International Workshop for Integrated Assessment Model (IAM)

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Final Report

1. Purpose

Financially supported by Asia-Pacific Network for Global Change Research (APN) and National Institute for Environmental Studies (NIES), Center for Energy-Environment and Climate Change Researches (CEEC) of Energy Research Institute of State Development Planning Commission of China held an international conference of "East Asia Workshop on Integrated Assessment Model (IAM)" in Beijing Friendship Hotel from October 11 to 13, 1998. The main purpose of the workshop is as following:

- Discuss and exchange the recent development of integrated assessment models for climate change researches; explore and apply the methodology and experiences; study the impact and effect of regional activities on global GHG emissions; study the style and method for the east Asian countries to collaboratively develop and apply integrated assessment models for climate change.

- Strengthen the capacity for the east Asian countries to develop and apply integrated assessment models for climate change; extend the application areas of integrated assessment models for climate change; improve the east Asian countries' understanding to global climate change issues; effectively participate the activities to protect global climate while policy-makers of these countries making their social and economic development strategies.

2. The organizing of the workshop and the participants

2.1 Organizing

Center for Energy-Environment and Climate Change Researches (CEEC) of Energy Research Institute prepared and organized the workshop from February 1998. Major activities include: setup secretariat for the workshop, determine schedule and contents of the workshop, contact with foreign and domestic experts and determine the speakers and their topics, collect papers, select and determine place for the workshop, rent facilities for simultaneous interpreting, computer projector and ordinary projector, book air-tickets for foreign

participants, select and determine domestic participants, copy papers and materials for the workshop, etc.

2.2 Participants

Prof. HU Xiulian, director of Center for Energy-Environment and Climate Change Research (CEEC) of Energy Research Institute, chaired the workshop. Mrs. SUN Cuihua, director of Coordinating Group for State Climate Change Countermeasures of State Development Planning Comission, participated the workshop and gave a speech. Dr. T. Morita, head of Global Warming Response Team of National Institute for Environmental Studies, Dr. Bert Metz, head of IPCC Working Group III and Prof. ZHOU Fengqi, director general of ERI, gave speeches expressing their support and congratulations to the workshop, on behalf of APN, foreign experts and ERI respectively.

55 foreign and domestic representatives participated the workshop. Among them, 12 experts who had just finished their Beijing IPCC Working Group III Special Report on Emissions Scenarios were from USA, the Netherlands, Japan, Austria, India and Korea; 3 foreign experts came from Vietnam, Mongolia and the Philippines; the others were Chinese participants who came from State Meteorological administration, State Climate Center, Atmospheric Physics Institute of Chinese Academy of Science, Chinese Academy of Forestry Science, State Environmental Protection Bureau, Ecological Research Center of Chinese Academy of Science, Tsinghua University, Institute of Quantitative & Technical Economics of Chinese Academy of Social Sciences, Beijing Normal University, Development Research Center of the State Council, Climate Impact Research Center of State Environmental Protection Bureau, Commission for Integrated Survey of Natural Resources of Chinese Academy of Science, Agricultural Meteorological Institute of Chinese Academy of Agriculture Science and Energy research Institute. 31 experts gave speeches on the workshop and some hot issues were thoroughly discussed.

3. Exchanging ideas and discussing issues

Exchanging and discussing were focused on the following sessions.

3.1 Recent Trend on IAM

- Dr. B. Metz from RIVM introduced the new IPCC process and IAMs which included the organizations, recent progress for climate change mitigation of Working Group III and the use of IAMs in climate change researches.

- Dr. T. Morita from NIES introduced the activities and countermeasures of the related countries after Kyoto Protocol and the application and contributions of IAMs to climate change researches.

- Dr. A. Gruebler from IIASA gave a speech about IPCC new scenario project.

- Prof. Dadi ZHOU from ERI presented climate change policy making and IAM in China.

3.2 Recent Development of IAMs

- Prof. Matsuoka from Kyoto University introduced the newest development of AIM in Japan, including new scenarios for Japan's CO2 emissions and the impact assessment of the combined policy of GHG mitigation and pollution control.

- Dr. R. Sands from PNNL introduced GCAM Model including its structure, methodology, data requirement, etc.

- Dr. B. de Vries from RIVM introduced the background, structure and application of IMAGE model and highlighted the connection between research and policy-making.

- Dr. A. Gruebler from IIASA introduced the development, organizations and major research fields of IIASA and their model.

- Dr. H. Pitcher from PNNL introduced the background and characteristics of mini-CAM and stressed the application and communication with policy-makers.

- Dr. S. Smith from NCAR gave a speech about the global warming potentials of GHG emissions.

3.3 IAM and Regional Policy Making

- Prof. Y. Matsuoka from Kyoto University assessed the contribution of the implication of Kyoto Protocol to global GHG mitigation and asked for more collaboration between developed and developing countries to minimize the risk of climate change countermeasures.

