

Looking Ahead

The concerns expressed during the Workshop about the present gap in knowledge and understanding of different aspects of energy problems, causes, and solutions, imply a definite need for further applied research and training. Similarly, general consensus and recommendations about a framework and approach towards decentralised energy planning and management have evolved; however, specific methodological and operational details are to be further elaborated.

In looking towards the future, the two broad areas of planning methodology and applied research represent potential contributions by ICIMOD and other institutions, which are committed to energy - centered rural development in the mountains. Research and training priorities for rural energy development in the mountains are broadly indicated below, and are followed by the prospects for an action - oriented, district level energy planning and management approach in the Region.

Research and Training Priorities

The Workshop identified the following broad areas for research and training :

- Policy Analysis and Planning
- Energy Linkages with Other Sectors
- Monitoring and Evaluation

Policy Analysis and Planning. A more effective planning and policy framework requires a multilevel spatial planning approach through participatory methods. Applied research is needed to understand the role of catalytic agents in promoting participation and determine the needed training of such catalysts. Another important research area relates to the integrated approaches of technology development and dissemination, as exemplified by the Chinese energy village approach. How can these approaches be transferred elsewhere so they are consistent and complimentary to local types of multilevel energy planning ? What are the institutional and organisational innovations necessary for large - scale commercialisation of appropriate energy technologies ? An appropriate applied research programme can help answer these questions. Similarly, impacts of energy pricing and subsidy policies constitute another priority area for policy research.

Energy Linkages with Other Sectors. At present, discernible data and information gaps exist regarding the relations between energy and other sectors. Research is needed to analyse the continuing changes in energy-employment, energy-agriculture, and energy-industry linkages, so that it becomes possible to assess the consequences of energy scarcity on the growth of non-energy sector incomes and employment. Research can also help explain the energy implications of developmental changes in agriculture, industry and other sectors. Furthermore, it is necessary to look into approaches for concurrent and complimentary development of small and cottage industries, agriculture and energy sectors, to evolve methodologies for end-use energy planning, and to examine the potentials for multiple use of energy technologies. There is a need to assess methods of designing appropriate packages of energy technologies and their scale of operation, for specific local energy needs and energy resource endowments.

Monitoring and Evaluation. Monitoring and evaluation of various energy projects, such as biogas, community forestry, and improved stoves are presently ineffective or entirely lacking. Applied research in these areas can help towards the design of more effective methodology to carry out such monitoring and evaluation activities. Appropriate and timely feedback on technological and institutional problems is presently not available to research and developmental institutions and implementing agencies.

District Energy Planning Prospects

The district development planning approach has been accepted and is being practised in the Hindu Kush - Himalaya Region. The challenge now is to integrate energy with district development incorporating rural energy planning with the emerging and ongoing district level planning process. Undoubtedly, China's energy villages and India's rural energy centres are noteworthy pioneering efforts. However, effective political, administrative, and implementing structures generally exist at the district level, not at the village level. There is scope for promoting additional investment in energy, developing guidelines for district (or equivalent level) energy planning and management, and strengthening district energy planning and implementing capabilities.

Although planners and engineers work with well - tested technologies, they are often not in a position to adopt the latest scientific advances. Applied research is required to incorporate these in their designs.

During the first phase of ICIMOD's rural energy planning programme, consultations in China, India, Nepal, and other countries in the Region were held, and cooperative action was initiated. The objective of the programme has been specified as : assisting the countries in the Hindu Kush - Himalaya to strengthen their capacity to plan rural energy at the district level within the framework of integrated mountain development and improved management of mountain resources.

The main emphasis of such a programme would be energy for integrated development, giving due importance to conventional, non - conventional, renewable, non - renewable, commercial, non - commercial, internal, and external sources of energy within the context of decentralised development.

District energy planning and management is visualised in conjunction with integrated area development. Energy technologies would be designed for accelerated socioeconomic development. Such energy planning would demand a high degree of autonomy in decision making at the district level and strengthened participation by politicians, administrators, financing organisations, and beneficiaries.

