

Report of the
Training Workshop on
Asia-Pacific Integrated Model
June 16-20, 2003

Venue



**Asian Institute of Technology,
Pathumthani, Thailand**

Conducted by

Dr. Manmohan Kapshe



**Maulana Azad National Institute of Technology,
Bhopal, India**

Organized by



**National Institute for Environmental Studies
Tsukuba, Japan**

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Training Workshop on Asia Pacific Integrated Models at Asian Institute of Technology, Pathumthani, Thailand

1. Introduction

1.1 Background

The Asia-Pacific region houses over a half of the global population. The region is physically diverse including highland mountains, long shoreline and deserts, and is ecologically rich in natural and crop-related bio-diversity. The region includes nations with diverse economic development patterns, most experiencing rapid economic growth and rising Greenhouse Gas (GHG) emissions. The region is exposed to climate change impacts from changes in monsoon circulation, increases in surface temperature, sea-level rise, hurricanes and increases in the magnitude and frequency of extreme events. These changes can impact region's ecosystem and bio-diversity; hydrology and water resources; agriculture, forestry and fisheries; mountains and coastal land; and human settlement and human health.

The need for integrated environment assessment modeling and policymaking in the Asia-Pacific region is thus evident. Meaningful participation of these nations in the global environmental actions, such as in the global sustainable development and climate change regimes, calls for integrated assessment of environmental policies and measures in the context of their specific local conditions. In recent years, the integrated environment assessment modeling to support global policymaking processes, such as in the case of climate change policies, is recognized as a major advancement in environmental policy research. In Asia-Pacific, this field has been advanced significantly by the modeling research and assessment studies conducted by the National Institute for Environmental Studies (NIES), Tsukuba, Japan. The Asia-Pacific Integrated Model (AIM) developed by the NIES researchers is an important tool for developing integrated environment assessment in the region.

NIES has been organizing a series of workshops to disseminate the knowledge and experience related to the Asia-Pacific Integrated model. This workshop at Asian Institute of Technology (AIT), Thailand was also one such effort. The workshop aimed at building capacity for co-operative assessment of environment policies in the Asia-Pacific region by providing exposure on model structures, applications and hands-on experience with the important components of the Integrated Environment Assessment models used in the Asia-Pacific context. The participants included Masters and doctoral level researchers from Indonesia, Sri Lanka, Thailand and Vietnam.

The workshop was conducted for a duration of 5 days. The initial two days of the workshop focused on greater understanding of the AIM family of models through introductory discussions, the last three days concentrated on providing hands on experience on AIM/Enduse and AIM/Local models to the participants. Dr. Manmohan Kapshe, from the Department of Architecture and Planning, Maulana Azad National Institute of Technology, Bhopal, India, conducted this workshop.

1.2 Objectives

This training workshop on AIM was a part of the initiative to build capacity for co-operative assessment of environment policies in the Asia-Pacific region. This objective is achieved by providing exposure to the state-of-the-art knowledge about model structures, applications and hands-on-training with the important Integrated Environment Assessment (IEA) models used in the Asia-Pacific context. The capacity building and networking from the workshop was aimed at making a lasting contribution to the integrated environment assessment and climate change policymaking in the Asia-Pacific region. It also aimed at providing an opportunity to the new researchers to acquaint themselves with the details IEA models and to experience working on the models with full guidance and support.

2. Activities Conducted

The workshop had an intense schedule of 5 days and was attended by 9 participants. The workshop discussed the significance of adopting integrated modeling approaches for environmental assessment. The integrated model adopted during the discussions was the AIM, which is an important tool for integrated environment assessment in the region, developed by NIES researchers. Dr. Manmohan Kapshe made presentations on the structure and use of the component models of AIM family, which include an energy model, economic assessment model, climate model and impacts model, their strengths and weaknesses, the recent developments and future work required. He took help from the previous presentations of various NIES researchers who have been working in the different component models. Case studies were used to bring out the policy applications of AIM models in the Asia-Pacific region. Application of AIM/Enduse and AIM/Local model for India was discussed in detail analyzing step-by-step procedure of setting up these models for India. Lastly the results obtained from these models and the policy contribution of the results was highlighted. Dr. Kapshe also presented the modeling exercises, which were to be undertaken for hands on experience. Discussions were held after every round of presentation.

The four component models discussed during the workshop include AIM/Material, AIM/Ecosystems, AIM/Emissions and AIM/Trend. The policy implications of these models on the Asia-Pacific region were also presented. A summary of the information presented on the component models during the workshop is given below. Figure 1 shows the linkages of these component models with each other. A brief introduction of the new model on AIM/Air was also given.

