

ICIMOD Publications on 'Energy'

Operation and Management Manual for Private Micro-hydropower Plants. Butwal: Development and Consulting Services (DCS)- Technology Development/Kathmandu: International Centre for Integrated Mountain Development. 1999. 47 pp. ISBN 92-9115-886-0

Abstract

This manual on the management and operation of private or community-owned/managed mini- and micro-hydropower (MMHP) plants (especially micro-hydro) is intended to provide assistance to managers and operators faced with the problem of running such systems in isolated areas. The managers and operators of MHP plants have often not had the benefit of extended education, may have little experience of working with machinery, and have often had very few opportunities to participate in relevant, high quality, training programmes.

The main focus of this manual is on the isolated, indigenous, local entrepreneur-owned plants in the micro-range. Most of these plants installed in Nepal, Pakistan, and India have a capacity of less than 60kW. The manual has been kept simple and brief so that it can be used by managers and operators with limited formal education and training and little technical knowledge. The manual does not cover the specific details of different types of machines and management systems, rather it provides general information that can be applied to all schemes.

Maintenance and Repair Manual for Private Micro-hydropower Plants. Butwal: Development and Consulting Services (DCS)- Technology Development/Kathmandu: International Centre for Integrated Mountain Development. 1999. 47 pp. ISBN 92-9115-922-0

Abstract

This manual has been prepared as one of a series of four manuals for the various groups of technicians and professionals engaged in the design, survey, feasibility study, manufacture, installation, management, operation and maintenance and repair of private/community-based micro-hydropower (MHP) installations in the Hindu Kush-Himalayan region. The main reason for preparing the manuals was the felt and stated need of such groups for whom there are few opportunities for adequate training or advisory back-up. The lack of such opportunities and support is now recognised to be one of the main reasons why such schemes are less successful than hoped for. At present, many schemes are being designed, installed, and operated by people who have not had sufficient opportunity to acquire the necessary skills.

The current manual is aimed primarily at managers and operators who have to carry out maintenance and minor repairs and organise major repairs in remote and underdeveloped mountain areas. It is hoped that this manual will provide some assistance to these professionals as a reference document.

Manual for Survey and Layout Design of Private Micro-hydropower Plants. Butwal: Development and Consulting Services (DCS)- Technology Development/Kathmandu: International Centre for Integrated Mountain Development. 1999. 105 pp. ISBN 92-9115-905-0

Abstract

This manual has been prepared as one of a series of four manuals for the various groups of technicians and professionals engaged in design, survey, installation, management, operation, and maintenance and repair of private micro-hydropower (MHP) installations in the HKH Region.

The current manual is aimed at site surveyors, layout designers, and consultants who carry out surveys and prepare feasibility studies for private MHP plants for communities or entrepreneurs in remote and underdeveloped mountain areas. It is intended to provide some assistance to such professionals both as a training aid and as a reference document.

Installation and Commissioning Manual for Private Micro-hydropower Plants. Butwal: Development and Consulting Services (DCS)- Technology Development/Kathmandu: International Centre for Integrated Mountain Development. 1999. 67 pp. ISBN 92-9115-919-0

Abstract

Private or community-owned and managed micro-hydropower (MHP) schemes are now accepted as viable, least-cost options for many under-developed and inaccessible mountain areas in the Hindu Kush-Himalaya (HKH) Region. Local entrepreneurs and/or communities are likely to initiate, manage, operate, and maintain such plants themselves. The technology is simple and low cost. However, the implementers/surveyors, designers, manufacturers, installers, and other technical people involved are usually not highly qualified and may lack the necessary expertise in their respective fields. Therefore, institutional arrangements and properly designed and implemented inputs are needed for these groups of professionals (both implementers and operators/managers) in

the form of training opportunities, manuals and guidelines, back-stopping back-up support, maintenance and repair facilities, and know-how support. Without such inputs, the performance and viability of many plants may be less successful than hoped for.

