ECONOMIC PERFORMANCE OF THE USER GROUPS IN COMMUNITY FORESTRY: AN APPROACH TO THE STUDY OF

PARTICIPATORY DEVELOPMENT WITH REFERENCE TO KABHREPALANCHOWK DISTRICT, NEPAL

A THESIS SUBMITTED TO THE GOKHALE
INSTITUTE OF POLITICS AND ECONOMICS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN ECONOMICS

BY
BAL KRISHNA UPADHYAY

UNDER THE GUIDANCE OF DR. V. S. CHITRE PROFESSOR OF ECONOMICS

GON HALE INSTITUTE OF POLITICS AND ECONOMICS

(DEEMED TO BE A UNIVERSITY)

PUNE - 411004

9 JULY 2003 8

ECONOMIC PERFORMANCE OF THE USER GROUPS IN COMMUNITY FORESTRY: AN APPROACH TO THE STUDY OF PARTICIPATORY DEVELOPMENT WITH REFERENCE TO KABHREPALANCHOWK DISTRICT, NEPAL

A THESIS SUBMITTED TO THE GOKHALE INSTITUTE OF POLITICS AND ECONOMICS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ECONOMICS

BY
BAL KRISHNA UPADHYAY

UNDER THE GUIDANCE OF
DR. V. S. CHITRE
PROFESSOR OF ECONOMICS

GOKHALE INSTITUTE OF POLITICS AND ECONOMICS
(DEEMED TO BE A UNIVERSITY)

PUNE - 411004

July, 2003

ECONOMIC PERFORMANCE OF THE USER GROUPS IN COMMUNITY FORESTRY: AN APPROACH TO THE STUDY OF PARTICIPATORY DEVELOPMENT WITH REFERENCE TO KABHREPALANCHOWK DISTRICT, NEPAL

NUMBER OF VOLUMES

: THESIS (ONE)

NAME OF THE AUTHOR

: BAL KRISHNA UPADHYAY

DEGREE

: DEGREE OF DOCTORATE OF

PHILOSOPHY (PH.D)

NAME OF THE UNIVERSITY

: GOKHALE INSTITUTE OF **POLITICS AND ECONOMICS** (DEEMED TO BE UNIVERSITY)

MONTH AND YEAR OF SUBMISSION : JULY, 2003

Dr. V. S. Chitre Professor of Economics, Gokhale Institute of

Politics and Economics,

Pune – 411 004.

CERTIFICATE (FORM 'A')

CERTIFIED that the work incorporated in the thesis entitled "Economic

Performance of the User Groups in Community Forestry: An Approach to

the Study of Participatory Development with Reference to

Kabhrepalanchowk District, Nepal" submitted by Mr. Bal Krishna

Upadhyay was carried out by the candidate under my supervision. Such

material as has been obtained from other sources has been duly

acknowledged in the thesis.

Date: 26 July, 2003

Place: Pune 411 004

V. S. Chita

Dr. V. S. Chitre

(Research Guide)

CONTENTS

	List of Tables and Figures		i		
Acronyms		iii			
	Acknowledgements		iv		
		TER I DOUCTION			
	1.1 1.2 1.3 1.4 1.5 1.6 1.7	Introduction Dependence on Forestry Development of Forest Policy in Nepal Common Understanding Analytical Issues of this Study Approach to the Study Current Status of Research in Community Forestry and the Significance of this study Organisation of this Thesis	1 3 6 10 11 18 23 25		
	1.9	Appendices	28		
	CHAPTER II THE FOREST ECONOMY OF NEPAL				
	2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8	Introduction General Background Information of Nepal Population Growth and its Distribution in Nepal Situation of the Demand and Supply of Forest Products at National level Distribution of the Available Arable Land Per Capita Growth of Livestock Population of Nepal Development of Forest Policy in Nepal Conclusions	30 34 35 37 38 39 61		
		PTER III EW OF LITERATURE			
	3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8	Introduction Attributes Associated with the Forest General Principles of Participation User Member Related Attributes Institutional Aspects Theoretical Indicators of Performance of the CFUG The Broad Trends of Research in Community Forestry Conclusion	62 63 74 80 93 108 117		