Areas of further work discussed in the Kathmandu Workshop include food and energy, energy in agriculture and irrigation, energy for production systems, energy planning for human settlements, sharing of knowledge on indigenous fast - growing energy plantations in the Hindu Kush - Himalaya Region, links between forestry management and energy planning, and implementation of energy villages.

Programme Objectives

Programme objectives designed in consultation with the participating countries include :

- Strengthening the district planning process by integrating rural energy planning
- Building capability for decentralised energy planning, for better utilisation of investment in energy at the district level
- Developing practical guidelines for district energy planning and management which could be used as training materials for district planners and implementors

Regional Cooperation

Such a programme can best be executed jointly by energy research institutions and development planning institutions. Further regional cooperation is highly desirable ; many combinations are possible in the Hindu Kush - Himalaya. Since October, 1985, ICIMOD has had several consultations with :

- Division of Science and Technology, Planning Commission, Royal Government of **Bhutan**
- Appropriate Technology Development Organisation, and Pakistan Institute of Development Economics, **Pakistan**
- Water and Energy Commission, Agricultural Development Bank, and Agricultural Projects Services Centre, **Nepal**

- Tata Energy Research Institute, and School of Planning and Architecture, New Delhi, India
- Energy Research Institute, Institute of Rural Development, and Commission for Integrated Survey of Natural Resources, China

Selection of Study Districts

Preliminary surveys and district selection have been attempted, though these are in no way considered final. The following criteria were utilised for tentatively identifying study districts :

- Agro - ecological and altitudinal variations (may include predominant activities such as animal husbandry, grazing, shifting cultivation, sedentary agriculture, urbanising regions and/or plantation economy)
- Levels of socioeconomic development as indicated by selected demographic and socioeconomic indicators
- Accessibility to markets, technologies, and services
- Varying energy constraints and potentials
- Presence of rural development programmes and projects

Indication of the selected districts for all countries at this formative stage of the programme is premature. This is ultimately the responsibility of the concerned governments. As an example, China has indicated the following counties: Neimo or Dingri County in Xi Jian Province, Ningnan County in Yunnan Province, and Teng Chong County in Sichuan Province.

Programme Funding

The Commission of the European Communities and other funding agencies have shown considerable interest in the energy programme of ICIMOD.

A six - month participatory trainers' training programme is to be conducted in China, India, Pakistan, Nepal, and Bhutan. Intensive field - oriented training is to be designed for ten professionals from those countries drawn mainly from potential training institutions. They would utilise the available training materials with the help of subject matter specialists to formulate a broad approach to district energy planning and management. This would help the participants to delineate district energy problems and issues, evolve strategies and policies, and use analytical procedures.

This would be followed by four months of fieldwork, analysis, and report writing based on studies conducted in the selected districts. ICIMOD staff, in addition to organising this programme, would assist in giving field supervision, guidance, and adopting methodologies for the mountain regions.

An international trainers' workshop would be held in Kathmandu to be attended by national and state level decision makers, in addition to the participants. This meeting would be utilised to present the prepared plan, utilising the methodology. Hence this meeting would promote the importance, rationale, and methodology of district energy planning and management.

A project of this duration can only be a preliminary attempt at pretesting methodologies already available. However, it is important to develop a specific methodology for mountain regions. This may involve collection and analysis of primary data from sample clusters of villages and development in district energy planning and management. This may be considered ICIMOD's Phase II effort on District Energy Planning and Management. A clear idea is expected to emerge from the case studies developed during the scope of Phase II activities.

Phase II Programme on District Energy Planning and Management

A two - year programme is envisaged for the second phase activities of the District Energy Planning and Management Project. This would have a substantial field research component in which primary data would be collected and analysed. As a regional project, about ten representative districts would be covered from the Hindu Kush - Himalaya Region. The approach would be to make the available survey research methodology more efficient and less time - consuming and to develop newer appropriate analytical methods. Experience gained from the project would be utilised to prepare the case studies and guidelines for district energy planning and management. The project would be designed based on reviews of the Phase I project.

The major output expected from this project would be :

- Regional cooperation to train trainers in district energy planning and management
- Standardisation in resource inventory, survey research, and analytical tools for planning
- Ten district energy plans as case studies
- Guidelines for district energy planning and management