# AN ASSESSMENT OF RURAL ELECTRIFICATION AMONG DIFFERENT WELL-BEING-RANKS

(With Particular Reference To Rasnalu VDC, Ramechhap)

## **A Thesis**

Submitted to the Central Department of Rural Development, Faculty of Humanities and Social Science Tribhuvan University in the Partial Fulfillment of Requirements for the Degree of Master's of Arts in Rural Development

By BIMAL POUDEL Exam Roll No. 3087

Central Department of Rural Development Tribhuvan University Kirtipur, Kathmandu September, 2006

# **RECOMMENDATION LETTER**

The thesis work entitled "An Assessment of Rural Electrification Among Different Well-Being-Ranks: With Particular Reference to Rasnalu VDC, Ramechhap" has been prepared and submitted by Bimal Poudel under my supervision in partial fulfillment of the requirement for the Degree of Master of Arts in Rural Development.

I forward this report with recommendation for approval.

Supervisor

Prof. Dr. Pradeep Kumar Khadka Head of the Department

Date:

## APPROVAL LETTER

This is to certify that the Thesis Report submitted by Bimal Poudel entitled "An Assessment of Rural Electrification Among Different Well-Being-Ranks: With Particular Reference to Rasnalu VDC, Ramechhap" has been approved as a partial fulfillment of the requirement for the Degree of Master of Arts in Rural Development in the prescribed format of the Faculty of Humanities and Social Science.

<b>Evaluation Committee</b>
Prof. Dr. Pradeep Kumar Khadka
Head of the Department and Supervisor
Prof. Dr. Panna Kaji Amatya

**External Examiner** 

#### **ACKNOWLEDGEMENTS**

I take this opportunity to acknowledge my deep sense of gratitude to my supervisor Prof. Dr. Pradeep Kumar Khadka, Head of Central Department of Rural Development for his valuable guidance and encouragement through out the research.

I am grateful to Mr. Ram Prasad Bhandari, SAGUN/CARE Nepal. His valuable suggestion and comment during the conception phase of this research project was instrumental.

I am indebted to CARE Nepal for the grant assistance to conduct this research project. Without this support, it would have been almost impossible to carryout this research.

I would like to express my gratitude to my respondents and other people of Rasnalu VDC, Ramechhap who made themselves available for interviews, focused group discussions and informal conversation. I am also thankful to Manisha Sunuwar and Arjun Karki (Rasnalu) who provided their valuable time in locating the respondents and supplied other information about the village. I would like to thank Chhatra Bahadur Sunuwar for hosting me during my stay in Rasnalu. I am also thankful to Maya Nath Ghimire, SAGUN/CARE Nepal who provided background information of the field.

I am grateful to my friend Zachary H. Nelson (Zack) who spent hours commenting on this document in spite the busy schedule of American life.

My love and appreciation to my parents for all their patience on my decision to complete this degree after a two-year of pause in my study.

Likewise, I would like to thank to all my class friends from university and friends from my childhood for their encouragements to complete this research on time.

Many people have helped me directly or indirectly in the process of preparing this research project. It is not possible to name them all, I am thankful to all of them.

Last but not least, appreciation is due to my brother Paban, who released me from all kitchen duties and let me work fulltime on the computer placed in other corner of the room.

I remain, however, solely responsible for any shortcomings or errors that may have crept into this undertaking.

#### **Bimal Poudel**

## **ABSTRACT**

Every society is stratified and Rasnalu VDC is not an exception. About 4% of the total population of Rasnalu VDC is well-off (rank A), while 18% are the poorest of the poor (rank D). In Rasnalu, most of the populations belong to the Sunuwar caste while other residents include Tamang, Lama and Chhetri. The best-off segment of the population is generally living outside the community in other parts of the country or in other country.

The differentials in social service consumption exist among the various strata of the society. The illiteracy rate is much higher among the rank D (poorest of the poor section) for the other ranks, their access to employment in service sector is much lower than the other groups and most of them are employed as daily wage labor.