CHAPTER IV METHODOLOGY OF DATA COLLECTION

4.1	Introduction	126
4.2	Selection of the District	126
4.3	Selection of the Community Forest User Groups (CFUGs)	129
4.4	Selection of Households	133
4.5	Instruments and Pre-testing	135
4.6	Data Collection Technique	137
4.7	Data Processing and Analysis	140
	PTER V	
ANA	LYTICAL FRAMEWORK	
5.1	Introduction	146
5.2	Theoretical Framework: Underlying Choice-Theoretic Problem	147
5.3	Implications of the Choice- Theoretic Problem: The Principal Hypotheses	
5.4	Additional Analytical Issues and Hypotheses	164
5.5	Conclusion	166
СНА	PTER VI	
EMP	IRICAL FINDINGS FROM THE FUEL WOOD MODEL	
6.1	Introduction	167
6.2	Definitions of the Dependent and Independent Variables of the Model	169
6.3	Testing of Hypotheses	171
6.4	Selection of Estimable Fuel Wood Model	171
6.5	The Fuel Wood Model	173
6.6	Average Statistics of the Dependent and Independent Variables and	174
67	Data Sources	174
6.7	Interpretations	176
6.8	Conclusion	190
	PTER VII IRICAL FINDINGS FROM THE FODDER MODEL	
LIVIE	IRICAL FINDINGS FROM THE FODDER MODEL	
7.1	Introduction	193
7.2	Definitions of the Dependent and Independent Variables	194
7.3	Testing of Hypotheses	195
7.4	Average Statistics of the Dependent and Independent Variables and	
	Date Sources	196
7.5	Fodder Model	199
7.6	Interpretation of the Linear Regression Results of Fodder Model	199
7.7	Conclusion	212

	Appendix B Table B1	Background Information about the Fuel Wood Model Average Quantities of Fresh and Moisture Content Corrected Fuel wood and Sita Received (in 000 kgs) by the Member Household Per Child and Adult from the Community Forest	273 274
	Table B2	User Groups, During 1996/97 to 1998/99. Average Quantities of Fresh and Moisture Content Corrected Fuel Wood and Sita obtained by Household per Adult and Child from the Government Forest, Own Farmlands and the Secondary Community Forests.	276
	Table B3	Fuel Wood Supply Calendar for the Community Forests, Own Farmlands, and Government Forest.	277
	Table B4	Record of Average Weight of Fresh Fuel Wood per Bundle/Dori for some Sample Households of Vakundebesi, Banskhark Ka, Voltase and Sallenibaguwa CFUGs.	278
	Appendix C	Background Information about the Fodder Model	278
	Table C1	Average Quantities of Fodder (including grass and tree fodder) Received by Household (per Child and Adult) from the Community Forest, During 1996/97 to 1998/99.	280
	Table C2	Average Quantities of Fodder (grass and tree fodder) obtained by the Households (per Child and Adult) from Own Farmlands, Government Forest and Secondary Community Forests	281
	Table C3	Fodder Supply Calendar for the Community Forests, Own Farmlands, and Government Forest.	282
	Appendix D Table D1	Background Information about the Leaf Litter Model Average Quantities of Leaf Litter Received by the Member Household (per Child and Adult) from the Community Forest User Groups, During 1996/97 to 1998/99.	283 284
	Table D2	Average Quantities of Leaf Litter obtained by the Households per Child and Adult from Own Farmlands, Government Forest and Secondary Community Forests.	285
	Table D3	Leaf Litter Supply Calendar for the Community Forests, Own Farmlands, and Government Forest.	286
	Appendix E	Attributes Associated with the Community Forest	287
	Table E1	Forest Area (in hectare) and Types of Community Forest	287
	Appendix F	Attributes Associated with the User Members	288
	Table F1	Future Consciousness of the Respondents About the Protection of the Forest for the Future(in percentage)	288
	Table F2	Castes of the Respondents in Percentages	289
-	Table F3	Literacy Status of the Men and Women Respondents (in %)	290
	Table F4	Average Family Size including the Average Number of Children, Adults and Olds	291

b.

