EIA. He explained that currently in China, while all projects have to conduct an EIA, the review EIA and follow-up supervision of projects needs to be improved; (iv) provide ad hoc advice and support to construction and engineering projects to facilitate closer project supervision; (v) improve the system of information disclosure via the online submission and approval system; and (vi) continue to improve public participation, including, but not limited to, the use of public hearings in the EIA process.

REN Jingming, in reviewing the development of China's EIA System, emphasized the practical experiences of SEA in China. He focused on the promulgation and implementation of "The Regulations of Plan-EIA," and highlighted the significance of environmental protection in optimizing economic development through consideration of environmental concerns in overall policy-making and in pre-empting ecological damage and environmental pollution.

He pointed out that China's EIA institution was established in early 1979, making it one of the first countries to adopt a national EIA system. The Environmental Impact Assessment Law of China (EIA Law) goes beyond the typical investment project environmental assessment process and has been extended to the mandatory environmental assessment of government plans.

There is, Prof. Ren stated, clear evidence of strong political will on this issue. This is illustrated by the decision of the State Council on "Implementing the Outlook on Scientific Development and Strengthening Environmental Protection" in December of 2005, which requires environmental impact analysis to be carried out for any decision making which has significant environmental impact.

This is further supported by the provisional measures for public participation in EIA promulgated in February 2006. The Regulations of Plan-EIA which came into effect on October 1, 2009 are also significant. He observed that about 16 provinces and municipalities have now issued administrative Plan-EIA Regulations to facilitate its implementation in the administrative regions.

AM Session
SEA and EIA in China: Development and Prospects

The Regulations also stipulate Plan-EIA timing. For general plans and directive plans and special plans, an EIA shall be carried out during the process of plan drafting. However, in the case of special plans, the EIA shall be carried out before the submission of the draft plan for approval.

He remarked that the Plan-EIA may include, in a chapter or statement, an analysis, prediction and appraisal of the environmental impacts that might occur if the plan or program is implemented, as well as possible countermeasures for preventing or mitigating any unfavorable environmental impacts, while an EIA report for special plans will include all of these elements as well as the conclusions of the Plan-EIA.

Prof. Ren emphasized the three key impacts that should be addressed in a SEA. He explained that these are contained in Article 8 of the Plan-EIA Regulations. A complete Plan-EIA process should include analysis, prediction, and evaluation of three key impacts and relationships. First, the overall effects on the ecosystem of the region, due to implementation of the plan, must be addressed. Second, potential long term impacts on the environment and health of the population must be considered. Third, the relationship between the economic outcome and the social and environmental effects, as well as the balance between immediate and future benefits, must be examined.

Article 6 of the Regulations gives impetus to strengthening the concept of public participation by conferring the right upon any organization or person to report activities that breach these Regulations, or to report to the relevant authorities any plan implementation that has significantly adverse environmental impacts.

Article 13 provides additional support by stating that specialized plans that impose adverse impacts on the environment or which concern environmental rights and benefits of the public, shall solicit comments and suggestions to the Plan-EIA report from related organizations, experts, and the public, by means of questionnaire, fora, meetings or hearings. This Article also maintains that if the opinions from such organizations, experts, and the public differ from the conclusions of the Plan-EIA report, the plan institution shall hold debate meetings or public hearings to further demonstrate and justify the Plan-EIA report. Prof. Ren emphasized that the plan institution is also required to attach a specific description of whether the public opinions have been adopted and, if not, the reasons of not doing so.

Article 20 states that the reviewing panel shall suggest that the Plan-EIA report be revised if the fundamental data is inconsistent with the facts; selected methodologies are inappropriate; the analysis, prediction, and evaluation of adverse environmental impacts are inaccurate or inadequate; serious defects exist in the countermeasures proposed to prevent or alleviate adverse environmental impacts; the conclusions are indefinite or unreasonable, or even false; the description about adoption of public opinion and argument to support it, is not attached, or the argument against the public opinion is apparently unconvincing; or if there are other serious defects or important contents missing in the Plan-EIA report.

Despite the depth and strength of the recent Regulations Prof. Ren acknowledged that major difficulties in Plan-EIA enforcement persist and remain to be addressed. He explained that there are constraints resulting from funding and timing; inadequate technical foundations; lack of information; inadequate support of stakeholders; and insufficient public participation.

Prof. Ren concluded by suggesting that some possible solutions may be found in enhancing capacity building in SEA. This involves expediting the development of technical guidelines on Plan-EIA for key fields and industries; training of SEA professionals and officials; strengthening international communications and cooperation; and establishing a national SEA research center.

Ede Jorge IJJASZ-VASQUEZ opened his presentation by summarizing the environmental and development challenges in China and noting that China, one of the most successful developing countries economically, has achieved this with a very low per capita GDP. While China has a very large economy, it also has a very large population, and unlike most traditional countries, China has developed rapidly for many years.

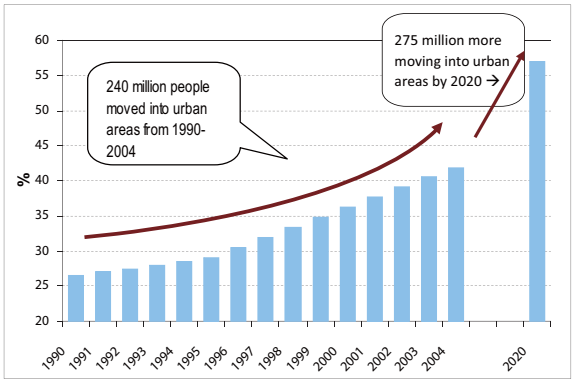
Chinese New Year is the largest migration of the world

Connectivity, he suggested, is at the core of China's economic growth and the infrastructure supporting this growth is fundamental to the country's success. China's highway and railway networks, connecting cities, are expanding quickly, placing tremendous stress on the urban infrastructure. He cited the striking statistic of a 31% annual growth of private vehicle ownership over the last two decades.

The huge demand for transport is demonstrated during the Chinese New Year—the largest migration in the world. Every year at this time, a large portion of the population travels in a single weekend. This is an indication of the design and growth parameters that China has to grapple with—mobility, growth and connectivity.

Between 1990 and 2004, 240 million people moved into urban areas—the largest rural to urban migration the world has ever seen. This migration is very important for economic growth and poverty reduction in China. Dr. Ijjasz-Vasquez emphasized that there was nothing wrong with this growth. The question is how to manage it in a manner that is more sustainable. He cautioned that China's unprecedented growth has come at a price—the total cost of air and water pollution in China could be as high as 5.8% of its GDP. China's pollution problems are indeed severe. The south of China now has half of the world's 20 most polluted cities, half of China's rivers in the north are Class 5, while air pollution, particularly PM-10, is a widespread problem.

Although China is developing very rapidly, it also has significant resource constraints. China has 22% of the world's population, yet only 6.4% of the world's total land area, and only 7.2% of the farmland. Water scarcity, especially in rural areas, is a serious problem with the annual per capita water availability of 725 cubic meters being less than 10% of the world average. The problem, emphasized Dr. Ijjasz-Vasquez, is clear—there is massive economic growth, there is serious pollution, there are major resource constraints. China's future growth depends on how its environment and environmental problems are mainstreamed into its development path. However, most importantly, he reiterated, given China's size and scale, the world cannot solve its environmental problems without China. For China, this is not only a local problem, it is a global issue. Much of China's pollution, while of local origin, has global importance. China is now the world's largest carbon emitter and is also a country that is not only growing very fast but which is also heavily polluted. Nevertheless, he suggested that the reality, when a closer look is taken, is not so simple.



Source: East Asia Urban Infrastructure Unit, The World Bank

Urbanization Trend in China

China has also achieved enormous success in responding to environmental challenges, both at the national and global level. Dr. Ijjasz-Vasquez cited China's wastewater treatment program, the largest in the world, which has achieved spectacular growth of 20 to

AM Session
SEA and EIA in China: Development and Prospects

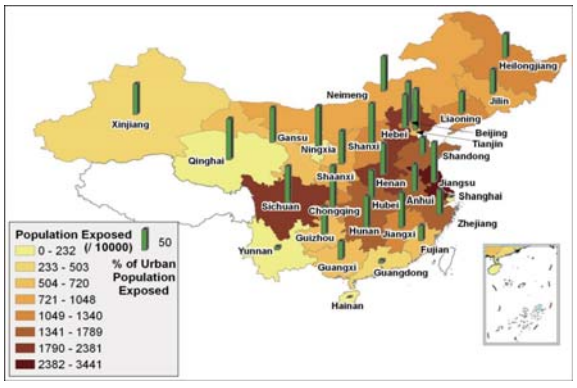
60% progress in the last 10 years. No other country has invested so much so quickly in dealing with its wastewater treatment. China also has the largest reforestation program in the world, contributing to the increase from 12 to 18% of the world's forest coverage in over 20 years. These successes have been achieved quietly, with little or no media attention.

He also noted that SO_2 pollution, primarily from coal-fired power plants, is being successfully reduced in China. Significantly, China has strategically prioritized environmental challenges, selecting those which can be done cost effectively and has acted decisively and quickly. China phased out CFC usage in 2009, which is acknowledged as one of the most successful global environmental programs.

This success indicates that the Ministry of Environmental Protection has made significant advances in legislation, EIA procedures and expertise development. It is important to realize that China has taken these actions much earlier in its development path than many OECD countries, especially when GDP per capita is considered. OECD countries only began to take these measures in the 1960s and 1970s, when their GDP per capita was much higher than China's current levels. On these development trajectories, China is arguably following a greener development path. However, due to its size, its large population, and its fast rate of growth, the environmental challenges confronting China clearly have global implications.

China is now the largest emitter of greenhouse gases, although its per capita emissions are only one-fifth of that of the United States. Over the last five years China has embarked on a very aggressive energy intensity reduction program, with a target of 20% reduction in terms of energy consumption per GDP by 2010. This is a very challenging target, especially when industrial growth and the GDP are increasing so rapidly. Delinking this level of growth from energy intensity requires major, concerted action. However, Dr. Ijjasz-Vasquez observed that it appears as though China will achieve this target by the end of this year, despite the pressures of the financial crisis. A second area of focus is the massive expansion of its renewable energy, with a target of 10% of total energy consumption by 2010 and a target of 15% by 2020. Again, he noted, achieving these percentages is a tremendous challenge. Nevertheless, Dr. Ijjasz-Vasquez asserted, this is not enough. More needs to be done.

The World Bank has a rapidly evolving partnership with China, which reflects the current situation and the methods China has chosen to use to address the challenges it faces. The World Bank, in partnership with China, has evolved from addressing broad challenges to projects that, while equally large, are more focused on specific issues of environmental sustainability. Dr. Ijjasz-Vasquez emphasized that while doing so the World Bank has to ensure full compliance with its environmental and social safeguards policy requirements and that the World Bank and China jointly and consistently mainstream key environmental and social issues, not just for the sake of environmental protection, but to enhance the outcomes and the development objectives of these projects.



Urban Population Exposed

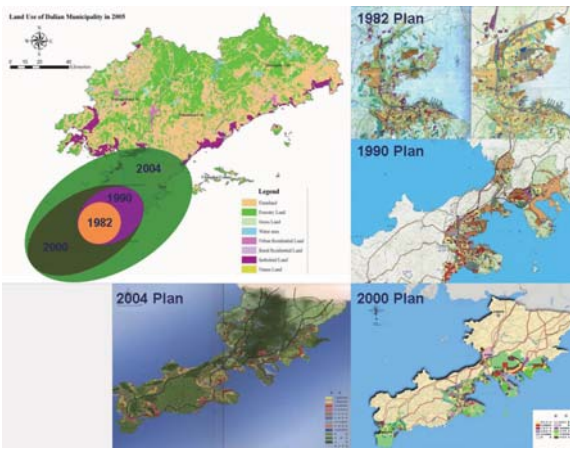
He emphasized that it is necessary to seek innovations and good practices around the world that can be brought to China and adapted to its particular circumstances, as well as to identify opportunities to test innovations that can be successfully replicated. Dr. Ijjasz-Vasquez also observed that it is necessary for the World Bank to identify practical steps to support the Ministry of Environmental Protection. Improvement in terms of the EIA process and practices in China includes more consideration of regional and cumulative effects, a greater use of early alternative assessments, and integration of the EIA analysis with the planning process. The World Bank also sees opportunities to strengthen the biodiversity components in EIA studies and to better integrate relevant social aspects into EIAs .

