

Socio-Economic Impact of Biogas Energy on Rural Women
(A Case Study of Chandragadi VDC in Jhapa District)

A Thesis

Submitted to Department of Rural development

In Partial Fulfilment of the Requirement of the Master of Arts in Rural
Development

Submitted by

Pratima Nepal

Central Department of Rural Development

Tribhuvan University

Kirtipur, Nepal.

Exam Roll No. 2605

Regd. No. 30841-95

LETTER OF RECOMMEDATION

This thesis entitled “SOCIO- ECONOMIC IMPACT OF BIOGAS ENERGY ON RURAL WOMEN : A CASE STUDAY OF CHANDRAGADI VDC IN JHAPA DISTRICT” has been prepared by Pratima Nepal under my guidance and supervision for the partial fulfillment of the requirement for the Master of Arts in Rural Development. To the best of my knowledge, the study is original and provides useful information to the field of biogas energy for rural women.

I hereby, recommend this thesis for evaluation to the dissertation committee.

.....
Associate Prof. Dr. Chandra Lal Shrestha
Central Department of Rural Development
Tribhuwan University
Kritiur, Kathmandu

Date: 2065-06-09

APPROVAL LETTER

We certify that this dissertation entitled “SOCIO – ECONOMIC IMPACT OF BIOGAS ENERGY ON RURAL WOMEN : A CASE STUDAY OF CHANDRAGADI VDC IN JHAPA DISTRICT” submitted by Ms. Pratima Nepal to the Central Department of Rural Development, Faculty of Humanities and Social Sciences, Tribhuwan University, in partial fulfillment of the requirements for the Degree of MASTERS OF Arts IN Rural Development has been found satisfactory in scope and quality. Therefore, we accept this thesis as a part of the said degree.

Dissertation Committee

.....

Prof. Dr. Pradeep Kumar Khadka
(Head of Department)

.....

External Examiner

.....

Associate Prof. Dr. Chandra Lal Shrestha
(Thesis Supervisor)

Date: 2065-06-09

ACKNOWLEDGEMENTS

I would like to present my sincere gratitude to my supervisor Dr. Chandralal Shreshtha for his valuable comments and guidance which inspired me to continue and complete this work. I would also like to thank Lecturer Mr. Ratnamani Nepal who also gave initial idea and encouraged me to do research on biogas programme in Chandragadi VDC and later provided his valuable comments.

I would also like to thank Alternative Energy Promotion Centre (AEPC) and Biogas Sector Partnership Nepal (BSP/N) which provided me necessary literatures. Similarly, Centre for Rural Technology Nepal (CRT/N) is also thankful for providing me financial support to finish this research work. My brother Mr. Shankar Nepal is also thankful as he also gave comments in my works. I am also thankful to my friend Ms. Nishan Rai who provided me the necessary literatures. I would also like to thank Mr. Raju Acharya as he helped me during my field works. Last but not least, I am indebted to my parents as they inspired me all the time.

24 September 2008

Pratima Nepal

ABSTRACT

While talking about the impacts of biogas to rural women, one counts a number of benefits like it minimises the workloads and time of fetching firewood, motivates male to help in kitchen works and kitchen gardening and also make marginalised community inclusive to the livelihood programme for the betterment. Further to the social impact, it also have economic impacts like saving money of firewood, minimisation of health costs due to health improvements, women participation in economic works and slurry use for increasing the productivity of farms. The number of impacts goes even more when environmentalists explain them. However, using the concept of social structure of gender and following the field study with structured questionnaires and focus group discussion the study found that the effect of biogas is general in nature. It has made the work easier within the social construction of gender, but it has no effect to increase women participation in income generating activities outside the farm. After installation of biogas plant women left to go to jungle for collecting firewood or they are saving money by not buying firewood anymore. Social activities of women are mostly religious, which are also parts of the social construction. Besides these observations the study found that biogas program in Jhapa is not able to benefit Dalits and minorities as they are not included in the program significantly. The other weakness is that it is also not able to demonstrate the benefits of biogas for lighting and thus, is limited to cooking and slurry use for kitchen gardening and farms. However, biogas program, in general, has positive effects to reduce the workload and improve health situation of women.

