



MOUNTAIN INFRASTRUCTURE AND TECHNOLOGY

Discussion Paper Series

ENERGY PLANNING AND MANAGEMENT IN ALMORA DISTRICT, U.P., INDIA

A CASE STUDY

**Jami Hossain
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PREFACE

A programme on 'Strengthening Rural Energy Planning and Management in the Mountain Districts of the Hindu Kush-Himalayan Region' was organised during the time course of January 1987 to November 1988, funded by the European Economic Community. Various activities were implemented under this programme. Six case studies, relating to 'Energy Management and Planning', covering five regional countries (Bhutan, China, India-2, Nepal, and Pakistan) were also conducted. It is hoped that the ultimate use of these case studies will be to develop energy management and planning guidelines that could be used for training district level officers working in the field of energy-related issues. This study is one among these six cases studies, and was conducted in Almora District, situated in the hills of the Uttar Pradesh Province of India.

Introduction to the Area of Study

Almora District

This paper investigates issues in energy management and planning in Almora District of the U.P. Hills of India.

ENERGY SITUATION ANALYSIS

Energy

Energy Use, 1980-1985

Electricity

Energy Supply Methods

Energy Subsidies

Oil Subsidy

Coal Subsidy

Gas Subsidy

ENERGY DEMAND ANALYSIS

Home or Domestic Energy Consumption

For Central National Consumption

Exploratory Survey on Energy Consumption

Energy Budgets

Lighting

Cooking

Space Heating

Local Industry

Other Energy Needs

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List of Abbreviations

<i>Madua</i>	=	Millet
<i>Samba</i>	=	Millet
<i>Kharif</i>	=	Main (Monsoon) season
<i>Rabi</i>	=	Winter season
LPG	=	Liquified petroleum gas
Quintal	=	100 kilograms
<i>Van Panchayat</i>	=	A voluntary organisation at the village level comprising of the right holders of a Panchayat forest
<i>Chulha</i>	=	Cooking stove
<i>Khoya</i>	=	Processed milk product used in sweet making

Energy Content and Conversion Factors

	Natural Units	kcal ('000)	TCE	TOE	Others
<u>Non-commercial</u>					
Fuelwood	ton	4,000	0.57	0.39	1.43 m ³
	m ³	2,800	0.40	0.27	700 kg
Dried Dungcake	ton	2,600	0.37	0.25	--
Agricultural Residues	ton	3,000	0.43	0.29	--
<u>Commercial Fuels</u>					
Diesel	kl	9,080	1.29	0.88	0.826 ton
	ton	10,960	1.57	1.07	1,210 litre
Light Diesel Oil	kl	9,350	1.34	0.91	0.853 ton
	ton	10,960	1.57	1.07	1,172 litre
Petrol	kl	8,000	1.14	0.78	0.709 ton
	ton	11,290	1.61	1.10	1,411 litre
Kerosene	kl	8,660	1.24	0.84	0.778 ton
	ton	11,130	1.59	1.08	1,285 litre
Liquefied Petroleum Gas	ton	11,760	1.68	1.14	--
Coal	ton	6,000	0.86	0.59	--
Electricity	MWh	860	0.12286	0.083576	--
<u>Other Conversion Factors</u>					
1 TCE			1.00	0.680272	
1 TOE			1.47	1.00	

Heat Content of Different Fuel Types

1 kg wood	=	15 Megajoules (MJ)
1 kg coal	=	26.5 MJ
1 litre of kerosene	=	43.6 MJ
1 kWh of electricity	=	3.57 MJ