In a rapidly decentralizing system, tools such as EIAs and SEAs can help China mainstream its environmental and social challenges in the 12th Five-Year Plan from 2011 to 2015. One of the most interesting parts of this type of planning process is that governors and mayors and many local government officials, as part of their annual performance targets as individuals, have closely linked performance indicators that lead to the overall targets of the national and provincial program, and therefore act as an incentive for government officials. Dr. Ijjasz-Vasquez asserted that such clarity in the indicators and targets provides a permanent incentive for individuals—in contrast to central plans.

Dr. Ijjasz-Vasquez concluded by hoping that EIAs and SEAs can be effective planning and monitoring tools in dealing with the increasing urbanization of the country, achieving greater resource efficiency in energy and in water and in addressing the environmental constraints to growth.

LIU Yi, in presenting the role of SEAs in urban planning in China, focused on methodological approaches, and detailed a number of land-use based methodologies. Prof. Liu noted that in 2008, China had a total of 655 cities. The urbanization rate had rapidly reached 45% and, propelled by economic growth, is set to continue. It is expected that by 2030, China will have one billion people living in cities.

Prof. Liu defined urban planning as a fundamental regulatory approach to guide urban development in China. The central concern of urban growth is the change in land use; often from agrarian purposes, to townships and then to the current modern industrialized cities. In parallel with this process, land use changes in terms of the physical boundaries, land-use patterns, and types and degrees of intensity of material and energy use as well as pollution emissions.



The Rapid Expansion of Urban Edge

He explained that an urban plan emphasizes three elements: the scope of urban land use regarding the growth of population and the economy; the structure of industrial and residential land use; and the layout of land use over the whole urban region. These methods allow urban planners to integrate the issues relating to policy, economic growth and land use into the layout of future urban plans. He stressed the importance of this process in China by referring to the example of Dalian City. This initially small urban area almost doubled its size between 1992 and 2000. As compared to the 2000 plan, the urban area has now doubled again. He cautioned that any development of this scale calls for the need to integrate SEA with the decision-making process.

Prof. Liu presented the stages of urban planning: the preliminary stage; the outline stage; and the outcome stage. In the first stage the urban planners assess future limitations regarding urban growth – this is not limited to physical factors but also covers ecological restrictions. At the outline stage, the planners may be more interested in the land-use patterns and the development direction, while in the last stage the planners will provide a final layout of the whole land use outlook.

Prof. Liu then posed the question: what can SEA contribute to these three stages? He answered that in the first stage its main responsibility is to figure out the spatial environmental constraints, while in the second stage the SEA can screen out potentially environ-

mentally adverse development patterns. At the third stage, it can help forecast the future environmental impacts based on the land use layout proposed by the urban planners, and then suggest mitigation possibilities.

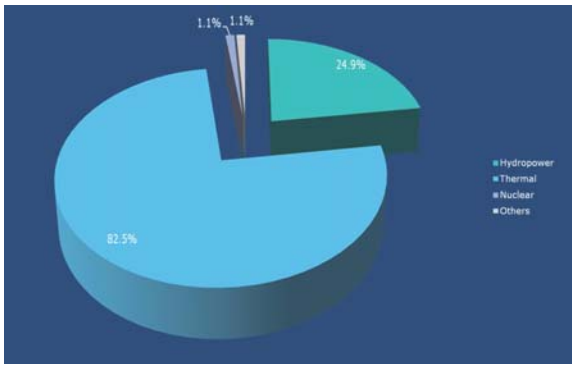
Prof. Liu pointed out that the conventional EIA usually starts with the scenario approach and then uses point-source based emission efficiency, followed by EIA modeling to estimate environmental responses. However, he emphasized that from a land use perspective more strategic and systematic approaches can be taken into consideration. First, it is necessary to identify the spatial variation of the future urban growth, then explore the spatial expansion of the cities, and discuss where, within the physical boundaries, the newly developed industries are likely to be located. Then it is necessary to use land unit loads, instead of loads based on individual enterprises, to estimate environmental impacts. By using this methodology, Prof. Liu noted that more emphasis is focused on urban growth than on estimates of environmental impacts. Another advantage of such an approach is its linkages with urban planning.

He then discussed the various land use models that can be applied to these stages. A first model—the SIMULAND based on GIS approaches—can be used to scope the boundary of future urban growth; by identifying ecological and physical constraints it becomes possible to identify the ecologically feasible future urban growth space. This model also allows ecological prevention areas to be reserved as zones where the city cannot expand. A second model, i.e., ULE-CA model based on cellular automata approach, can be applied to project future urban expansion. By using this approach, it is possible to provide different options for future urban growth at given economic and population growth rates and local governmental preference and then identify which pattern of urban expansion will lead to conflicts with the ecologically feasible growth space as defined by the SIMULAND or other environmental regulations. A third model deals with the environmental impacts of urban industrial development, which often dominates urban environmental problems in China. By applying an environment-extended production function, the PLAM model generates various land use scenarios for newly developed industries and assesses the related environmental impacts based on land unit based emission coefficients. Some statistical tools, e.g., the K-S test, can be used to identify all environmentally unacceptable scenarios and to provide insights on the potential space for future industrial allocation for planners and decision makers.

Prof. Liu emphasized that all three of these models can be applied at the earliest stage of urban planning. However, he observed that often in China, urban planning has already been completed before the SEA process. In that case, there is a need to develop appropriate SEA approaches, instead of simply using EIA-based methods, to serve plan-level environmental impact projection and assessment. Again, land use based approaches can be used to link the planned urban land use layout and its environmental impacts. The land use regression models, i.e., LUR models, are developed to construct the causal relationship between urban land use and impacts on water, air and noise. By applying the LUR models to the case study area, it was found that the models work better than conventional EIA-based models and there is no significant variation in the LUR model's precision at different spatial scales.

Prof. Liu concluded by saying that that these models—all based on land use—start from the premise that the city is a complex system. If a SEA is carried out, it is necessary to start with integration of the social economic system with the environmental systems. The land-use based approach provides a promising and a systematical way to understand the relationship.

ZHOU Shichun, in his presentation regarding SEAs for hydropower development plans in China, conveyed that currently China's energy supply relies heavily on thermal power and hydropower. In 2009, data from the National Bureau of Statistics indicated that thermal generation was 2,900 GWh, while hydropower generation was 615 GWh,—equal to 310 million pounds of standard coal and 286 million pounds of CO_2 emission reduction—followed by nuclear generation at 17 GWh. Although China has made great progress in hydropower development, the country's development is still at a comparatively early stage. Over the last 50 years hydropower installed capacity in China's power system has trailed far behind thermal power.



Installed Capacity Composition of the Power System in 2009 in China

However, China has committed to that by 2020, CO_2 emission for unit GDP will be reduced by 40 to 45%, when compared with 2005. Hydropower, as a renewable clean energy, is a key component of China's future energy supply and one of the important measures toward achieving China's CO_2 emission reduction targets. The National Renewable Energy Plan states that hydropower installed capacity by 2020 in China will reach 300,000 MW.

Mr. Zhou emphasized that China attaches great importance to environmental protection in its hydropower development program. By the end of the 1980s, all large- and medium-size hydropower projects had been placed under the environmental management program. This means that the government is responsible for developing comprehensive plans in the major river basins. He pointed out that there is now a legal requirement to conduct a SEA for river basin development in order to monitor the cumulative environmental impacts caused by continued hydropower development.

He outlined the phases of development of a hydropower project: the first is development of a plan; the second phase is a project feasibility study, covering the construction and operational aspects. The plan needs to be examined and approved by the central or local government for environmental aspects, and an SEA-EIA also needs to be approved by the environmental authorities, according to the importance of the river and the proposed capacity of hydropower plants. When the project is completed, the environmental authorities review it and, if found satisfactory, endorse the proposed environmental protection measures. Mr. Zhou then provided the main contents of an SEA. First is the alternatives analysis; followed by an assessment of the environmental baseline. Next is identification of environmental impacts, which are then analyzed and assessed. Environmental protection countermeasures are then proposed. The final stage is preparation of SEA reports.

The SEA makes it possible to better understand and consider river basin resources, local economic development and ecosystem protection at the basin level, and to optimize the basin development plan. A river basin development plan is key to the scientific and environmentally sustainable development of hydropower resources. He stressed the need to periodically review environmental impacts during implementation in order to optimize hydropower development and related hydropower countermeasures. He then discussed the SEA indicator system for hydropower development, highlighting the environmental and the social components and their relationship with the SEA process.

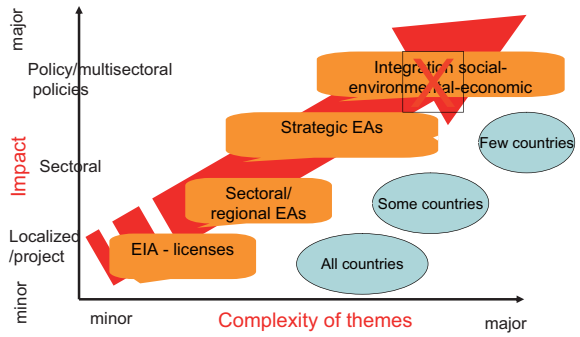
Mr. Zhou presented the Daduhe River hydropower development. The river, which extends over 1,000 kilometers, has a basin area of 77,000 km^2, and 22 hydropower projects with three controlling river reservoirs. To enhance the success of the program, the SEA was initiated early. The first aspect addressed was the general layout of the cascades; the second was the selection of the water supply levels; while the third was the selection of the dam development pattern. During the SEA process four levels of special investigation were conducted, covering terrestrial life and landscape system; biodiversity of aquatic life; impact of water temperature; and water quality. An SEA system was developed for the Daduhe hydropower development plan. The main purpose was to avoid adverse impact on 206 nature conservation areas while avoiding inundation impacts on the Gongga National Scenic Area, three national cultural heritage sites, five important cities and towns as well as to reduce farmland inundation.

Mr. Zhou concluded by assessing the prospects of SEA for hydropower development in China. He emphasized that the Daduhe River is only one of 30 important hydropower basins in China. The multiple interfaces between the Daduhe hydropower development and the river basin environmental protection have recently been managed through an SEA of the basin plan. This pioneering work has

AM Session
SEA and EIA in China: Development and Prospects

many benefits in promoting integrated basin wide development as well as building SEA capacity in China. He noted that recently, China has slowed the pace of development of large- and middle-sized hydropower projects by attaching increased importance to environmental and socially related issues. He stressed that the early involvement of SEA can play a key role in the decision making process and serve to ensure that hydropower developments in China are conducted in an environmentally and socially sustainable manner.

Juan QUINTERO & SUN Chongwu provided a World Bank perspective on the state and evolution of EIAs and SEAs in China.



After 30 Years+ of EIA in Developing Nations

Mr. Quintero stated that while almost all developing nations now have EIA systems, they address direct impacts from projects and too often deal with minor issues. He suggested that it is necessary to look beyond the project level to the cumulative impacts of development programs or to even more complex issues like macro-development plans, using strategic tools such as Regional EIAs, Cumulative Impact Assessments and strategic EIAs. Ultimately, this will lead to the mainstreaming or integration of social, environmental, and economic issues into development. He contended that this is something that very few countries have achieved to date.

SEA can be viewed as a decision making process that goes from stakeholder identification through to the analysis of options, identifying priorities and strategic options, based on strong participation and consultation of stakeholders and supported by analytical tools. However, elements such as modeling, mapping, and other technical inputs are often confused with SEA. Instead, these are the technical tools that will help decision makers make better decisions.