Rijal, K. (ed.) **Energy Use in Mountain Areas: Trends and Patterns in China, India, Nepal and Pakistan.** 1999. 282p. ISBN 92-9115-872-0

Abstract

This publication summarises the main findings of a set of studies on energy use patterns in the HKH region carried out in four countries separately, namely, China, India, Nepal, and Pakistan. The results of the studies were used to prepare energy balance tables for the HKH Region in each country and to identify issues emerging concerning energy use.

The publication proposes a four-pronged strategy for sustainable energy development in the mountains. It also describes the various policy and institutional measures that need to be taken so that sustainable development of the energy sector in the HKH Region can become a feasible proposition.

Rijal K. 1999. **A Place in the Sun: Options for Space Heating in the Mountains.** IMD 99/5. 6pp ISSN 1017-0027

Abstract

Issues in Mountain Development bring recent trends, findings, and issues affecting mountain development to planners, development workers and researchers. As yet six editions of these series have been published. A six-page issue on methods of passive solar heating.

Bansal, N. K.; Rijal, K. **Profiting from Sunshine - Passive Solar Building in the Mountains: Collection of Papers on National Workshops in China, India, Nepal and Pakistan.** 2000. 284p. ISBN 92-9115-099-1

Abstract

In the Hindu Kush-Himalayan (HKH) Region it is difficult to keep houses warm during winter. Usually biomass fuels are burned for cooking and space heating. Using biomass fuels has resulted in large-scale deforestation and ill effects on the health of mountain people, especially women and children, from the smoke produced. Solar radiation is available in most parts, and it is sensible to take solar energy consciously into consideration in designing buildings in order to reduce the use of biomass fuels for space heating.

The International Centre for Integrated Mountain Development (ICIMOD) is committed to improving the living standards of people living in the HKH Region. In the light of this objective, the Centre organised workshops on Passive Solar Building Technologies in China, India, Nepal, and Pakistan to establish a network of institutions involved in promoting Passive Solar Building Technology (PSBT) in mountain areas. The state-of-the art reviews clearly indicated that concrete efforts had been made in China and India to promote a solar passive heating programme, whereas there have been individual efforts in Nepal and Pakistan to build passive solar homes. The compilation of these papers in a comprehensive and concise manner should help to share knowledge about new developments in the respective countries as a means of promoting PSBTs in mountain areas.

This book, the first of its kind, provides an overview of the (i) National Workshops; (ii) Potentials for Application of PSBTs in Mountain Areas; (iii)

Fundamentals of Solar Energy and Solar Radiation; (iv) State of the Art in Solar Passive Technologies; (v) Solar Passive Building Designs in the Mountains; (vi) Building Materials for Hilly and Mountain Areas; (vii) Application and Design of Passive Solar Systems for Buildings; and (viii)

Issues and Future

Directions required for the promotion of PSBTs in mountain areas of the Hindu Kush-Himalayan Region.

Overall, concrete solutions are needed to introduce solar passive building concepts in the HKH Region. Understanding climate, traditional architecture, construction materials, and construction techniques is important for optimum passive building designs, and this book attempts to provide some insights.

The following activities are recommended:

- (i) analysis and classification of climatic conditions in the HKH Region;
- (ii) study of vernacular architecture and identification of passive building elements;

- (iii) study of urban architecture;
- (iv) selection of an appropriate thermal simulation programme;
- (v) creation of a database and thermophysical properties of building materials and traditional building components;
- (vi) quantification of individual design patterns, for example, direct gain, indirect gain, thermal storage, solarium, cavity insulation, building form, roof shape, and underground structure; and
- (vii) preparation of manuals on design guidelines, design context, and construction issues.

The information and knowledge thus prepared should then be disseminated to architects, users, and the construction industry, in both the formal and informal sectors. Design guidelines have not been provided for rural mountain areas anywhere in the world. Any initiative in this respect would help improve the health, efficiency, and lifestyles of rural people residing in mountain areas.

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