Only 67% of the households from rank D are electrified, whereas 87% of the total households from rank A are. Cut-Out system of tariff rates are favored if the service quality of the Cut-Out system is improved. Among the households that have energy meter installed, average unit consumption of the rank A is 16.75 units per month while the average consumption of the rank D is seven units. Electricity has mostly substituted battery and kerosene. Previously, a majority of the households from rank A consumed batteries worth NRs 50 per month prior to electrification, half of the total households from rank D did not have a radio/cassette. Most of the households from rank A stated that the present tariff rate is affordable while 62.5% of the households from rank D reported that it is expensive. An average number of the total bulbs and tube lights in a household of rank A accumulates to 337.5 W, whereas for rank D it is only 110.45 W. Almost all rank A households have a radio/cassette whereas only 33.3% of the total households from rank D have radio/cassette. Thirty-eight percent (37.5%) of the households from rank A have television; 12.5% have the electric rice cooker.

A majority of the households in Rasnalu VDC have not enjoyed an income or employment because of the accessibility of the electricity. Within people's perception and practice, electricity has been experienced and understood as a synonym of lighting. Relief from the burdens of kerosene and battery has been recognized as the benefits of electricity. Few households from rank C and D have benefited from the provision of electricity during the night. A large number of women (80%) from rank D have delayed their routine for going to the bed following the introduction of electricity facility and only 36% of the men have this

experience. Few households believe that their children's educational performance has improved following the electricity facility.

Twenty percent of the households from rank A intend to buy an electric rice cooker and the same percentage of households from rank D plan to buy radio as electronic appliances. Many people think that they can use electricity for income generating activities and employment; most of them envision running a grinding mill. Their lack of experience means their knowledge and skill regarding technologies is very weak.

# **CONTENTS**

· · · · · · · · · · · · · · · · · ·	
Recommendation Letter	
Approval Letter	
Acknowledgement	
List of Tables	
Acronyms	
Abstract	
CHAPTER ONE: INTRODUCTION	
1.1 Background	1
1.2 Statement of Problem	3
1.3 Objectives	4
1.4 Significance	4
1.5 Limitation of the Study	5
1.6 Organization of the Study	5
CHAPTER TWO: REVIEW OF LITERATURE	
2.1 Electricity	6
2.2 Energy	10
2.3 Inequality	14
CHAPTER THREE: RESEARCH METHODOLOGY	
3.1 Research Design	18
3.2 Study Site	18
3.3 Sampling Design	18
3.4 Techniques of Data Collection	19
3.5 Analysis and Presentation	19
CHAPTER FOUR: INTRODUCTION OF THE STUDY AREA	
4.1 Well-Being-Rank	20
4.2 Facilities Available in the Village	21
4.3 Households Distribution by Different Well-Being-Ranks	21
4.4 Population Distribution by Different Well-Being-Rank	22

4.5 Sex Composition of Total Population	22
4.6 Ethnicity/Caste Composition	23
4.7 Average Family Size	24
4.8 Age Composition	24
4.9 Residential Status	25
4.10 Status of Education	25
4.11 Occupation	26
4.12 Water Mills and Electric Mills	27
4.13 Use of Electricity in Other Sectors	27
4.14 Activities Carried Out by the JREDP	28
HAPTER FIVE: DATA ANALYSIS ON ANTICIPATION AND	D
AFFORDABILITY OF ELECTRICITY	
5.1 Status of Electrification in the HH	29
5.2 Type of Electrification	30
5.3 Monthly Expenses of Electricity	31
5.3.1 Practiced Tariff Rates	31
5.3.2 Monthly Payment for Electricity Energy	32
5.4 Average Electric Energy Consumption	33
5.5 Monthly Kerosene Consumption Prior to Electrification	33
5.6 Monthly Expenses of Battery	34
5.7 Affordability	35
5.8 Income Sufficiency to Pay Electricity Bill	36
5.9 Lighting	37
5.9.1 Average HH Consumption of Electricity for Lighting	37
5.9.2 Lighting at Public Places	38
5.10 Distribution of Electrical Appliances in the Electrified House	eholds38
5.11 Desired Rate of Electricity	39
5.12 Electricity for Income	40
5.12.1 Additional Employment due to Electricity	40
5.12.1 Electricity use in Cottage Industry	41
5.13 Support of Electricity	41
5.14 Access to Television	42