Mr. Quintero held that a SEA is essentially a continuum that covers the project level through to macroeconomic policy. He explained that traditional EIA methods place emphasis on impact prediction. However, as the level of decision making for development rises, there is a corresponding reduction in the capacity to predict. There is, invariably, more uncertainty, and as a result, there is a need to focus, not on the potential impact, but on the governance and institutional framework that is necessary to manage environmental issues in that sector and in that country.

The World Bank, Mr. Quintero noted, has been heavily involved in SEAs throughout the world. It supported the SEA of the Great Western Development Strategy in China—crucial to the development of the western part of the country. The Bank has also supported the SEA for the Hubei Road Network Plan and recently assisted Hubei Province to complete the SEA for its urban transport development strategy.

The use of SEAs, he said, has expanded dramatically in East Asia and South Asia. Mr. Quintero referred to a crucial review, carried out in 2009, which examined the strengths and weaknesses of SEA practice in these two regions. The review posed specific questions including: the role of SEA, its influence in decision making, the issues addressed by SEAs, the analytical approaches, stakeholder participation and the contribution of SEAs to mainstream environmental issues into high-level decision making or sectoral planning. One major finding is that none of the SEA systems in this review included any analysis of institutional arrangements or institutional capacity. Although most of the SEA systems include some degree of public consultation, this is usually only partially implemented

or applied. Most of the consultations that SEAs have with government institutions involve limited public participation. In addition reports from the countries indicate an important need for capacity building.

SUN Chongwu provided the example of the Wuhan Urban Transport Master Plan—a World Bank technical assistance project that includes an urban transport and master plan, as well as the SEA for the master plan.

Wuhan, the capital city of Hubei Province, is located in central China at a critical junction of the country. Transportation in this city of 7.4 million is one of the key issues for city government, made more challenging because the city is divided by the Yangtze and Hanjiang Rivers. The region features major key infrastructure—Wuhan was the location of the first bridge across the Yangtze River, and recently constructed the first tunnel underneath it.

Ms. Sun noted that generally government is focused on short term issues—goals that can be achieved within its span. Nevertheless, the World Bank recommended a SEA to assess the needs of the transport system in order for strategic environment implications to be considered upstream at the policy and planning levels before the entire system is built. This raised the question of who should be involved in the SEA process. Ms. Sun stated that there was acute awareness of the lack of social considerations in this case. As a result, the preparation of the study caused the World Bank to discuss a broad range of issues, not only with the city of Wuhan but also within the World Bank. This created learning opportunities not only for local officials but also for the World Bank team involved.

Ms. Sun emphasized that several useful experiences can be obtained from such an exercise. Among them is the importance to define the approach and methodologies with stakeholders. If the stakeholders are not identified, and there is no stakeholder analysis and coordination or discussion, it is difficult for the final product to be usefully shared with others. Another important point is that institutional coordination and cooperation are key elements in the process. It is necessary to properly link the master plan EIAs with SEAs in the overall plan for the next five years and to connect this with the decision making process.

Ms. Sun concluded by noting that a new Wuhan Urban Transport Project as a second phase will be implemented in Wuhan with components that have been designed based on the recommendations of this SEA.

Mr. Quintero then summarized some of the emerging issues and challenges in SEAs. One of the most crucial issues is the late initiation of SEA with respect to the planning process. Most SEAs are done when the planning is completed. Much scrutiny is given to the biophysical impacts with much less attention paid to social issues, strategic options and institutional arrangements. Mr. Quintero raised the question of how to link SEAs with the planning process emphasizing that this requires immediate consideration among SEA practitioners and planners in China. A crucial aspect is how to tier, that is how to link SEAs with the ensuing projects. He strongly suggested that, in China, it is necessary to "put the S, the strategic, back in SEAs."

One of the current challenges and restrictions of SEA in China is the low capacity in sector agencies, which manifests itself namely in the lack of effective consultation and stakeholder participation. This is compounded by an absence of institutional coordination. He also noted that public participation remains largely untapped territory for SEAs.

Mr. Quintero believes that high-level decision makers are not fully aware of the benefits of SEAs yet. He stressed that SEAs should be adapted to the planning and the situation, and not vice versa. In addition, there is a need to have a strong institutional commitment from the agencies carrying out the SEAs. Furthermore, regardless of the composition or structure of the SEA, it is imperative to focus on the key issues. It is important not to try to solve all the issues through the SEA; to be truly effective a SEA does not necessarily have to be complex.

AM Session
SEA and EIA in China: Development and Prospects

FIRST PANEL DISCUSSION

The panelists consisted of Fernando Loayza, Senior Environmental Economist from the World Bank; Hussein Abaza, Chief Economist, UNEP; Susan Bromm, Director at the Office of Federal Activities of the USEPA; Larry Canter, President of Environment Impact Assessment Training in the United States; and Ross Marshall, Head of the National Environment Assessment Service of the Environment Agency in the United Kingdom.

AM Session

Dr. Loayza commented that the morning's presentations showed there have been a number of achievements: that China, arguably, has taken a greener development path than many OECD countries; that the EA system has been developed and expanded to incorporate strategic issues; and that targeted investment indicates that the country is placing priority on environmental issues such as management of wastewater. China, he observed, is experiencing the greatest rate of urbanization in history, but future development will be constrained by natural resources. He noted that significant challenges such as pollution are creating social instability, as pollution is becoming a major issue with several Chinese cities, which are now among the most polluted in the world.

There have been substantial improvements, but significant challenges remain. He raised the possibility that the Chinese environmental assessment system may not be able to address the challenges ahead, arguing that to do so, China's EA's system must have the capacity to foster innovation in environmental management. Currently, he contended, the system is focused largely on regulation, with limited attention paid to incentives. He gave the example of Costa Rica, which rebuilt its depleted forests, not because of regulation, but because of an innovative system of incentives. He suggested that provinces that demonstrate they can produce innovative productive plans be rewarded with greater budget. Another recommendation made by Dr. Loayza was to strengthen the public participation system, possibly through the use of redress grievance mechanisms. He also suggested that China invest more in basic science and advanced engineering research for management of pollution, environment and natural resources.

Mr. Abaza commented that in his experience very little from the assessment outcomes is integrated into the policy and decision-making process. Few countries have effectively integrated the recommendations from assessments into the decision-making process. He posed the questions: "Why is that? What went wrong and why is the outcome not integrated into policy- and decision-making"? To a large extent, the environment is isolated from economic and social aspects and that often the entry point is the environment, not the economic aspects. This approach has a failed to demonstrate the business case for the environment and the economic benefits of integrating environment into macroeconomic policies. The economics of the factors driving environmental problems and issues have not been clearly analyzed—the approach has been to focus either on the environment or the economics, but not the linkage between the two. A deterrent to this kind of integration is the political economy and that there are vested interests in both the public and private sector in maintaining business as usual.

Furthermore, there is a need to adopt a holistic approach in aligning SEA with the macroeconomic policy decision-making process. This should not be a stand-alone exercise and must ensure that environment and social considerations are prioritized in the planning process. If environmental or strategic assessment continues to be a parallel exercise, the environmental and social aspects will remain divorced from mainstream economic policy. A key question to be addressed is: "How can SEA be used as a tool to mainstream environmental and social aspects up front in the decision and planning process, particularly for a country such as China?"

Ms. Bromm congratulated China for having established a framework for integrating environmental assessment into all types of planning processes, especially into the national five-year plans, into regional land-use planning and into sector plans. China is on a good

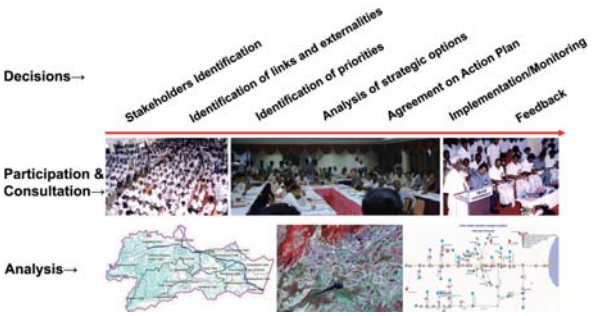
trajectory to achieve the goal of mainstreaming environmental assessment into its decision making.

She noted that one area of possible further improvement is public participation. The most important aspect of this process is the opportunity for the public to first learn about and then provide input into decision making, not just on environmental impacts, but also on socioeconomic impacts. Ms. Bromm expressed concern about the low occurrence of public hearings in some of the SEAs in China. She stressed that while public hearings can be very challenging they are also very important. She expanded on this point by saying that public participation is at its most meaningful when the public: has good information; has access to the underlying data; and is able to look for example at plant-by-plant information and gauge how well a particular plant contributes to emission reduction goals or energy conservation goals.

Dr. Canter took note of the massive scale of the ongoing plans, projects and studies. However, he expressed surprise at the limited mention of cumulative impacts. He suggested that cumulative impacts assessment represents a key integrator of information on impacts at the strategic level, and possibly even more at the individual project level. One of the main reasons for assessing cumulative impacts is because it is not simply about identifying more and more actions, but keeping track of the cumulative consequences of these actions on common resources. He emphasized that the perspective needs to be on the resources and not upon the actions per se. Such an approach provides the opportunity to consider the carrying capacity of resource use, the sustainability of resource availability and also the restoration of degraded resources. Dr. Canter concluded his remarks by raising the question: "Has adequate attention been given to cumulative effects assessment with respect to resources within the EIA and SEA processes in China?"

Dr. Marshall noted that Plan Making is simpler than Plan Implementation. Implementing plans across sectors and spatial zones requires integrated action across government ministries to accelerate delivery and secure positive outcomes. SEA cannot operate alone. China needs to address the issues of integrating green infrastructure programs, spatial planning and strategic environmental assessment with other activities, such as regulatory permits. Such integration can move industries toward greater environmental resilience, zones of lower impact and also encourage improvement in their own performance. Dr. Marshall also emphasized that staff can have a substantial impact on implementation, adding that institutions need to be strengthened in their intellectual capacity, their governance and the ability of their staff.

He also raised the issue of prioritization by asking whether integration of the structural planning systems with EIA is achieving potential multi-sectoral benefits, especially in areas that are driven by sustainable criteria that do not simply operate on technological criteria, but which involve aspects such as community, cultural promotion and social harmony. Dr. Marshall described this as "options not involving concrete"—key parameters within good strategic environmental assessment which seeks win-win scenarios across multi-sector and zoning applications that can benefit government, industry and the public, such as water management with related amenity and recreation resource management, biodiversity, fisheries and navigation. He asked whether, initially, within the plans, environmental priorities are sufficiently defined and documented. He pointed out that his own ministry demands that their SEAs, if audited, can ensure that the SEA process has clearly influenced the sustainability of the plan and delivered desired outcomes.



The Process of SEA

In the discussion opened to the floor, the questions covered a variety of topics, some additional to those raised by the panelists.

The question was raised that it is difficult to deal with the combined power of government and private capital without a strong independent judiciary. It was suggested that it is necessary to have a system of courts that can independently arbitrate disputes; not enough focus is given to the role of the judiciary in the resolving these problems. Ms. Bromm agreed, adding that the judiciary, in the United States, plays an extremely important role in interpreting the environmental impact assessment laws and regulations; she

also stressed that the public needs to have access to the courts and to impartial judges. Dr. Loayza stated that key to having a strong judiciary is some degree of separation of powers. However, he wondered whether creating specific redress or grievance mechanisms, which is perfectly compatible with existing political systems, might be incorporated in the current conditions in China.

Ms. Sun followed up the question of cumulative impacts in China by suggesting that these cumulative effects are being increasingly considered in China. She stated that stipulations regarding cumulative impact assessments such as Article 8, which requires a complete Plan-EIA process, should include analysis, prediction and evaluation of the full extent of impacts.

It was also asked how institutional commitment could be improved, particularly in China, where some of the proposals in these SEAs may be viewed as politically controversial by the government. Mr. Abaza responded by saying that SEA has been promoted in a manner that has lost sight of the decision-making process. He agreed that China remains a planned economy, but it is no longer an option for EIAs to be conducted as business as usual, and that also applies to SEAs. He reiterated that the entry point has always been the environment without demonstrating the importance of the environment to the economy, whether it is for poverty reduction, for trade promotion, or employment generation. He said that the message needed to be clear—that concern for the environment is not just for the sake for environment, but because it is good for the economy and business.

