

Chapter 1

Background

Development of energy is essential in the mountains for three distinct reasons: first, to ensure the minimum level of energy services required to meet the basic needs of mountain communities for cooking and space heating; second, to maintain energy services that sustain and support economic activities (newly emerging or traditional ones); and, third, to increase the incomes of mountain communities through the development of available energy resources that are abundant and/or are renewable in nature.

In the past, the pattern of energy use has been dictated by the availability of and access to particular energy resources and technologies developed by the communities themselves, and the use of energy has been primarily to fulfill subsistence needs. Most of the time, the cost for the extraction of these fuels (primarily fuelwood) was the labour involved in their collection. Decreased availability of biomass, together with low purchasing power and increasing population, indicated unsustainable trends in energy use patterns. These trends triggered environmental hazards of different magnitudes, particularly in the Hindu Kush-Himalayas (HKH) and its adjoining plains.

Policies to promote forestry and energy development in the mountains were initially aimed at reducing the consumption of fuelwood with the intervention of providing improved cooking stoves. These interventions failed due to improper assessment of the multiple use of traditional technologies and the non-recognition of sociocultural aspects. Also, the consumption of fuelwood was considered the main cause of deforestation, while other requirements, such as fodder for livestock, land required for cultivation due to low productivity, large-scale felling of timber for commercial purposes, and so forth, were not given due attention in designing energy options. At the same time, the issues of alleviating human drudgery and deteriorating health conditions, particularly in the context of women and children, as well as decreasing soil fertility were never adequately addressed.

The appropriateness of energy resource, technology, and institutions not only requires comprehension of the quality and quantity of energy services required but also of the physical environment (i.e., mountain specificities). For example,

the quality of energy services dictates the choice of energy resources and technologies, whereas the quantity required dictates the scale of energy technologies and institutions, and these, in turn, determine the suitability of particular types of financial infrastructures. The conditions that relate to mountain specificities entail the availability of energy resources on a sustainable basis. At the same time, the choice of energy technologies and institutions is crucial in terms of their scale of operation and socioeconomic and cultural acceptability, as these factors are even more vital in mountain areas.

Given this situation, the type of energy service required and the supply available need to be understood, together with their environmental implications, so as to identify appropriate policies and investment strategies for the development of a sustainable energy system in the HKH. Recognising this, ICIMOD established a programme on Sustainable Energy Development in Mountain Areas, as indicated in the Four-year Regional Collaborative Programme, 1995-1998. Activities envisaged under the programme are to: a) analyse the present energy-use patterns in rural and urban areas of the HKH; b) prepare forecasts of the energy needs of the HKH at the household level and for industrial development; c) prepare guidelines for energy planning; and d) prepare state-of-the-art reviews on the potential use of renewable energy in the HKH.

As part of its energy programme, ICIMOD carried out a series of studies on the Analysis of Present Energy Use Patterns in Urban and Rural Areas of the HKH in order to understand the energy use patterns and supply potentials and to develop an energy database. The studies have been completed in China, India, Nepal, and Pakistan by collaborating institutions/experts and were instrumental in identifying energy sector data-gaps; reviewing energy policy and planning frameworks; reviewing energy sector manufacturing capabilities; identifying sustainable energy supply potentials; constructing energy flows for each economic activity in terms of a Reference Energy System (RES); preparing the energy balance for the HKH; and identifying socioeconomic variables that influence useful energy consumption patterns for different end-use activities.

As a follow-up, a meeting of experts from ICIMOD regional member countries was organised from April 16-18, 1997, in Kathmandu, with the objective of reviewing energy-use patterns, policies, and programmes prevalent in the HKH so as to identify priority areas for energy development.

A detailed programme of the meeting is presented in Annex 1. The study coordinators from China, India, and Nepal made summary presentations on energy use in mountain areas. Dr. A. A. Junejo made a brief presentation on behalf of the coordinator from Pakistan who could not attend the meeting. In addition, experts from China, India, Nepal, and Bangladesh made brief presentations on the energy policies and programmes of their respective countries. Extensive discussions were held on the deliberations, based on the summary presentations made by **Dr. Kamal Rijal** on the emerging issues in

energy use patterns, policies, and programmes. Priority areas for the development of the energy sector in the mountains were identified. Also, **Professor M. Nurul Islam** presented a methodology for carrying out the study on energy-use patterns in the HKH Region of Bangladesh.

The meeting was attended by energy experts from four member countries of the HKH Region and by ICIMOD professional staff members. The list of participants is presented in Annex 2. The list of studies commissioned by ICIMOD and papers presented during the meeting is presented in Annex 3.