AIM/Material

- Intends to estimate economic and environmental effects of environment investment.
- Assesses the effects of policy integration for comprehensive environmental problems

AIM/Ecosystems

- Calculates global and regional climatic impacts, especially on primary production industries such as water supply, agriculture, forest products and human health.

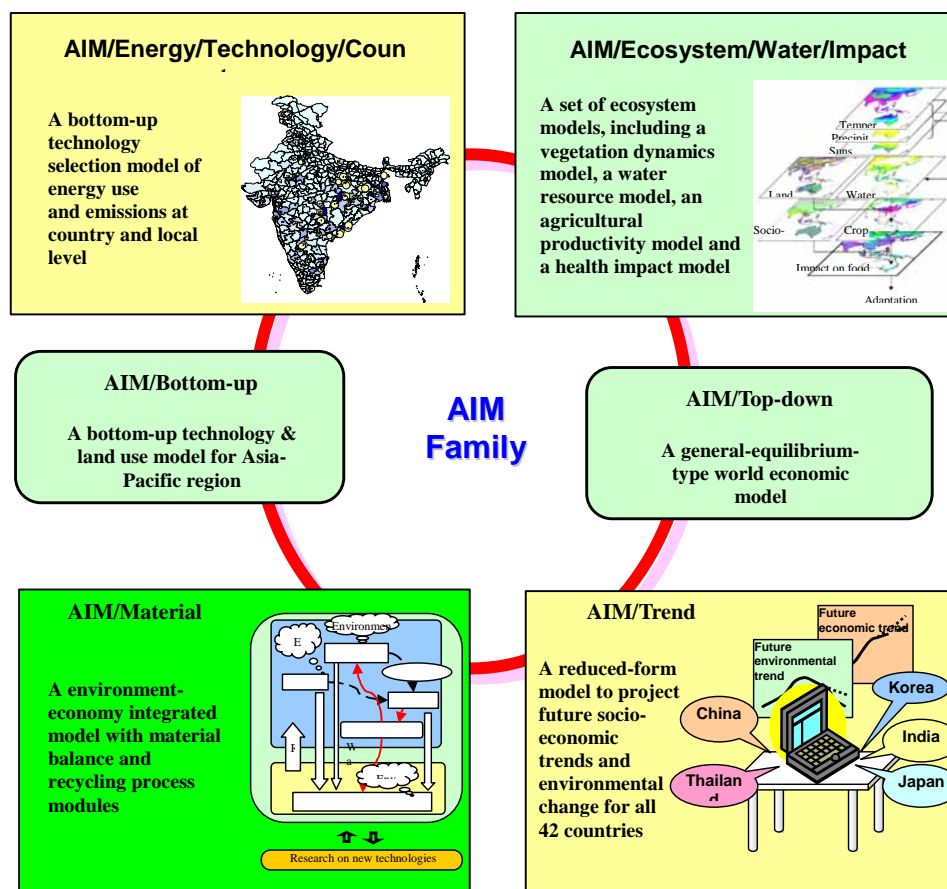
AIM/Emissions

- Bottom-up energy model
- Focuses on activities of people who deal with energy consumption and production
- Focuses on changes in technologies

AIM/Trend

- Prospects the basic situation of the economy, energy and environment in Asia-Pacific region.

Figure 1: Asia-Pacific Integrated Model System



Last three days of the workshop were solely dedicated to give hands-on-training of the two selected component models to the participants. The hands-on-training was organized in three sessions on each day. In the first session of the hands-on-training a detailed explanation was given about the installation, operation and applications of the models. The participants got an opportunity to interact closely during this session to understand the prerequisites of model installation.

The workshop program, giving details of the schedule and topics covered has been given in Appendix 1. A list of the participants who attended the workshop is given in Appendix 2.

3. Outcomes/Achievements

The achievements of workshop are as follows:

- a) It created an awareness of the utility of Integrated Assessment Models (IAM) and enhanced the understanding and capabilities of the participants to address policy related questions. This will help in achieving the objective of capacity building of all the participants for using integrated models in the Asia-Pacific region.
- b) There was a direct exchange of information and views among the participants, experts and researchers working in diverse disciplines. These interactions provided the foundation and insights for future work.
- c) The workshop brought out the need for appropriate model assumptions, data requirements and data validation during modeling exercises. It showed the significance of developing model structures, which are in tune with the policies and measures required to deal with local-specific issues. This is especially true for developing countries, where the diverse physical and socio-economic structures have to be considered during modeling exercises.
- d) The training helped in enhancing the capabilities of researchers who work in the participating institutions.
- e) The workshop has strengthened the network of IAM modelers, policy makers and experts working on environment assessments in the Asia-Pacific region. This could expand collaborative research and thus be a lasting benefit for the research and policy making community.