- Dr. M. Kainuma from NIES and Dr. Ronald Sands form PNNL presented the recent research about AIM top-down model and discussed the post Kyoto Scenario for developed countries.

- Dr. T. Morita from NIES thoroughly introduced Japan's activities and countermeasures to meet the demand of Kyoto Protocol. Their studies set a good example for other countries and other research groups to apply IAMs in more extended areas.

3.4 IAM in Asia

- Dr. Kejun JIANG from ERI introduced the long term scenario for China and discussed the methodology for scenario analysis.

- Prof Xiulian HU, Dr. Kejun JIANG and Dr. Hongwei YANG from ERI introduced the successful collaboration between ERI and NIES on the AIM project. They presented their studies that they had completed by utilizing AIM in China. The ongoing researches of the linkage between bottom-up model and top-down model were also discussed.

- Prof. Aling ZHANG from Tsinghua University introduced and energy demand model – INET model and its application in GHG emission.

- Dr. D. Dagvadorj from Mongolia Met Agency introduced Mongolia's IAM studies and climate change response activities.

- Dr. Tae Young Jung from NIES introduced the status of IAMs in Korea and Korea's climate change mitigation measures.

- Prof. P. R. Shukla from IIM presented in details the modeling and analysis activities in India. All the models for energy and carbon mitigation used in India were discussed.

- Dr. Fan ZHAI from Development Research Center, the State Council introduced their studies on recursive dynamic computable general equilibrium (CGE) model for China.

3.5 Regional Climatic Change and Impact

This session began from the morning of October 7. It focused on the regional climate change and impact analysis. Eight speakers presented their research activities.

- Prof. Matsuoka from Kyoto University introduced the impact assessment methodology, model framework and major output by AIM.

- Professor Li Zhehui presented the application of AIM/Impact model in China for the climate change impact on agriculture production and water resource.

- Dr. Rosa Perez showed the possible impact on Philippines' social economy development based on their several research projects.

- Professor Dinh Van Uu presented the modeling activities by their research on the climate change impact on Vietnam.

- Professor Erda Lin presented the impact analysis on China's agriculture production, sea level rise and forest. He also mentioned about the possible adaptation response in China.

- Professor Wang Shourong talked about the regional climate analysis by using several climate models introduced from other institutes.

- Dr. Wei Helin presented the modeling research on China's land use and regional climate analysis.

- Professor Xu Deying gave a presentation on the potential impact of climate change on forest in China.

3.6 Response to Climate Change: China's Perspective

The last session emphasis the China's modeling activities and future task to enlarge the modeling group in China.

- Mrs. Hu Xiulian presented the case study for the first AIJ project with the analysis by AIM/China on steel industry.

- Dr. Kejun Jiang discussed about the present modeling activities in China and the future plan to prompt such research ability.

4. Achievements

Through the three days' discussion and communication, participants from abroad and domestic all agreed on the following understandings:

- The development and application of integrated assessment models in the field of climate change researches have important significance. The researching field and process of integrated assessment are based on modeling, which is a normal researching field and has turned out to be a key process for policy-making in the recent decade.
- The development and studies of integrated assessment models have experienced rapid progress. So far, the applied integrated assessment models can be classified as the following types:
  - Large scale integrated assessment models that analyze in details the whole process of social activities, climate change and their impacts on social economy, including AIM, developed by Japan, and IMAGE2, developed by the Netherlands.
  - Integrated assessment models that focus on the natural phenomena of climate change and the mechanism of climate change impact and damage, such as MAGICC, PAGE, etc.
  - Integrated assessment models that especially analyze the schedule for future countermeasures and the best way for economic development during the process of climate change damage analysis, such as DICE, MERGE, etc.
  - Integrated assessment models that focus on system development, such as TARGETS, etc.
- Trend for integrated assessment models
  - Support the drafting of global climate change mechanism
  - Develop models for long-term economic activities, especially the dynamic optimal models for environmental investment and the bottom-up models for technology and life style analysis. Assessment for countermeasures option and the effect of their combination can be done by utilizing these models.
  - Extend the model researches from climate-centered models to global environmental change models that involve different disciplines.
  - Extend the simulation from energy and pollutants emission to agriculture, land use, territorial ecosystem, biological variety, water resource and other fields.
  - Change the focus for analysis from developed countries to developing countries, especially the development of integrated assessment models for regional issues.
- Promote the communication between modeling researchers and policy-makers to make IAMs become the common foundation for the combination of science and policy. IAMs should become a kind of information exchange between researching and policy-making to support policy-making through the whole process.

- Developing countries play an important role in the field of climate change. The capacity improvement for developing countries to develop and apply IAMs through expanded international collaboration will help a lot for the making and implementing of global climate change mechanism.
- Developing countries should actively participate the development and application of IAMs in global climate change researches and the study of various mechanisms. Much attention should be especially paid to the development of IAMs that are suitable for the specific economic development approaches for developing countries.

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