Dr. Loayza added that institutional commitment requires further assessment of the incentive system. He voiced once more his concern that progress on the EA system in China is based too much on regulations and wondered if there were sufficient incentives. Prof. Jining Chen responded that a SEA is only one of the many measures to address environment problems. He argued that there cannot be reliance on SEA or EIA to solve everything. He added that while possibly over-regulated, China also has resorted to additional tools like volunteer programs and economic incentives like taxes, but cautioned that the effectiveness of these measures cannot be determined immediately.

A question from the floor asked whether there is a system in place for follow-up or monitoring of SEA which results in integrating into actions. Dr. Loayza agreed that the greatest weakness of the SEA system generally is following up and monitoring, arguing that in many cases there is no incentive to do more. Dr. Canter joined the discussion by noting that one the most promising tools is the concept of monitoring and adaptive management. He drew the distinction that this concept is not just monitoring to gather information, but rather involves taking the results of monitoring and then adapting projects, adapting designs, adapting SEA plans themselves. He said that larger-scale SEAs need to include an element that fits the category of monitoring and adaptive management to allow them to keep refining and revisiting a plan.

Ms. Bromm commented further on the concept of adaptive management. She pointed out that the mitigation measures that agencies commit to as part of the environmental assessment process are not enforceable unless they are framed in another legal document, for example, a permit. She explained that permitting continues in parallel and is integrated with the environmental assessment. This means that it is necessary for those mitigation measures and monitoring to be captured in another legal arrangement to become truly enforceable. Dr. Marshall added that any plan, as distinct from the SEA itself, should set its own monitoring and follow-up programs, performance criteria, pragmatically saying that plans tend to have more available funding than the SEA.

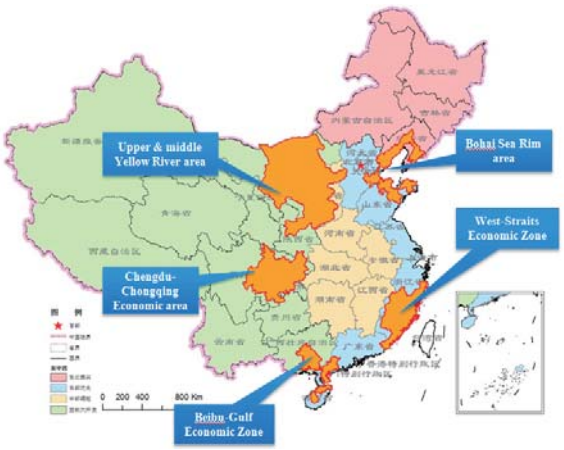
Mr. Leonard provided concluding remarks. He stated that SEA is just one process or one tool among many others with which China is currently experimenting. At the policy level different mechanisms are being prepared or piloted. He also stated that China's growth is unprecedented in terms of scale, especially for infrastructure. As a result the challenges are enormous. He commented specifically on public participation. He acknowledged that there is and should be considerable focus on aspects to be improved; this has also been emphasized by the Director-General of the Ministry of Environment. But, he added, conversely, it would be of interest to have a more in-depth discussion on what is presently going on in the field on public consultation in China. For example, the World Bank applies its policies on public consultation in China as it would anywhere else, and is increasingly witnessing examples of good practice in public participation and community involvement.

PM Session
SEA of Five Mega-Regions in China

CHEN Jining gave a presentation on the five mega-regions in China.

In opening the presentation, Prof. Chen provided some background on the five mega-regions: the Bohai Sea Rim Area; the West-Straits Economic Zone; the Beibu Gulf Economic Zone; the Chengdu-Chongqing economic areas; and the Yellow River Upper and Middle Stream area. These five zones cover 1.1 million km^2, contain 90 cities, and are home to about 300 million people. The regions, which constitute about 22% of the national GDP total are included in China's national development strategy, and are undergoing very rapid growth. In addition to their economic importance, the regions are rich in biodiversity, ecologically and environmentally significant; therefore it is particularly important to seek long-term balanced growth solutions.

By 2030 China will be in the middle to late stages of industrialization. Growth is likely to be mostly heavy industry and this will be intensified and located closer to environmentally sensitive areas. Between 2030 and 2040 environmental pressures resulting from industrialization and urbanization in China are likely to peak. China's land use intensity, due in part to its large population, is much higher than that experienced by other developed countries during their industrialization process. For China, the intensity of industrial output per square meter of land, as a measure of pressure from industry, is much higher than for any other country in history. This pressure applies not only to land but also to water. Prof. Chen referred to the "ten-times" rule of thumb, which works on the principle that if the flow rate of a river is ten times the discharge of the treated wastewater, then the river will be clean when it reaches the next city downstream, allowing its use for accommodating new discharge. However, in China this rule often does not apply because of the high intensity of land use and urbanization.



The Five Mega-regions in China

Prof. Chen emphasized that land use in the early stages of development is crucial and for this reason SEA is critical for environmental management—SEA has a key role to play in China's future. SEA is a proven, effective institutionalized management tool in long-term assessment of environmental risks at an early stage of policy making. A key methodological consideration is industrial land use planning at a very early stage to determine future environmental impacts. However, the biggest problem confronting SEAs in China is uncertainty concerning growth and technological changes. This means that if the recommendations in the SEA are too rigid, it may not be amenable to strategic management at a later stage. Conversely, if the recommendations are too general, it may not be capable of controlling future environmental risks. It is necessary to strike a balance between the ideal and practical feasibility. The methodology of the SEA should identify and assess the ecological risks of sensitive areas. In addition, appropriate methodologies should be used for developing integrated quantitative assessment tools, quality assurance procedures with peer review, public and stakeholder participation, technical meetings, case-study libraries, a support network, and retrospective analysis.

For the SEA of the five mega-regions, the main technical task is developing a scenario analysis based on different possibilities. This provides information about alternatives based on the future impact and risks for which appropriate recommendations can be made to decision makers. Prof. Chen described the modeling for the five mega-regions, which covers two periods: 2015 and 2020. One model is known as the "Three-'S' model". At the assessment stage, the first "S" relates to the scale—the total industrial capacity; the second "S" is the structure—the parts of the industrial plans; and the third "S" is the space—where they will be likely be located.

He highlighted the need to consider the impacts on resource use in the context of sustainability. This includes the impact on the community, the environment carrying capacity, as well as spatial constraints. He reiterated that a fundamental issue confronting SEAs is

PM Session
SEA of Five Mega-Regions in China

the large degree of uncertainty. This is a serious problem because uncertainty at the macro-level can propagate and amplify, hence increasing cumulative impacts.

Another of the models, explained Prof. Chen, is the "agent-based model" used for simulating industrial land use patterns. It focuses on economic policies at the local or central governmental level, building an industrial model within the socio-economic framework of that region. It is possible to apply this to pollution emissions. The Monte Carlo simulation provides samplings which allow large-scale ecological risks to be calculated. This means that different samplings can be used to estimate industrial distribution. It is then possible to assess the statistical impact the discharge will have on each river, and to calculate the river's water quality. However, this is not an easy task. All five regions are dominated by heavy industries, with production levels of steel, electricity, and crude oil having increased dramatically in the last 15 years. Accommodating this unprecedented rate of growth poses enormous challenge. It is also necessary to calculate the cumulative impacts and risks from chemicals such as persistent organic pollutants in the soil and marine environment and then grade the risk to assess the likely long-term impact. This allows a region to be divided into sections depending on different ecological risks and, through comparative risk-analysis, to locate the zones that require priority attention.

Prof. Chen concluded by emphasizing that uncertainty is a major issue facing the five mega-regions and it exists on a large scale because the mega-regions are so complex. Since so many factors have to be integrated, a conventional SEA approach faces fundamental challenges. It is necessary to ensure that speculations are scientifically sound and results are communicated effectively to the stakeholders.

Present Situation and Scenario of the Environmental Pressure in Coastal Regions

HAN Baoxin, in his review of the Beibu Gulf Coastal Area (BGCA) SEA, highlighted the environmental pressures, ecological issues, trans-boundary environmental impacts and constrained carrying capacity in the study area. He described the BGCA, widely considered to be the area with "the last clean sea" and "the Gulf Area with the most biological diversity" in China, as covering a total area of 82,100 km^2, accounting for 18.2% of the provinces of Guangxi, Hainan and Guangdong. Its total population, in 2007, was about 31.6 million, or 20.7% of these provinces. The region has an extensive shoreline of about 4,063.5 km.

In recent years, the resources of BGCA have been included in regional and national development strategies, especially heavy industries and port logistics. Growth has created inevitable conflicts with the marine environmental resources, placing them under tremendous pressure. The ecological richness of the region and its precariousness are illustrated by the plight of the local dugong species, which is in extreme recession and on the brink of extinction. However, currently the overall water quality of the BGCA is generally good. Sea waters considered to be "clean" and "relatively clean" account for 92.6% of the area. Nevertheless, evidence suggests that this ecologically sensitive region is under enormous and growing environmental pressure from rapid economic development, with more water bodies reaching Class IV and worse. Such deterioration in water quality is found in a wide variety of locations, including Lianzhou Bay, Maoweihai and Zhanjiang Bay. In addition, Class III water has appeared in Qinzhou Bay, Haikou and Dongfang coastal waters, Shuidong Port, and Leizhou Bay.

The main pollutants, he explained, are fecal coliform and inorganic nitrogen. Inorganic nitrogen is the main contributor to the eutrophic condition that currently afflicts Zhanjiang Port, Shuidong Port, Lianzhou Bay and Maoweihai. The predicted loading of pollutants is expected to increase significantly—a trend closely related to the planned substantial increase in the length of shoreline use. The total length of the port industries are planned to increase to 564.5 km, approximately 11 times the length of 52.2 km in 2007. Correspondingly, emissions of COD and ammonia nitrogen for 2020 will increase by 62.9% and 99.1%, respectively, compared with 2007. The increased development and utilization of the natural shoreline and tidal-flat areas have resulted in a reduction in size as well as quality of important ecological areas such mangroves, coral reefs and sea-grass beds.

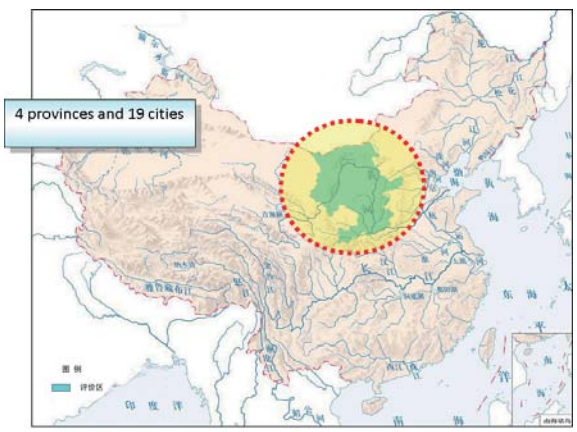
The coastlines can be divided into ecologically sensitive ones and general ones, with half of the coastlines belonging to the former. The ecologically sensitive coastline, which accounts for 2,023.2 km (48.6% of total), can be further subdivided into areas where development is constrained and areas where development is strictly prohibited. Prohibited areas include ecologically protected zones, mangroves shorelines, and important tourism resources. Areas in which development is allowed but constrained include tourist resorts, sea-farming areas and breeding grounds. Furthermore, from the development plans formulated for the year, it is anticipated that 60% of the water in the area will exceed the environmental capacity, while inorganic nitrogen concentration will far exceed the specified standard. The integrated risk index increases closer to the bays and harbors, and these waters may face a higher danger of degenerating into a critical state.

Based on local development scenario forecasts, marine environmental impacts were simulated and predicted using a wide range of supportive examples. The Analytical Hierarchy Process (AHP) technique was applied to integrate the estimated environmental capacity into the evaluation of coastal eco-suitability and eco-risks. This led to a preferable key coastal industrial development strategy for various regulatory proposals.

