



Discussion Paper
Series No. MEI 96/1

Developing Energy Options for the Hindu Kush-Himalayas

Rethinking the Mountain Energy Development Paradigm

Kamal Rijal

Copyright © 1996

ISSN 1024 - 7564

International Centre for Integrated Mountain Development

All rights reserved

Published by

International Centre for Integrated Mountain Development
G.P.O. Box 3226
Kathmandu, Nepal

Typesetting at ICIMOD Publications' Unit.

The views and interpretations in this paper are those of the author(s). They are not attributable to the International Centre for Integrated Mountain Development (ICIMOD) and do not imply the expression of any opinion concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

Developing Energy Options for the Hindu Kush-Himalayas

Rethinking the Mountain Energy Development Paradigm

Kamal Rijal

MEI Series No. 96/1

Dr. Kamal Rijal is the Energy Specialist for the Mountain Enterprises and Infrastructure
Division, ICIMOD

July 1996
International Centre for Integrated Mountain Development
Kathmandu, Nepal

Preface

This paper provides a brief review of the current energy situation in the countries of the Hindu Kush-Himalayan (HKH) Region and compares it with the situation that prevails in the HKH Region *per se*. The paper also examines the energy use variability and concludes that there is a strong correlation between the human development index and energy requirements. It also examines implications on and for the energy sector as a result of mountain-specific constraints and opportunities, besides presenting the energy sector barriers. The present unsustainable energy use pattern is not only the result of the development paradigm that has been followed but also of the inability of energy planners and experts to understand the energy system in a holistic perspective. The paper highlights lessons that should be learned while implementing energy programmes.

Against this backdrop, the author attempts to provide a framework for sustainable energy development in the context of mountain areas, stressing the need for redefining the energy sector goals and incorporating issues related to the quality and quantity of energy demand, as these would have implications not only on the energy mix but also on the scale of energy technology and institution. The underlying philosophy for redefinition is that energy must not be treated as an end in itself but as a means to satisfy human needs. Nobody needs fuelwood, LPG, gasoline *per se*, but everybody needs energy to perform certain services such as cooking food, lighting homes, running engines, and so on. The energy systems thus need to be looked into from the energy services point of view rather than from the energy supply perspective.

The paper advocates that the development process in the mountains should be accompanied by energy system transformation which includes: increased availability of renewable energy and energy-technology supply infrastructure; introduction and /or increased use of energy conversion devices to alleviate human drudgery and boost productivity; a productivity increase which facilitates off-farm employment; improved use efficiency; higher value use of energy; and increased use of efficient devices. It further examines factors that affect energy system transformation and concludes that the mountain population requires the transformation of the energy systems to sustain the economic transition from subsistence to market, besides providing energy services for the fulfillment of basic needs.

Contents

1. BACKGROUND	1	Emergence of New Development Philosophies and Their Energy Implications	13
Background of the Countries of the Hindu Kush-Himalayan Region	1	Redefining Energy Sector Goals	14
2. REVIEW OF THE CURRENT ENERGY SITUATION	2	9. ENERGY SYSTEM TRANSFORMATIONS	15
Countries of the HKH Region ..	2	10. FACTORS AFFECTING ENERGY SYSTEM TRANSFORMATIONS ..	16
The Hindu Kush-Himalayan Region	3	Energy Resources and Technology: Access and Availability ..	16
3. ENERGY USE VARIABILITY	5	Energy and Other Infrastructure: A Complementary Issue	16
Population Dynamics and Urbanisation	5	Energy Services to Exceed Subsistence: Poverty Elimination through Employment Generation	17
Income and Energy Transition ..	5	Mountain Energy Development as Part of the Food, Fuel, Fodder, Fertiliser and Fibre Systems	17
Process of Industrialisation ..	6	Transforming Animals and Animal Energetics	17
Diversification and Intensification of Agriculture	6	Accounting for Gender, Generational and Group Dimensions	18
Human Development Indicators	6	Energy and Environmental Linkages: Global Concerns ...	18
4. ENERGY SECTOR BARRIERS	7	Public Health and Poverty Linkages	19
Policies, Planning and Programme Barriers	7	11. CONCLUSION	19
Technological Barriers	8	TABLES	21
Cost, Financing and Investment Barriers	8	FIGURES	29
Institutional Barriers	9	SELECTED REFERENCES	43
5. EFFECTS AND IMPLICATIONS OF MOUNTAIN SPECIFICITIES ON THE ENERGY SECTOR	9		
6. PARADIGMS SHAPING THE PRESENT ENERGY USE PATTERN ..	11		
7. LESSONS LEARNED	12		
8. RETHINKING THE ENERGY DEVELOPMENT PARADIGM ...	13		