5.14.1 Frequency of Watching Television		42	
5.14.2 Program Generally Watched		43	
5.15 Trainings		44	
5.15.1 Trainings in the Village		44	
5.15.2 Households Received Trainings		45	
5.15.3 Participants by Gender		45	
5.16 Literacy Class after Electrification		46	
5.17 Delayed Time for Going to the Bed at Night		46	
5.18 Use of Extended Time		47	
5.19 Educational Performance of Children		49	
5.20 Future Plan for other Electronic Appliances		49	
5.21 Electricity for Income Generating Activities		50	
5.21.1 Possibility of Using Electricity for Income		50	
5.21.2 Future Plan for Income through Electricity		51	
5.22 Advantages of the Electricity		52	
5.23 Affects of Khimti Hydro Project on the Household		53	
5.24 Casualty		54	
CHAPTER SIX : SUMMARY, CONCLUSIONS AND			
RECOMMENDATIONS			
6.1 Summary		55	6.2
Conclusions	61		
6.3. Recommendations		63	
APPENDICES			
Appendix 1 Questionnaire		65	
Appendix 2 FGD Check-List		68	
Appendix 3 Photos		71	

**REFERENCES** 

**74** 

# **List of Tables**

Table 4.1: Household Distribution	22
Table 4.2: Population Distribution	22
Table 4.3: Sex Composition	23
Table 4.4: Ethnicity/Caste Composition	23
Table 4.5: Average Family Size	24
Table 4.6: Age Composition	24
Table 4.7: Residential Status	25
Table 4.8: Status of Education	26
Table 4.9: Occupation	26
Table 5.1: Status of Electrification in the HH	30
Table 5.2 Type of Electrification	31
Table 5.3: Practiced Tariff Rates	32
Table 5.4: Monthly Payment for Electricity Energy	32
Table 5.5: Average Electric Energy Consumption	33
Table 5.6: Monthly Kerosene Consumption Prior to Electrification	34
Table 5.7: Monthly Expenses of Battery	35
Table 5.8: Affordability	36
Table 5.9: Income Sufficiency to Pay Electricity Bill	37
Table 5.10: Average Household Consumption of Electric Energy for Lighting	38
Table 5.11: Distribution of Electrical Appliances in the Electrified Households	39
Table 5.12: Desired Rate of Electricity	39
Table 5.13: Additional Employment due to Electricity	40
Table 5.14: Support of Electricity	41
Table 5.15: Frequency of Watching Television	43
Table 5.16: Program Generally Watched	43
Table 5.17: Households Received Trainings	45
Table 5.18: Participants by Gender	46
Table 5.19: Delayed Time for going to the bed at Night	46
Table 5.20: Use of Extended Time	48
Table 5.21: Educational Performance of Children	49
Table 5.22: Future Plan for other Electronic Appliances	49
Table 5.23: Possibility of Using Electricity for Income	50

Table 5.24: Advantage of Electricity	52
Table 5.25: Losses Due to Khimti Hydro Project	53

#### **ACRONYMS**

ADB Asian Development Bank
BHA British Hydropower Association
BOOT Build, Own, Operate and Transfer

CBS Central Bureau of Statistics

CDRD Central Department of Rural Development

CFL Compact Fluorescent Lamps

CRED Community Rural Electrification Department

FGD Focused Group Discussion

FUG Forest User's Group

FY Fiscal Year

GDP Gross Domestic Product GOs Governmental Organizations

GW Giga Watt HHs Households

HMG/N His Majesty's Government of Nepal

HPL Himal Power Limited

ICIMOD International Center for Integrated Mountain Development

JMHP Jhankre Minihydro Power Plant

JREDP Jhankre Rural Electrification and Development Project

km. Kilometer KW Kilo Watt

LSMS Living Standard Measurement Surveys

MoF Ministry of Finance

MoWR Ministry of Water Resources

MW Mega Watt

NEA Nepal Electricity Authority NGO Non Governmental Organization NPC National Planning Commission

NRs. Nepali Rupees
PoP Poorest of the Poor

PPA Participatory Poverty Assessment

RE Rural Electrification

RETRUD Renewable Energy Technology for Rural Development

SAGUN Strengthened & Action Governance Utilization of Natural Resources

SLC School Leaving Certificate TOE Tons of Oil Equivalent

TV Television United Nations

USA United States of America

USAID United States Aid for International Development

VCD Video Compact Disc

VDC Village Development Committee

W Watt

WB World Bank