In conclusion, he stated that the most crucial element of this strategy is the need to reduce the amount of planned activities occupying the environmentally sensitive shoreline. Accordingly, he maintained that the port and industry shoreline should be adjusted from the current 565 km to 406 km—a figure less than 10% of the total natural length. Prof. Han also identified a number of recommendations which include reduction in the scale of an oil refinery, from the original 128 to 92 million tons; a reduction in ethylene capacity from 7.2 to 6.2 million tons; iron and steel production reduced from 76 to 26 million tons; paper pulp manufacture adjusted from 6.5 to 3.5 million tons; coal-fired power generation adjusted from 37.6 million kilo-watts to 30.1 million kilowatts; and fuel ethanol, adjusted from 1.5 million tons to 1.0 million tons.

WANG Yanan shared her experience in conducting a SEA for Sustainable Use of Water in one of the mega-regions—the Yellow River Upper and Middle Stream Region. This region covers Ningxia Province, Inner Mongolia, Shaanxi Province and Shanxi Province and includes 19 cities.

Water scarcity is severe in north China, especially this region, of which one-third is desert. The water resources allocation per person is lower than half that of the whole Yellow River Region. Similarly, the water resources allocation per hectare is only one-third. The primary challenge, said Ms. Wang, is to identify water resources and optimize allocation. To solve this issue, restructuring of the water



Overview of Yellow River Upper and Midstream Region

PM Session
SEA of Five Mega-Regions in China

Arid Conditions: Man resting in shade of billboard

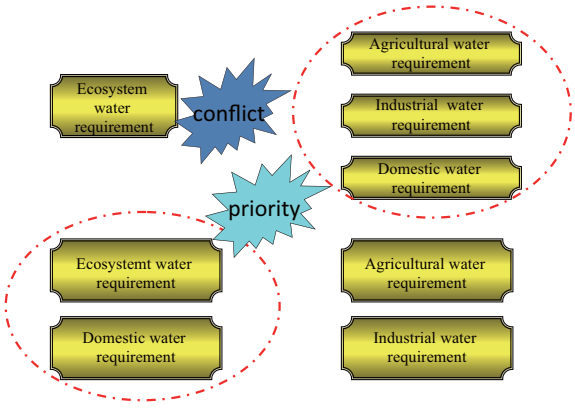
requirement has to be undertaken, and the results used to allocate water resources according to ecosystem requirements.

She explained that the first issue is to achieve improvement in eco-environmental quality and at the same time economic development, in tandem with promotion of social development and stability. The second issue, she added, is how to estimate the competing needs for water in order to achieve ecosystem stability. This calls for identification of ecosystem water requirements and an estimation of the amount of available water required. Based on the characteristics of the Yellow River, the ecosystem water requirement is divided into two parts: the base flow of the river, and the quality of the water and sand discharge. The ecosystem water requirement amounts to 20 to 70% of the flow rate at different rivers. From the river ecosystem point of view, it is possible to calculate the volume of potential water that can be used by society. She presented this as regional surface water plus ground water minus basic ecosystem water. As a result, the 19 cities of this region now have a new optimized water allocation scheme. Based on the scheme, in 2007, the total water supply in the region was 22 billion cubic meters, of which over 90% was consumed.

Ms. Wang elaborated that in planning for further growth and development, it is important to manage areas of different consumption levels differently. In regions that have been over-developed and where water consumption already exceeds the usable amount, water consumption should be reduced. In regions where water consumption is near or equal to the available volume, water consumption should not increase. It is only in areas where water consumption is less than the available amount that further development is allowed.

The third issue, she noted, is how to attain targets—which requires a strategy to control consumption and protect existing water resources. In this case, it is necessary to accord the ecosystem water requirement high priority and develop water saving strategies. Such strategies must include water saving for agriculture, industries and domestic use.

The last issue, and one which is crucial, is wastewater recycling. She explained that it is important to obtain further information about assuring ecological water requirements and consuming less water in over-exploited areas. This will protect the usable water resources and maintain ecosystem health in the Yellow River and its branches. It is also necessary to ensure security of wetland ecosystems by strictly limiting development in these areas.



Principle of Water Resources Allocation

In conclusion, Ms. Wang emphasized that if optimization can be achieved, then a balance can be maintained between economic development and environmental protection. However, to resolve ecosystem/environmental issues and ensure the security of water for industrial and economic development, it is vital to achieve optimization of water allocation, and at the same time, restrict water consumption for planned activities. Finally, it is also necessary to orchestrate economic development and environmental protection to enhance security in regional water supply.

SECOND PANEL DISCUSSION

The SECOND PANEL DISCUSSION consisted of Maria Partidário from Instituto Superior Technico IST, Portugal; Rob Verheem, Deputy Director of the Netherlands Commissions for Environmental Assessment; Nick Taylor, President of the IAIA; Miles Scott-Brown, Principal of Integrated Environments; Charlotte Bingham from the Millennium Challenge Corporation; and Shirley Lee from the Environmental Protection Department of the Hong Kong Special Administrative Region Government.

Dr. Yongqin Chen opened the second discussion session of the day by noting that in the morning session the discussion was focused on the history, recent developments and future directions for SEA and EIA in China. The afternoon session wishes to narrow the focus of the discussion to developments of the SEA for the five mega-regions. While these five regions cover a large part of the country, they reflect the balance that the country is trying to achieve between the east and the west parts of China in its development. He added that despite the scale of the problems that China faces—characterized as complexity, conflicts, and constraints—innovative progress has been achieved in several areas, along with breakthroughs in methodology.

The five mega regions include 15 provinces and 90 cities or counties with an area of 1.07 million km². In 2007, about 300 million people were living in the five regions, which contributed about 900 billion USD GDP.

> The environmental quality of five mega regions is of much significance to the nationwide middle and long term ecological security level and environmental trend.

Prof. Partidário was encouraged that despite the increasing pressure on the environmental resources there is an attempt to define the environmental carrying capacities of the systems that are under this pressure. She noted that this was a positive development because there have been some difficulties actually defining the meaning of carrying capacity. This illustrates general concern for the limits of the environmental systems. However, she cautioned that there may be a risk in using measures that are uncertain in terms of the reactions of the environmental systems.

Prof. Partidário expressed her concern that while a SEA can be instrumental in finding solutions, it is unlikely to bring a solution by itself. SEA is a process, not to correct the errors of the past, but to address and guide future development. SEA needs to be viewed more as a way of looking for optional pathways to intended objectives. SEA can consider current problems and then, if the existing proposals exacerbate these problems, the SEA should ask whether other activities might engage the development of wealth within those regions, without imposing on the eco-systems or the existing environmental problems. SEA needs to address the policy challenges at different scales, especially regarding linkages between multiple planning scales.

Mr. Verheem noted that the scale of development and the resulting issues in China are tremendous. He referred to the three key challenges in the SEA for the mega-regions that Prof. Jining Chen highlighted in his presentation: the uncertainty and the complexity; the need for a "risk screening and comparative analysis" approach; and communication—the interface between science and policy. He believed that the first two issues will be solved in China, but that communication remains a challenge, not only for China but for SEAs worldwide.

PM Session
SEA of Five Mega-Regions in China

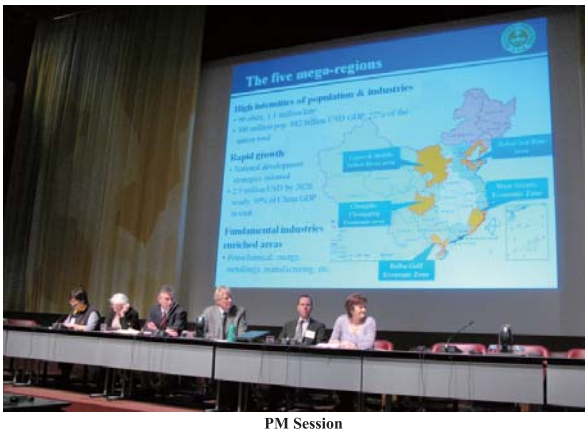
In asking how SEA can act as an interface between science and policy he emphasized that SEA is not just about science or just about policy. Instead, SEA is about linking the two. He argued that for SEA to be an effective interface between science and policy it is necessary to include political entities in the process as early as possible—waiting until recommendations are made is too late. Furthermore, while fully understanding that there are alternative ideas on wealth and economic growth, if the SEA commences by challenging the need for economic growth, it will risk being less succesful because of the challenge it may present to influential stakeholders in China. He strongly made the point that communication is a crucial skill in SEA.

The influence of the SEA typically ceases with the report. However, he maintained that the implementation phase, particularly with respect to the five mega-regions, needs an integrated monitoring and assessment process. His final remark concerned institutional issues during implementation. He explained that to ensure that environmental and social issues receive attention, there need to be constituencies in China to speak on behalf of these issues. These could be government agencies, or scientific institutions, but they should have the strength, the funding and the capability during implementation to call attention to an issue if needed.

Dr. Taylor emphasized the need for social dimensions to be integrated into the assessment process as early as possible, rather than waiting for the need for remedial action. Emissions, air quality, water quality, and other environmental impacts arising from industrialization and urbanization need health impact assessments in order to address some of the human consequences of those issues. Health is only one key component; it is also necessary to address the net social consequences of other impacts, pointing out that natural capital is a key component in people's livelihoods.

He emphasized that it is important to apply social impact assessment at both the strategic and project levels. Strategic assessment is particularly useful for large-scale projects, such as a transportation corridor or land-use changes taking place at a regional level. The strategic social impact assessment can be used to frame key issues, policies and mitigation strategies in advance of site specific work. Dr. Taylor also commented on public participation. Best practice social impact assessment is participatory in nature, and he believed that the process is a valuable method of involving affected people in the overall environmental assessment process, especially identifying key stakeholders, obtaining their input and tapping into local knowledge.

Mr. Scott-Brown made a challenging observation by asking: "What is the definition of strategic?" In answering that it is a plan or action to achieve a particular goal he then asked: "Are we really looking at strategic assessment?" There may be a lot of simulation, mapping, or analytical work, but the challenge is to take these pilot studies and recommendations to the decision makers. He also challenged the assumption that many outside of China view Chinese economic growth and the associated environmental pressure as purely internal to China. However, the reality is actually the reverse—growth in China supports everyone. There must a realization that any transition to a green economy or toward sustainability, involves people outside of China as much as the Chinese population because China's growth is driven by the world's demand for low-cost products. He also returned to the scale and speed of China's development. By 2030, there may be one billion people in Chinese cities. This is a major transformation with huge consequences; there is pressure to act immediately because the impacts will be of an unprecedented scale.



PM Session

Mr. Scott-Brown noted that China also is undergoing a rapid evolution in its environmental assessment system, in contrast to OECD countries which have had 30 to 40 years to develop their policies and programs. He highlighted two areas where further evolution

could occur. One is moving from a reactive to a more proactive approach. The Chinese system is highly regulated; a more widespread use of incentives may have greater success than a command and control approach. Another possible area of improvement is less reliance on a mitigation-based approach which combined with greater emphasis on the use of new technologies and controls, may result in prevention being applied early in the process to eliminate impacts before they can occur.

He concluded with remarks on institutional capacity and implementation. SEA is an adaptable process and may be used as adaptive management. SEA is currently a very reactive process, to be mainstreamed into the environmental process it needs to move upstream. Mr. Scott-Brown optimistically sees a tremendous opportunity in the formulation of the upcoming 12th Five-Year-Plan. The "takeaway" from this conference, is that the use of SEA, the lessons learned from the mega-regions, may be integrated into the planning process.

Ms. Bingham agreed with the views of Larry Canter that there is insufficient emphasis on cumulative impacts. She emphasized that there will be mega-accumulative and synergistic issues when the level of development in 2030 and 2050 is attained. She also stressed the importance of linkages saying that there needs to be more emphasis on the connection of health and disease prevention such as with sewage disposal and air pollution. She also concurred with the other presenters regarding the need for continuous monitoring of proceedings—whether via plans or SEAs.