Table F5	Average Land Holding of Low Rice Land and Rain-fed Upland per Household (in hectares)	292
Table F6	Average Production and Yield of Major Crops of Low Rice Land and Rain- fed Upland.	293
Table F7	Input Use and Input Costs per Hectare of Crop Production	295
Table F8	Average Net Income from Low Rice Land (or khet) and Rainfed Uplands (or bari) Crops per Household (NRs. 000)	297
Table F9	Average Number of Cattle, Buffalo and Goat and Equivalents of the Number of Cattle, Buffalo and Goat in Standard Units (LSU)	298
Table F10	Percentage of Respondents According to Sex.	299
Table F 11	Kilograms Equivalent of Muri	299
Appendix G	Questionnaire for Member Households	300
Appendix H	Check List or Discussion Guidelines for the Community Forest User Group	302
Bibliography	•	307

.

.

.

1

•

List of Tables

2.1	Forest and Shrub Area by Development Regions (in 000 hectares)	33
2.2	Percentage of the Major Tree Species Types of Nepal	33
2.3	Altitude, Climate and Forest Types in Nepal	34
2.4	Population size, its Growth Rate and Regional Distribution of Population	35
2.5	Projected Supply and Demand without the Master Plan and Most Critical Forest Areas likely to be Degraded under the Present Trends	36
2.6	Available Arable Land Per Capita in 1990 and 2025 for the Selected 14 Countries	38
2.7	Population of Livestock of Nepal (in Numbers), Their Percentage Change and Annual Growth Rate	39
3.1	Attributes of Forest Resources	70
3.2	Design Principles of Long- Enduring CPR Institutions	115
4.1	Distribution of Forest User Group (CFUG) by Altitude range and Year of Establishment and Selection of the Sample CFUG	130
4.2	Distribution of CFUGs in Kabhrepalanchowk District and Number of the Selected CFUG.	131
4.3	Number of VDC and their Wards Covered by the CFUG and the Total Number of Member Households and Sample Households.	135
4.4	Year-wise Supply of Bundles of Fresh Fuel wood and its Equivalent Weight.	141
6.1	Dependent and Independent Variables of the Fuel Wood Model and their Definitions	170
6.2	Karl Pearson's Correlation Coefficient between Dependent (CFUG fuel wood) and Independent Variables of Fuel Wood Model.	171
6.3	Average Statistics of the Dependent and Independent Variables of the Fuel Wood Model	176
6.4	Estimated Coefficients, Standard Errors, t-Statistics and their Significance Levels for the Fuel Wood Model	177
7.1	Dependent and Independent Variables of the Fodder Model and Their Definitions.	194
7.2	Karl Pearson's Correlation Coefficient between Dependent and Independent Variables of the Fodder Model.	195
7.3	Average Statistics of the Dependent and Independent Variables of the Fodder Model.	197
7.4	Estimated Coefficients, Standard Errors, and t-Statistics and their Significance Levels for the Fodder Model.	203

8.1	Dependent and Independent Variables of the Leaf Litter Model and Their Definitions.	216
8.2	Karl Pearson's Correlation Coefficient between the Dependent (CFUG Leaf Litter) and Independent Variables of Leaf Litter Model.	217
8.3	Average Statistics of the Dependent and Independent Variables. of the Leaf Litter Model	219
8.4	Estimated Coefficients, Standard Errors, and t-Statistics and their Significance Levels for the Leaf Litter Model.	224
	List of Figures	
3.1	Biological Growth Law	65
3.2	The Oakerson's Framework for Studying Common Property Resources	109
3.3	The Okerson's Revised Framework	114
41	The Location of Survey District in the Map of Nepal	128

Acronyms

ADB Asian Development Bank

AIDAB Australian International Development Assistance Bureau

CBS Centre Bureau of Statistics
CF Community Forestry

CFUG Community Forest User Group

CFUGC Community Forest User Group Committee

CPFD Community and Private Forest Division

CPR Common Property Resource

CPRI Common Property Resource Institution

DANIDA Danish International Development Agency

DFID Department for International Development

DFO District Forest Officer
DFOf District Forest Office
DOF Department of Forest

EFEAP Environment and Forest Enterprise Activity Project

ERDG Energy Research and Development Group

FAO Food and Agricultural Organization FRSC Forest Research and Survey Centre

GDP Gross Domestic Product

GTZ Gesellschaft for Technische zusamenarbeit (German Agency for

Technical Co-operation)