4. Conclusion

To conclude, the workshop has contributed significantly to the enhancement of knowledge, understanding and appreciation among the research and policy making communities to address the policy relevant scientific problems, both in the Asia-Pacific context as well as in the global context. It provided an opportunity to the new researchers to develop their skills in the field of integrated assessment modeling while providing a focused training on select component models.

APPENDIX – 1

AIM Training Workshop

June 16-20, 2003,
Asian Institute of Technology, Pathumthani, Thailand

Workshop Report

Program Schedule

June 16, 2003 (Monday)

9:30-10:15 Session I Opening

9:30-9:45 Introduction and Initiation
9:45-10:00 Studies on Climate Change and Related Activities at AIT
 Prof. Ram M. Shrestha
10:00-10:15 AIM Modeling: Indian Experience
 Dr. Manmohan Kapshe

10:15-10:30 Coffee Break

10:30-12:00 Session II AIM Modeling

10:30-11:00 Introduction to Integrated Environment Assessment Models
11:00-11:15 Discussion
11:15-11:45 Asia-Pacific Integrated Model (AIM): Introduction to Component
 Models
11:45-12:00 Discussion

12:00-13:00 Lunch Break

13:00-15:30 Session III AIM Component Models

13:00-13:30 AIM/Trend Model
 [Using Presentation by Dr. Junichi Fujino (NIES)]
13:30-14:00 AIM/Material Model
 [Using Presentation by Dr. Toshihiko Masui and Dr. Ashish Rana
 (NIES)]
14:00-14:30 AIM/Ecosystems Model
 [Using Presentation by Dr. Hideo Harasawa and Mr. Kiyoshi
 Takahashi (NIES)]
14:30-15:00 AIM/Air Model
 [Using Presentation by Prof. T. Fujiwara, Kyoto University]
15:00-15:30 Discussion on the day's proceedings

June 17, 2003 (Tuesday)

9:30-10:15 Session IV AIM Component Models
9:30-10:00 AIM/Enduse Model (Model Information)
10:00-10:15 Discussion

10:15-10:30 Coffee Break

10:30-12:00 Session V AIM Component Models
10:30-11:15 AIM/Local Model (Model information and Database system)
11:15-11:30 Discussion
11:30-12:00 AIM/Local India Application

12:00-13:00 Lunch Break

13:00-15:30 Session VI Installation of Model and Support Software
13:00-13:30 Introduction to GAMS interface
13:30-14:00 Introduction to GIS interface
14:00-14:15 Discussion
14:15-15:30 Model Installations and test runs on all the systems

June 18, 2003 (Wednesday)

9:30-10:15 Session VII Hands on Experience on AIM/End Use and AIM/Local
9:30-10:00 Basic Exercises in AIM/Enduse and AIM/Local Model
10:00-10:15 Discussion

10:15-10:30 Coffee Break

10:30-12:00 Session VIII Hands on Experience on AIM/End Use and AIM/Local
10:30-12:00 Basic Exercises in AIM/Enduse Model and AIM/Local Model

12:00-13:00 Lunch Break

13:00-15:30 Session IX Hands on Experience on AIM/End Use and AIM/Local
13:00-15:30 Basic Exercises in AIM/Enduse Model and AIM/Local Model

June 19, 2003 (Thursday)

9:30-10:15 Session X Hands on Experience on AIM/End Use and AIM/Local

9:30-10:00 Basic Exercises in GIS interface

10:00-10:15 Discussion

10:15-10:30 Coffee Break

10:30-12:00 Session XI Hands on Experience on AIM/End Use and AIM/Local

10:30-12:00 Developing AIM/End Use AIM/Local Model database for Thailand

(Based on the availability of the data any one sector may be selected)

12:00-13:00 Lunch Break

13:00-15:30 Session XII Hands on Experience on AIM/End Use and AIM/Local

13:00-15:30 Developing AIM/End Use and AIM/Local Model database for Thailand

(Progress based on the availability of the data)

June 20, 2003 (Friday)

9:30-10:15 Session XIII Hands on Experience on AIM/End Use and AIM/Local

9:30-10:00 Preliminary Exercises in AIM/Enduse and AIM/Local Model with Thailand data

(Based on database development in the previous sessions)

10:00-10:15 Discussion

10:15-10:30 Coffee Break

10:30-12:00 Session XIV Hands on Experience on AIM/End Use and AIM/Local

10:30-12:00 Preliminary Exercises in AIM/Enduse and AIM/Local Model with Thailand data

(Based on database development in the previous sessions)

12:00-13:00 Lunch Break

13:00-15:30 Session XV Training continued (if necessary)