Ms. Lee also returned to the dimension and scale of the changes and challenges in China, noting that recently in Hong Kong she experienced the massive dust storm that traveled from Mongolia, to Japan, to Taiwan into Hong Kong—the effects of environmental degradation can span vast distances. This had prompted her to place more emphasis on the need to address cumulative impacts and the need to link this to health issues—whether related to air or water. She concluded by advocating that public participation needs to expand instead of simply increasing in transparency. While in favor of active dialogue with local governments, as well as other tiers, such dialogue has to suit the local situation.

Several questions were asked following the presentations by the panelists.

Mr. Leonard revisited the concept of carrying capacity and asked how this is defined and what methodologies are being used. China is presently reconsidering its environmental standards and thresholds, especially in terms of air quality and fine particulates. He asked by what means a threshold would be determined through time within a given area at a multifunctional level.

Mr. Verheem responded that if standards, norms and thresholds are discussed, this is essentially an EIA question—the project's impacts are assessed against norms and standards and a decision is made whether or not this is positive. However, such an approach does not link well with the more visionary and abstract nature of policy making. He suggested that for policies an alternative—or complement —to the "EIA like" approach could be rather than to define alternatives and then assess the impacts against standards; the SEA could start a consultative process in which, together with the stakeholders in the mega-regions, there is an attempt to identify the key environmental and social priorities. In the second step, it can then consider which kinds of institutions are needed to ensure that these priorities will be addressed over the course of the next 20 years. This is a different approach—the output of the SEA would focus not on a comparison of alternatives, but on the institutions China will need in the mega-regions to guarantee sustainable development. He also emphasized the benefit that can be gained in bringing science to the policy level. Sustainable development in the mega-regions is possible, only if the latest science is brought to the policymakers' attention.

Dr. Partidário followed up on the linkage between science and policy by clarifying that this extends beyond technologically-based science to social science, policy science, and others. She said that SEA can be of great assistance in shaping future directions, especially the developments over the next 50 years that will be beneficial for China and for the rest of the world. SEA can assist in bring-

ing this change, but it needs a wide range of sciences, not only the physical ones.

Prof. Liu noted that the SEA studies of the five mega-regions have been ongoing for almost two years. This is in effect a national initiative involving 15 provinces—almost half of the national total. The studies are planned to be completed by the end of 2010. During the process, the SEAs have already demonstrated their significance. Many local governments are committed to the findings of the SEA studies. One of the purposes of these SEA studies is to propose environmental insights for the 12th Five-Year Plan, both at the national and local level. These are very proactive SEAs—with a clear intent to avoid past problems. He commented that this is not a purely technical analysis, but has involved considerable negotiations and communications with different stakeholders.

Prof. Lam, in his closing remarks, noted that the issues confronting China are the same as in other countries, although on a vaster scale, and with massive and complex uncertainty. He observed that China has ventured into a new area of SEA and EIA and into a new type of national socioeconomic planning—an unprecedented area in policy making. At its best, it should be a reference for other countries. Mr. Leonard added that in recent years there has been tremendous change in the level of discussion, not only on related issues confronting China, but also on the global issues to be addressed—both common and different solutions are being sought from different perspectives. The China Day parallel conference event has contributed to this ongoing discussion.

Dr. Ijjasz-Vasquez concluded by saying that this has been an event where it has been possible to openly discuss the next generation of improvements that could happen in China such as improving public participation, social considerations, and the economic dimensions of SEAs. The China Day parallel conference event has provided an opportunity to learn from other countries, and a platform to bring this knowledge to developing countries. There is no better fora than the IAIA to achieve this.

These meetings should always close with practical next steps, and the World Bank is fully committed to supporting such initiatives. Therefore, there is a need to define these next steps, and Dr. Ijjasz-Vasquez encouraged Chinese officials and participants to build upon the success of the event. The World Bank is a committed partner of this process, and with only a few months remaining before the promulgation of the 12th Five-Year Plan one should not relinquish the opportunity to influence at a macro-level a process that only occurs once every five years.

Summary / Recommendations

China has made considerable environmental progress in the past 30 years, in which EIA, with its framework legislation, procedures and expertise, has played a key role. But there is much more to be achieved and huge challenges remain. While these challenges for China, both environmental and social, have a strong national importance, they are also of global significance; the world cannot meet its global environmental objectives without China achieving its local environmental objectives.

China has achieved numerous successes in responding to environmental challenges to date, both at the national and global level. These have been achieved quietly, with little or no media attention. The successes indicate that the Ministry of Environmental Protection has made significant advances in legislation, EIA procedures and expertise development. It is important to realize that China has taken these actions much earlier in its development path than many OECD countries, especially when GDP per capita is considered. China is undergoing a rapid evolution in its environmental assessment system, in contrast to OECD countries which have had 30 to 40 years to develop their policies and programs. China, arguably, is taking a greener development path than many OECD countries; its EA system is being developed and expanded to incorporate strategic issues; and is targeted towards significant environmental investments that indicate that the country is placing an increasing priority on environmental issues.

Within this context it is necessary to seek innovations and good practices around the world that can be brought to China and adapted to its particular circumstances, as well as to identify opportunities to test innovations that can be successfully replicated. It is necessary for learning institutions, international experts, the World Bank, and other partners such as IAIA to identify practical steps to support the Ministry of Environmental Protection on further improvement of the EIA process and practices in China. In a rapidly decentralizing system, tools such as EIAs and SEAs can help China mainstream its environmental and social challenges in the 12th Five-Year Plan from 2011 to 2015. EIAs and SEAs can be effective planning and monitoring tools in dealing with key issues in China such as the increasing urbanization of the country, achieving greater resource efficiency in energy and in water and in addressing the environmental constraints to growth.

The studies of the SEA studies of the five mega-regions have been ongoing for almost two years. It is a national initiative involving 15 provinces—almost half of the national total. The studies are planned to be completed by the end of 2010. During the process, the SEAs have already demonstrated their significance. Many local governments are committed to the findings of the SEA studies. These are very much proactive SEAs—with a clear intent to avoid past problems. It is not a purely technical analysis; it has involved considerable negotiations and communications with different stakeholders. One of the purposes of these SEA studies is to propose environmental insights for the 12th Five-Year Plan, both at the national and local level.

The IAIA'10 China Day has been an event where it has been possible to openly discuss the next generation of improvements that could happen in China. There is a need to define these next steps and encourage Chinese officials and participants to build upon the success of the event. The organizers of the IAIA'10 China Day Parallel Event are committed partners of this process, and with only a few months remaining before the promulgation of the 12th Five-Year Plan one should not relinquish the opportunity to influence at a macro-level a process that only occurs once every five years. With this in mind, the following recommendations resulting for the day's discussions are put forth for further consideration.

Strengthening environmental assessment and better integrating it into decision making

The environmental assessment process should continue to be strengthened and better integrated into the decision making process in China. This should include improving the environment protection capacity, institutional capacity and governance of environmental protection. Although much has been achieved, the decentralization of responsibilities, scale and pace of development in China renders capacity building a continued and critical issue to be addressed. If there is to be significant continued improvement in the effectiveness of the environmental assessment process in China, efforts on enhancing technical, institutional capacity and govern-

ance need to be commensurate with the challenges ahead. However, these efforts should be specifically focused on priorities such as providing guidelines to local authorities or establishing Centers of excellence to provide training and support research.

The review of EIA process and follow-up supervision of projects should be enhanced with initiatives such as providing ad hoc advice and support to construction and engineering projects to facilitate closer project supervision. The biodiversity and natural habitats components in EIA studies also require being strengthened. Major ecological function areas should be further identified and their restrictions and management be the object of technical guidelines. Environmental laws and regulations should also be updated namely to introduce stricter approval standards for projects. Environmental technologies and incentives for enforcement should be considered in tandem with the revision of regulations. Environmental regulations should also include guidelines for environmental assessment of China's international investments and activities in tandem with the Ministry of Commerce, the China Import-Export Bank and other entities such as ICBC and Syno-Hydro.

Linking SEA with the planning process

One of the most crucial issues to be addressed is the late initiation of SEA with respect to the planning process. Most SEAs are done when the planning is completed. How to link SEAs with the planning process requires consideration among SEA practitioners and planners in China. A crucial aspect is how to tier, that is how to link SEAs with the ensuing projects. Furthermore, since urban planning has usually already been completed before the SEA process starts, there is a need to develop appropriate SEA approaches, instead of simply using EIA-based methods, to serve plan-level environmental impact projection and assessment.

Developing methodologies that address uncertainty

SEA is critical for environmental management and has a key role to play in China's future. SEA is a proven, effective institutionalized management tool in long-term assessment of environmental risks at an early stage of policy making. However, one of the main challenges confronting SEAs in China is uncertainty concerning growth and technological changes. The large degree of uncertainty is a fundamental issue confronting SEAs and a serious problem because uncertainty at the macro-level can propagate and amplify, hence increasing cumulative impacts. The methodology of the SEA should identify and assess the ecological risks of sensitive areas. In addition, appropriate methodologies should be used for developing integrated quantitative assessment tools, quality assurance procedures with peer review, public and stakeholder participation, retrospective analysis, etc. The impacts on resource use should be considered in the context of sustainability. This includes the impact on the community, the environment carrying capacity, as well as spatial constraints.

Uncertainty is a major issue facing the five mega-regions and it exists on a large scale because the mega-regions are so complex. Since so many factors have to be integrated, a conventional SEA approach faces fundamental challenges. This means that if the recommendations in the SEA are too rigid, it may not be amenable to strategic management at a later stage. Conversely, if the recommendations are too general, it may not be capable of controlling future environmental risks. It is necessary to strike a balance between the ideal and practical feasibility.

SEA Capacity Building

One of the current challenges and restrictions of SEA in China is the low capacity in sector agencies, which manifests itself namely in the lack of effective consultation and stakeholder participation. This is compounded by an absence of institutional coordination. Therefore, despite the depth and strength of the recent Regulations major difficulties in Plan-EIA enforcement persist and remain to be addressed. Capacity building in SEA should be enhanced. This involves expediting the development of technical guidelines on Plan-EIA for key fields and industries; training of SEA professionals and officials; strengthening international communications and

cooperation; and establishing a national SEA research center.

Follow-up of SEA recommendations into actions

A system should be put in place for follow-up or monitoring of SEA which results in integrating the SEA recommendations into actions. The greatest weakness of the SEA system often is following up and monitoring; the influence of the SEA typically ceases with the report. The implementation phase—particularly with respect to the five mega-regions—requires an integrated monitoring and assessment process. To ensure that environmental and social issues receive attention during implementation, constituencies in China should be encouraged to speak on behalf of these issues. These could be government agencies, or scientific institutions that have the strength, the resources and the capability during implementation to call attention to an issue if needed. Furthermore, for SEA to be an effective interface between science and policy it is necessary to include political entities in the process as early as possible—waiting until recommendations are made is too late.

Cumulative impacts

Cumulative impacts are being increasingly considered in China within the Plan-EIA process and requirements such as conducting an SEA for river basin development to monitor the cumulative environmental impacts caused by hydropower development. However, its use should be much further expanded and its methodology and application clarified through the provision of technical guidelines for assessing cumulative impacts. Cumulative impacts represent a key integrator of information on impacts at the strategic SEA level, and possibly even more at the individual EIA project level. It allows keeping track of the cumulative consequences of actions on resources. The perspective is on the resources and not upon the actions per se. Such an approach provides the opportunity to consider the carrying capacity of resource use, the sustainability of resource availability and also the restoration of degraded resources.

Carrying Capacity

Given the scale and rapidity of the increasing pressure on the environmental resources in China studies to help define the environmental carrying capacities of systems that are under pressure should be further encouraged. This is another positive initiative from China in so far as there have been difficulties defining carrying capacity. The SEA Beibu Gulf Coastal Area (BGCA) illustrates well the environmental pressures, ecological issues, trans-boundary environmental impacts and constrained carrying capacity of the study area. The SEA for Sustainable Use of Water in one of the mega-regions—the Yellow River Upper and Middle Stream Region also highlights very well the need to consider the carrying capacity of a limited resource through an optimization of its planned use that balances economic development and environmental protection.