TABLE OF CONTENTS

RECOMMENDATION LETTER	I
APPROVAL SHEET	II
ACKNOWLEDGEMENTS	III
TABLE OF CONTENTS	IV-VI
LIST OF TABLES	VII
LIST OF FIGURES	VIII
LIST OF CHARTS	VIII
LIST OF PICTURES	VIII
ABBREVIATIONS AND ACRONYMS	IX
ABSTRACT	X
CHAPTER I: INTRODUCTION	1-6
1.1 Background of the Study	1
1.2 Statement of Problem	2
1.3 Objectives of the study	3
1.4 Rationale of the study	3
1.5 Conceptual Framework	5
1.6 Organization of Study	6
CHAPTER II: LITERATURE REVIEW	7-19
2.1 Sources of Energy	7
2.2 Workload on Rural Women	8
2.3 Evolution of Biogas in Nepal	10
2.4 Biogas as a Simple Technology	14
2.5 Relevance of Biogas in Nepal	15

CHAPTER III: RESEARCH METHODOLOGY **20-25**

3.1	Research Design	20
3.2	The Universe and Sample	20
3.3	Selection of the Key Informants	20
3.4	Nature of Source of Data	21
	3.4.1 Primary Data	21
	3.4.2 Secondary Data	21
3.5	Techniques and Tools of Data Collection	22
	3.5.1 Questionnaire	22
	3.5.2 Observation	22
	3.5.3 Focus Group Discussion	22
3.6	Data Analysis and Interpretation	22
3.7	Limitation of the Study	23

**CHAPTER IV: SOCIO-ECONOMIC STATUS OF BIOGAS
ENERGY OWNERS** **24-42**

4.1	Population distribution	25
4.2	Caste and Ethnicity	27
4.3	Family size	27
4.4	Occupation Distribution	28
4.5	Educational Status	30
4.6	Energy Use for Lighting Purpose	31
4.7	Effect on Environmental Pollution Reduction	31
4.8	Energy Source Prior to Biogas	32
4.9	Experience of Using Biogas	33
4.10	Plant Size	33
4.11	Latrine Connection in Biogas Plant	34
4.12	Livestock Distribution	35

4.13	Loan for Biogas Plant Installation	36
4.14	Beneficiaries	36
4.15	Benefit of Biogas	37
4.16	Use of Slurry in Agriculture Production	38
4.17	Class Distribution	38
4.18	Overall Impact of Biogas on Rural Women	39
	4.18.1 Workload Reduction and Time Saving	40
	4.18.2 Easy cooking	40
	4.18.3 Health and Sanitation	40
	4.18.4 Saving Money	40
CHAPTER V: CONCLUSION AND RECOMMENDATIONS		41-45
5.1	Conclusion	41
5.2	Recommendations	45
REFERENCE		46-48
ANNEX 1: Questionnaire		49-52
ANNEX 2: Pictures		53

LISTS OF TABLES

Table 1	Time Allocation Before and After Biogas Plants Installation	9
Table 2	Use of Saved Time in income Generating Activities after Biogas Plant Installation	10
Table 3	Average Composition of Biogas	14
Table 4	Slurry Utilization	17
Table 5	Reason for Installing Biogas Plant	18
Table 6	Population Distribution of Chandragadi VDC in B.C 2059	25
Table 7	Population Distribution of Chandragadi VDC of B.C 2064	26
Table 8	Caste/Ethnicity of Sampled Household	27
Table 9	Distribution of Households by Family Size	28
Table 10	Occupation Distribution of Biogas Owner Household	29
Table 11	Occupation Distribution of Women Having Biogas in Household	29
Table 12	Educational Status of Plants Owners and their Family Member	30
Table 13	Type of Energy for light	31
Table 14	Biogas Helps Reduce environment pollution	32
Table 14	Energy Source for Cooking Prior to Biogas Installation	32
Table 16	Experience of Using Biogas	33
Table 17	Size of Biogas Plants	34
Table 18	Latrine Connection in Biogas Plant	35
Table 19	Livestock Population	35
Table 20	Installation of Biogas Plant on Loan	36
Table 21	Sources of Loan for Biogas	36
Table 22	Beneficiaries	37
Table 23	Benefits of Biogas	37
Table 24	Use of Slurry in Agriculture production	38
Table 25	Class Distribution of people Using Biogas	39

LISTS OF FIGURES

Figure 1: Conceptual Framework 6

LISTS OF CHARTS

Chart 1: Size of Biogas Plants 34

ACRONYMS AND ABBREVIATION

ADB/N	Agriculture Development Bank of Nepal
AEPC	Alternative Energy Promotion Centre
BSP	Biogas Support Program
BSP/N	Biogas Sector Partnership Nepal
CRT/N	Centre for Rural Technology Nepal
HH	Household
ICIDMOD	International Centre for Integrated Mountain Development
INGOs	International Non-Governmental Organization
MOF	Ministry of Finance
NBL	Nepal Bank Ltd
NBPC	Nepal Biogas Promotion Group
NGOs	Non-Government organization
NPC	National Planning Commission
RBB	Rastriya Banijya Bank
RETs	Renewable Energy Technology
VDC	Village Development Committee