HMGN His Majesty's Government of Nepal

ICIMOD International Centre for Integrated Mountain Development

ILO International Labor Organization

JFM Joint Forest Management MOF Ministry of Finance

MFSC Ministry of Forest and Soil Conservation
MPFS Master Plan for the Forestry Sector

NACRMP Nepal Australia Community Resource Management Project

NARMSP Natural Resource Management Support Program

NAS National Academy of Science NRC National Resource Council NPC Nepal Planning Commission

NSCFP Nepal-Swiss Community Forestry Project
NUKCFP Nepal-UK Community Forestry Project

PF Panchayat Forest

PPF Panchayat Protected Forest

OP Operation Plan

SDC Swiss Development Corporation

TU Tribhuvan University

UNDP United Nations Development Program

USAID United States Agency for International Development

VDC Village Development Committee

WCED World Conference on Environment and Development

ACKNOWLEDGEMENTS

I acknowledge with thanks, first my research guide Dr. V. S. Chitre, (the Director of the Gokhale Institute of Politics and Economics, Pune), for the enjoyment and seriousness which comes through hard work and learning, his deepness and analytical skills in academic work. I am grateful to him for his inspiring guidance and for the wealth of ideas, which were instilled in me through intensive interactions with him. On several occasions, his deep understanding of the theoretical issues influencing the performance of the Community Forest User Groups (CFUGs) benefited me. During my long association with him, he patiently went through several drafts of this thesis, pointed out logical weaknesses in it and posed thought provoking queries and provided constructive suggestions, which definitely improved my understanding of the subject, sharpened my writing skills and enabled me to present this thesis in its present form.

The Rector's Office, Tribhuvan University, extended its cooperation by granting me study leave to study in India.

I extend my sincere appreciation to Prof. Nilkanth Rath, the former Director, Gokhale Institute Politics and Economics and President of Indian School of Political Economy, Pune, for providing inspiring and valuable suggestions for the questionnaire design and comments on the questionnaire of this study. I am grateful to Dr. Samar. K. Datta, professor and chairman, Center for Management in Agriculture (CMA), Indian Institute of Management, Ahmedabad, for his wise counsel and guidance, despite his busy schedule, on the results from the empirical models of this study.

I also take this opportunity to express my sincere appreciation of the cooperation and valuable assistance extended to me by the staff of the Dhananjayarao Gadgil Servants of India Society's Library and the Computer Section at the Gokhale Institute. I appreciate the cooperation of the faculty members of the Gokhale Institute.

A number of people have helped me with the arduous job of data collection. My negligible knowledge of Kabhrepalanchowk would normally have made me ineligible to conduct a sample survey in several villages of the 19 CFUGs. I have to sincerely thank the executive

committee members, who guided me at every stage and helped me contacting interview respondents. The field assistants and the executive committee members accompanied me to interview user members, interpreting my questions to them and visited the forest with me for observation of forest use pattern. The user members we interviewed during our field survey and their response to our visit was overwhelming. The chiefs and the secretaries of the CFUGs gave insights on the functioning of and the problems of the CFUG management and provided data on CFUG management. They not only supplied data but also asked questions about the objectives of the study. They also provided us the accommodation and gave us the best of their food and hospitality and best wishes for the project. I would like to make a special mention of the executive committee members, for making my stay in the villages comfortable as well as educative for me. I am greatly indebted to them.

I am thankful to District Forest Office, Department of Forest and Nepal Australia Community Resource Management Project for proving information at the various stages of this study.

I am grateful to several friends in Nepal, who have supported me in various stages of my study. In particular I must mention Dr. Shiv Raj Lohani, who provided suggestions on the draft questionnaire of this study. Dr. George Varughese provided literature on institutional aspects of common pool resource management. Mr Sunil Acharya, Supervision Division, Tribhuvan University supported me in various stages of this study.

I appreciate my wife and children, force behind this work, for their inspiration that made this work possible.

Lastly, I appreciate Vilas Mankar, Gokhale Institute of Politics and Economics, for his excellent services to produce the thesis in this technical form.