Adaptive management

The use of adaptive management tools should be considered in China. Impact Assessment is a flexible process that can be used as a tool for adaptive management. One the most promising and cutting-edge approaches being increasingly used to address uncertainty as well complexity of SEA or EIA is related to the concept of monitoring and adaptive management. In this approach monitoring is not just to gather information to verify and ensure compliance, but rather involves taking the results of monitoring and then adapting projects, adapting designs, adapting SEA plans themselves or EMPs of projects.

Social dimensions

The EIA process and practices in China needs to expand and better integrate relevant social aspects into EIAs and SEA. Presently, much scrutiny is given to the biophysical impacts with much less attention paid to social issues. Social dimensions should be integrated into the assessment process as early as possible, rather than waiting for the need for remedial action. Emissions, air quality,

Summary / Recommendations

water quality, and other environmental impacts arising from industrialization and urbanization require health impact assessments in order to address some of the human consequences of those issues. Health is only one component; it is also necessary to address the net social consequences of other impacts. The strategic social impact assessment as part of the SEA should be used to frame key issues, policies and mitigation strategies in advance of site specific work.

Public participation and disclosure

The Ministry of Environment Protection should continue to improve public participation requirements, including, but not limited to, the use of public hearings in the EIA process. Strengthening the public participation system should also consider the use of redress grievance mechanisms. The system of information disclosure should also be improved via an online submission and approval system and other efficient means.

Environmental performance incentives

To address the challenges ahead, China's EA's system should have the capacity to foster innovation in environmental management. Currently, the system is focused largely on regulation, with limited attention paid to incentives. The Chinese system is highly regulated; a more widespread use of incentives should complement and help achieve greater success than a command and control approach.

Environmental technologies

China should invest more in basic science and advanced engineering research for management of pollution, environment and natural resources. Less reliance on a mitigation-based approach and through greater emphasis on the use of new technologies and controls, prevention can be applied early in the planning process to eliminate impacts before they can occur.

Economic benefits

Participants highlighted a need to link environmental benefits to the economy. It was suggested that this should not be an isolated exercise—there should instead be a holistic or intergrated approach which aligns the SEA with the macroeconomic policy decision-making process to ensure that environment and social considerations are prioritized in the planning process.

Delegates at the Dinner Reception

Delegates of Organizers of IAIA China Day

Moderators, Contributors and Presentations

ZHU Xingxiang

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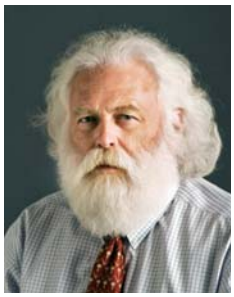
Mr. ZHU Xingxiang is currently the Director-General of the Department of Environmental Impact Assessment, MEP. Initially in charge of the water environment, Mr. Zhu has developed policies and standards and formulated management and implementation plans since the early 1980s, including the drafting of "Regulations of Plan EIA," and "Rules of Plan EIA."

Presentation:

The State of SEA and EIA in China: Recent Progress in Regulation Making and Practices



Stephen F. LINTNER

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Dr. Lintner is currently the World Bank's Senior Technical Adviser on issues concerning environmental and social safeguard policies. He is responsible for Bank-wide coordination and oversight of measures to support the environmental and social soundness of Bank supported programs and projects. He is also leader of the Quality Assurance and Compliance Unit (OPCQC) in the Operations Policy and Country Services Network. OPCQC provides Bank-wide support for implementation of the ten safeguard policies and their associated disclosure requirements. He is also President-elect of the IAIA and the recipient of numerous awards and medals, including the IAIA Rose Hulman Award.

CHEN Jining

Executive Vice-President of Tsinghua University, Professor in the Department of Environmental Science and Engineering, China

Prof. CHEN Jining is the Executive Vice-President of Tsinghua University, and a Professor in the Department of Environmental Science and Engineering. He is currently Deputy Chair of the National Environmental Science and Technology Committee, Vice President of the National Environmental Science Association, and board member of the Chinese Environmental Foundation as well as a number of other scientific committees, professional associations and advisory councils related to water and environment. He is also an editorial board member of several environmental journals and has won several scientific prizes for his distinguished work.

Presentation:

SEA of Five Mega-regions: Background, Framework and Outcomes

Moderators, Contributors and Presentations

Ede Jorge IJJASZ-VASQUEZ

Manager of Sustainable Development Unit, Beijing Office, the World Bank

Dr. Ijjasz-Vasquez is Sector Manager of the Sustainable Development Unit for China and Mongolia, which is responsible for the World Bank portfolio in the areas of infrastructure (transport, energy, water supply and sanitation), environment, climate change, disaster management, and rural and urban development. The Sustainable Development Unit manages a portfolio of $9.1 billion. Dr. Ijjasz-Vasquez has a Ph.D. and a M.Sc. in Civil and Environmental Engineering from the Massachusetts Institute of Technology (MIT), with specialization in hydrology and water resources.

Presentation:

The Contribution of Environmental Assessment in Addressing the Environmental Challenges of China: A World Bank Perspective

LAM Kin-Che

Professor in the Department of Geography and Resource Management, Director of the Center of SEA for China, The Chinese University of Hong Kong, China

Prof. LAM Kin-Che is a professor in the Department of Geography and Resources at The Chinese University of Hong Kong with a Ph.D. in hydrology and water quality (New England, Australia). He served on the Advisory Council on the Environment of the Hong Kong SAR from 1994 to 2009, initially as a member, then as founding Chair of the EIA Subcommittee and subsequently as the Council Chairperson. The Hong Kong SAR Government bestowed on him the honor of the Silver Bauhinia Star for promoting EIA in Hong Kong. His research focuses on environmental issues in compact cities and rapidly developing regions and how they can be managed by environmental assessment and planning.

Peter LEONARD

Safeguards Focal Point, Beijing Office, World Bank

Mr. Peter Leonard is presently the environmental and social safeguards focal point at the Beijing Office for the World Bank China and Mongolia program. He holds degrees in Social Sciences, Law, and Urban and Regional Planning. During the past 25 years, he has been involved in environmental and social assessment, environmental management planning, capacity building, institutional strengthening, technical assistance and training throughout the Middle East, Asia, North and Sub-Saharan Africa and Latin America. Mr. Leonard is a former president and board member of the IAIA.

REN Jingming

Director, SEA and Comprehensive Business Department, Appraisal Centre for Environment & Engineering (ACEE), MEP, China

Prof. REN Jinming is Director of the SEA Department and Comprehensive Business Department in ACEE, MEP. His research interests focus on SEA policy and comprehensive evaluation strategy. He holds a Ph.D. in System Ecology from the Research Center for Eco-environmental Sciences, Chinese Academy of Sciences. ACEE is a key technical supporting institution of MEP, which is responsible for EIA technology assessment and audit of large and medium-sized national construction projects. ACEE formulates or revises EIA guidelines, checking surveys of construction projects with ecological impacts, and reviews environmental technique consultations, and scientific studies and their implementation.

Presentation:
The Development and Status of EIA Regulation in China

LI Tianwei

Director, SEA Division, MEP, China

Dr. LI Tianwei has been engaged in EIA management for many years, and has participated in the drafting of several important official documents such as "Regulations on the Administration of Construction Project Environmental Protection" and "Law of the People's Republic of China on Environmental Impact Assessment." As the first Director of the SEA Division, MEP, he organized the planning of EIA experiments in selected areas, and formulated regulations related to planning and EIA management. He has published many books and articles on EIA and SEA. He is the author of the book, Environmental Impact Assessment Theory and Method from a Policy Level.

CHEN Yongqin David

Chairman and Professor, Department of Geography and Resource Management, The Chinese University of Hong Kong

Dr. CHEN Yongqin David is the Chairman and a Professor of the Department of Geography and Resource Management, and Deputy Director of the Center of Strategic Environmental Assessment for China, at the Chinese University of Hong Kong. He obtained his B.S. and M.S. from Sun-Yat-Sen University in Guangzhou, China and Ph.D. from the University of Georgia in the USA. His research and teaching areas include hydrology and water resources management, meteorology and climatology, environmental modeling and regional development. He has published extensively in international and Chinese journals.

Moderators, Contributors and Presentations

LIU Yi

Associate Professor and Assistant Dean, Department of Environmental Sciences and Engineering, Tsinghua University, China

Dr. LIU Yi received his bachelor's degree and Ph.D. at the Department of Environmental Sciences and Engineering at Tsinghua University in July 1999 and July 2004, respectively. In 2001 he joined the Group of Environmental Policy at Wageningen University in the Netherlands and obtained his second doctorate in May 2005. Dr. Liu is an associate professor in the Department of Environmental Science and Engineering, Tsinghua University. He is currently a member of the Professional Committee on Eco-City, Chinese Society for Urban Studies.

Presentation:

SEA of Urban Planning: Methodology and Case Study of Dalian City

ZHOU Shichun

Environmental Specialist, General Institute of Hydropower and Water Resources Planning and Design, China

Mr. ZHOU Shichun is an Environmental Specialist at the Planning Department of the General Institute of Hydropower and Water Resources Planning and Design where he is involved in sustainable hydropower development and assessment. Mr. ZHOU holds a Master of Science in Civil Engineering from the University of Arkansas. The General Institute of Hydropower and Water Resources Planning and Design, affiliated with Hydro China, is a public institution for technical supervision and management of hydropower and wind power.

Presentation:

SEA of Basin Hydropower Planning: Present Status and Prospects

SUN Chongwu

Senior Environmental Specialist, the World Bank

Ms. SUN Chongwu is a Senior Environmental Specialist for the World Bank Beijing Office. She has worked for the National Environmental Protection Agency, and, as one of the key members of the Environmental Technology Centre of China-Japan Friendship has made numerous contributions to the transposition of Japanese advanced environmental technologies into China. She has wide experience in the treatment, management, storage, and disposal of dangerous waste. Currently, Ms. SUN is the Project Manager of the World Bank Beijing Environment Project Phase II, as well as the Safeguards Coordinator for the Sustainable Development Unit of the World Bank Beijing Office.

Presentation:

SEA and EIA at the World Bank in China (with Juan D. QUINTERO)

Juan D. QUINTERO

Senior Environmental Specialist, East Asia & Pacific Region, the World Bank

Mr. Juan D. Quintero is a Senior Environmental Specialist for the East Asia and Pacific Region of the World Bank with over 30 years of experience in risk assessment, mitigation and compensation of environmental and social impacts of development projects. He has extensive experience in managing environmental assessments and management plans of infrastructure involving complex environmental and social issues. Mr. Quintero has coordinated the preparation of SEAs in the energy, transport, tourism, and water and sanitation sectors and has provided training in SEAs to high and mid-level government officials in Mexico, Brazil, Colombia, Argentina, El Salvador, Dominican Republic, and China.

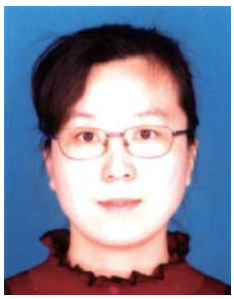
Presentation:
SEA and EIA at the World Bank in China (with SUN Chongwu)

HAN Baoxin

Deputy Director, South China Institute of Environmental Science (SCIES), MEP, China

Prof. HAN Baoxin is a state registered consulting engineer and EIA engineer. He received a Master's degree in Environmental Science from Sun Yat-sen University. Since 1985, Prof. HAN has been conducting studies in coastal water environment through which he has accumulated rich experiences in water environmental management and water pollution control, especially in the numerical simulation of water environment in coastal areas, water pollution control system analysis, water environmental planning, and EIA. He has organized and completed over 30 international and domestic research projects and served as Principal Investigator of over 30 state funded projects. Established in 1973, SCIES is an affiliate of the Ministry of Environmental Protection with the mission of providing comprehensive scientific research on and solutions for the environment.

