



**INTERNATIONAL ENERGY INITIATIVE
Asian Regional Initiative**

**Summary of
“hands-on” demonstration/training workshops**

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1. **Workshop on “Integrated Electricity Planning”**, 8th -12th March 1993, Bangalore

This was IEI’s first training workshop. It aimed at providing an overview of electricity planning methods to senior officers of the State Electricity Boards of the country, with the purpose of encouraging them to use integrated planning as a solution to the crises of the electricity sector.

The workshop consisted of two main programmes: a two-day information/advocacy session for the chief executive officers, technical members of the boards and engineers, followed by a three-day computer-based training session (for the engineers only) on the integrated planning procedure -- the construction of demand scenarios and least-cost supply mixes. Extensive notes were prepared in-house for distribution among the participants; these included both theoretical papers and worksheets accompanied by step-wise instructions. General exercises were provided to familiarise the participants with worksheets and specific examples of the state of Karnataka were described. The worksheets demonstrated that the methods were comprehensible and easily adaptable to analogous situations.

2. **Workshop on “Integrated Resource Planning”**, 30th May - 8th June 1994, [jointly sponsored by the China Council for International Co-operation on Environment and Development (CCICED) and the Institute for Techno-Economic and Energy Systems Analysis (ITEESA) of the Tsinghua University] Beijing

At the second meeting of the Working Group on Energy Strategies and Technologies of the China Council for International Co-operation on Environment and Development (October 1993, Tokyo), a request was made to the Energy Research Institute (Beijing) and IEI, to jointly organise a workshop on Integrated Resource Planning (IRP). A hands-on computer-based workshop was therefore held at Tsinghua University (Beijing). It was attended by 24 participants, 18 of whom were from Beijing and the others from four other cities of China. In addition, two persons from the Electric Power Research Institute (Beijing) and 12 from ITEESA (Beijing) registered for the workshop. IEI supplied explanatory notes for each teaching module and worksheets wherever required. Module 4 of the training document, entitled Integrated Energy Planning: The DEFENDUS Methodology, was translated into Chinese by ITEESA. The training included analytical methods, particularly in IRP (including the construction of demand and supply scenarios and the comparative costing of technologies).

3. **IEI-APENPLAN Workshop on “Integrated Energy Planning”** based on the **DEFENDUS Methodology for the UNDP-EASES Project**, 14th – 22nd November 1994, Bangalore

The Programme for Asian Co-operation on Energy and the Environment (PACE-E) of the United Nations Development Programme (UNDP) had funded the Asian and Pacific Energy-Environment Planning Network (APENPLAN) through the Asian and Pacific Development Centre (APDC), Kuala Lumpur, to carry out a project for constructing efficiency-oriented and environmentally constrained alternative strategies for energy scenarios (EASES). A preparatory workshop had been held for participants to choose the methodology they would follow. Participants from 8 (out of 14) countries – Bangladesh, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Vietnam – indicated that they would like to use the development-focused end-use-oriented service-directed (DEFENDUS) method for energy planning.

In response to requests for additional training, IEI conducted a hands-on computer-based training workshop in Bangalore for 15 EASES project participants from those eight Asian countries. The workshop aimed to demonstrate the procedure for constructing DEFENDUS scenarios for a region, using simple spreadsheets/worksheets rather than pre-arranged packages.

Since the EASES project had to include all energy sources and not merely electricity, it was necessary to integrate the spreadsheets for all these sources. A method was developed based on carrier substitution measures so that when one source carrier was substituted for another source/target carrier, the number of users (or devices) for the newly adopted carrier would increase and the number for the replaced carrier would decrease appropriately. Spreadsheets were therefore developed for this purpose.

The training programme consisted of 11 lecture modules and 6 assignments. Four assignments spread over 12 sessions were devoted to computer-based exercises using country data: these included the construction of demand scenarios for various energy carriers, computation of the life-cycle costs of electricity generation and saving options, construction of cost-supply stairways to arrive at the least-cost mix of electricity options, and the integration of worksheets to capture the implications of fuel substitution.

4. **UNDP Workshop on Sustainable Energy** organised by the Energy and Atmosphere Program, UNDP, New York, 10-30th April

During this workshop of the United Nations Development Programme (UNDP) at its office in New York, IEI-Asia’s contribution was “Integrated Energy Planning (IEP) Methodology: A Case Study of Electricity for Karnataka State”.

This was a worksheet-based presentation of how IEP could be carried out even without sophisticated software packages. Beginning from an overview of the

system, it provided a step-by-step description of the sector-wise bottom-up estimation of electricity requirements, followed by the estimation of the life-cycle costs of some electricity-generation and –conservation options and the resulting least-cost-stairway, and the integration of worksheets for impacts of changes to be viewed.