Presentation:
Marine Environmental Impact Assessment in Mega-regions



WANG Yanan

Senior Environmental Engineer and Deputy Director, Environmental Impact Assessment (EIA) Research Center, MEP, China

WANG Yanan currently works in the Environmental Development Center (EDC) of the Ministry of Environmental Protection, P.R.C. She has conducted many EIAs of projects in different areas of China. Among her major SEA projects is "Strategic Environmental Assessment for Five Major Regions – Yellow River Region Sub-project". The Environmental Development Center, affiliated with the MEP, is a comprehensive research institution and a supporting agency which provides services to the MEP. The EIA Research Centre's main activities cover SEA, EIA, environmental planning, and environmental verification of enterprises.

Presentation:
Assessment for Sustainable Water Use in Mega-regional SEA

International Panelists

Susan E. BROMM

Director, Office of Federal Activities, U.S. Environmental Protection Agency (USEPA)

Ms. Bromm is currently the Director of the Office of Federal Activities (OFA) at EPA headquarters in Washington, DC, responsible for EPA's activities implementing the National Environmental Policy Act and for EPA's international enforcement capacity building programs. Ms. Bromm directed the waste remediation enforcement office, establishing policy for compelling private parties to clean up old and abandoned toxic waste sites under the billion dollar Superfund program and the Resource Conservation and Recovery Act (RCRA) corrective action program. She also led efforts to implement the liability reforms contained in the Small Business Liability Relief and Brownfields law. She is an attorney and a graduate of Georgetown University Law Center.

Ross MARSHALL

Head, National Environmental Assessment Service (NEAS), United Kingdom

Dr. Marshall is a former President of IAIA and a Director of IEMA. He is also a visiting Senior Research Fellow at Strathclyde University's David Livingstone Centre for Sustainability (DLCS) which operates as a bridge between the engineering, design, environmental, social and economic disciplines. NEAS provides EIA, SEA and environmental project management services across the Agency's suite of statutory plans (Navigation, Fisheries, Water Quality, Water management, etc). The Environment Agency is Europe's largest Environmental regulator and the UK's largest producer of statutory obligated SEA Environmental Reports and EIA Environmental Impact Statements.

Hussein ABAZA

Environmental Economist, United Nations Environment Programme (UNEP)

Mr. Abaza is an Environmental Economist with 33 years experience at the United Nations out of which 27 years were spent with the United Nations Environment Programme (UNEP). Mr. Abaza has held several positions while at the UNEP, the latest being the Head of the Economics and Trade Branch. His most recent achievement has been the launch of the Green Economy Initiative.

Larry CANTER

President, Environmental Impact Training, USA

Dr. Canter is a Professor Emeritus from the University of Oklahoma and currently teaches EIA-related short courses and consults on the preparation and review of impact studies and the development of EIA policies, procedures, methods, and tools. He has written several books related to EIA and is also the author or co-author of numerous publications related to impact studies. He has also authored EIAs and Environmental Impact Statements on a diverse range of projects. Since 1970, he has taught short courses on EIA for several federal agencies. In 2008, he was Co-Chair of the IAIA's Meeting on Assessing and Managing Cumulative Environmental Effects. In 2009, he received the Rose-Hulman Award from IAIA for his major contributions to cumulative effects and EIA methodology over a sustained 40-year period. He received his Ph.D. in environmental health engineering from the University of Texas.

I. Fernando LOAYZA

Senior SEA Specialist, the World Bank

Dr. Loayza is a natural resources and development economist with a Ph.D. in science, technology and environmental policy from the University of Sussex, United Kingdom. He coordinates the World Bank's I-SEA pilot program. As Senior SEA Specialist at the Bank he provides analytical and operational support to regions applying for SEA in client processes, and in lending and knowledge sharing instruments. He has worked extensively in Africa and South Asia. Between 1995 and 1997, Dr. Loayza was Undersecretary for Mining and Metallurgy in Bolivia.

Rob VERHEEM

Deputy Director, Netherlands Commission for Environmental Assessment, the Netherlands

Mr. Verheem is currently Deputy Director at the Netherlands Commission for Environmental Assessment, and Deputy Director at Commissie voor de Milieueffectrapportage. He graduated from Groningen University. Mr. Verheem has over 20 years of practical experience in environmental assessment, both in developed and developing countries. He has worked at the European Commission and the Ministry of the Environment in The Netherlands. In 1996 he was co-author of the "SEA Effectiveness study" and in the earlier part of this decade he was an advisor on SEA for the World Bank. Currently, he is managing the international program of the Netherlands Commission on Environmental Assessment.

International Panelists

Maria Rosário PARTIDARIO

Associate Professor, Technical University of Lisbon (IST), Portugal

Prof. Partidário is a leading international SEA author, researcher, trainer and consultant. As co-author of one of the earliest books on SEA (1996), and of numerous other publications, she has been a leader in international thinking on strategic-based and integrated approaches to SEA. Ms. Partidário is a former President of IAIA and recipient of its Individual Award. Her professional activity includes advising and consultancy to United Nations organizations, the World Bank and other multilateral and bilateral financial institutions. In Portugal she has strongly influenced the current practice of SEA through the development of guidance for SEA, published by the Portuguese Environment Agency.

Nick TAYLOR

Director, Taylor Baines & Associates, New Zealand

Dr. Taylor is a founding Director in Taylor Baines & Associates. With a Ph.D. from the University of Canterbury he has been involved since the early 1980s in development of approaches and techniques for social assessment, including applications of soft systems techniques. His recently reprinted major text on social assessment (Social Assessment: theory, process and techniques) was first published in 1990. He is active in social assessment networks including the New Zealand Association for Impact Assessment and committees of the IAIA, of which he is currently President. At the University of Canterbury he is both a Senior Adjunct and on the Advisory Board of the Social Science Research Centre as well as on the Social Science Committee of the Royal Society of New Zealand.

Miles SCOTT-BROWN

Biologist, Partner, Integrated Environments, Ltd., Canada

Mr. Scott-Brown was a founder and has been a partner of Integrated Environments, Ltd. in Calgary, Canada since 1985. He has extensive background in the Canadian energy sector within Alberta and Northern Canada relating to conventional oil and gas, oil sands, and pipelines. Mr. Scott-Brown also has considerable experience working for international financial institutions including the World Bank, Inter-American Development Bank (IADB), Corporación Andina de Fomento (CAF), European Bank for Reconstruction and Development and the International Finance Corporation. He was the Environmental Auditor of the World Bank/CAF/IADB funded Bolivia-Brazil gas pipeline

to ensure compliance with project loan conditions and to oversee the implementation of ecological and social compensation programs. Currently he is working on several environmental projects for the World Bank Group.

Shirley LEE

Principal Environmental Protection Officer, Environmental Protection Department, Hong Kong Special Administrative Region Government, China

Mrs. LEE has over 20 years of experience in environmental assessment, particularly in the review of project level EIAs for major infrastructure within the metropolitan regions in Hong Kong. Apart from contributing towards the development and implementation of the Hong Kong Environmental Impact Assessment Ordinance (EIAO) in 1998, she has been actively involved in the subsequent review and improvement to the EIAO process. Since 1996, she has pioneered the planning and subsequent promulgation of initiatives and action plans for the promotion of corporate social responsibility in both private and government organizations, particularly in the voluntary implementation of environmental audits, environmental management systems and to produce annual environmental performance reports. She is currently serving as Chairman of the Hong Kong Institute of Environmental Impact Assessment (HKIEIA).

Charlotte BINGHAM

Former Director of Environment and Social Sustainability for Millennium Challenge Corporation

Charlotte Bingham is currently an environmental impact and resettlement consultant, specializing in development issues, environmental and social impacts of major infrastructure projects and capacity building. She has served as the Senior Vice President of a major architecture and engineering firm, Senior Regional Environmental Advisor for USAID in Eastern and Southern Africa, Safeguards Coordinator for the Africa Region and Lead Environmental Specialist of the Quality Assurance and Compliance Unit at the World Bank and Director of Environmental and Social Assessment of the Millennium Challenge Corporation, a US foreign aid agency. She has 35 years of experience in the field and is the 2010 winner of the IAIA Rose Hulman Award for her sustained contributions to impact assessment.

Organizers and Sponsors

Ministry of Environmental Protection, P.R.C.

The Ministry of Environmental Protection, P.R.C. formerly State Environmental Protection Administration, is a cabinet-level ministry in the executive branch of the Government of the People's Republic of China. The Ministry is the nation's environmental protection department charged with the task of protecting China's air, water and land from pollution and contamination. Directly under the State Council, it is empowered and required by law to implement environmental policies and enforce environmental laws and regulations. Complementing its regulatory role, it funds and organizes research and development. It also serves as China's nuclear safety agency. Since its establishment, the Ministry has shouldered the responsibility of preventing and controlling environmental pollution, protecting nature and ecology, supervising nuclear safety, and safeguarding public health and environmental safety.

Tsinghua University

Founded in 1911, Tsinghua University is one of the most famous universities in China that has developed at a breathtaking pace to become a comprehensive research university. At present, the University has 14 schools and 56 departments with faculties in science, engineering, humanities, law, medicine, history, philosophy, economics, management, education and art. The University has an enrollment of over 25,900 including 13,100 undergraduates and 12,800 graduate students. As one of China's most renowned universities, Tsinghua has become an important institution for fostering talent and scientific research. Tsinghua University is committed to the well-being of Chinese society and to world development. The Department of Environmental Science and Engineering of Tsinghua University, as the first Chinese department dedicated to research on environmental problems, has always set goals for building an interdisciplinary academic field in environment, and training generations of students with a vision to shape the collective environmental future, both locally and globally.

The Chinese University of Hong Kong

Founded in 1963, The Chinese University of Hong Kong (CUHK) is a forward looking comprehensive research university with a global vision and a mission to combine tradition with modernity, and to bring together China and the West. As a top university in Hong Kong and Asia, CUHK aims to nurture students with both specialized knowledge and wisdom for life. CUHK undertakes a wide range of research programs in many subject areas, and strives to provide scope for all academic

staff to undertake consultancy and collaborative projects with industry. The University's insistence on the highest standards of research has won it an enviable research reputation. CUHK is acknowledged locally, nationally and internationally as a first-class comprehensive research university whose bilingual and multicultural dimensions of student education, scholarly output and contribution to the community consistently achieve standards of excellence. The Centre of Strategic Environmental Assessment was established by CUHK to serve EA and SEA professionals around the world and particularly in China. It aims to provide a platform for international agencies and SEA practitioners in and outside China to research and develop appropriate methods and practices for China and to enhance, through its many research and capacity building activities, the effectiveness of SEA practices for environmental and social sustainability.

The World Bank

The World Bank is a vital source of financial and technical assistance to developing countries. Its mission is to fight poverty and to help people help themselves and their environment by providing resources, sharing knowledge, building capacity and forging partnerships in the public and private sectors. It consists of two unique development institutions owned by 186 member countries: the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). Each institution plays a different but collaborative role in advancing the vision of inclusive and sustainable globalization. The IBRD aims to reduce poverty in middle-income and creditworthy poorer countries, while IDA focuses on the world's poorest countries. Their work is complemented by that of the International Finance Corporation, Multilateral Investment Guarantee Agency and the International Centre for the Settlement of Investment Disputes. Together, they provide low-interest loans, interest-free credits and grants to developing countries for a wide array of purposes that include investments in education, health, public administration, infrastructure, financial and private sector development, agriculture and environmental and natural resource management. The World Bank, established in 1944, is headquartered in Washington, D.C., with more than 10,000 employees in more than 100 offices worldwide. To ensure countries continue to have access to the best global expertise and cutting-edge knowledge, the World Bank Group is revising its programs to assist the poor, as well as its range of financing options, to meet pressing development priorities. This is being achieved by focusing on helping developing countries deliver measureable results; by implementing reforms in investment lending, access to information, and decentralization of staff; and by securing capital increase to ensure that member countries continue to have a strong financial partner that can meet the challenges of an ever-evolving world.

The 30th Annual Conference, IAIA 2010

SUMMARY REPORT
CONFERENCE PARALLEL EVENT
CHINA DAY
THE STATE OF SEA AND EIA IN CHINA