CONTRIBUTION OF BIOGAS IN PATHARI SCHANISCHARI MUNICIPALITY OF MORANG DISTRICT

A Thesis

Submitted to the Central Department of Economics

Faculty of Humanities and Social Sciences, Tribhuvan University

In Partial Fulfillment of the Requirements for the

Degree of Masters of Arts

in

Economics

By

Gita Devi Sharma

Roll No: 401 / 2068/69

Regd. No.: 6-1-3-418-2004

Central Department of Economics

Tribhuvan University, Kirtipur, Kathmandu, Nepal
September 2018

Letter of Recommendation

This thesis entitled Contribution of Biogas in Pathari Schanischare Municipality of

Morang District has been presented by Ms. Gita Devi Sharma under my supervision. I

have by recommended this thesis for examination by the thesis committee as a fulfillment

of the requirements for the **Degree** of **Master** of **Arts** in **Economics**.

Dr. Yogesh Ranjit

Associate Professor

Thesis Supervisor

Date: B. S. 2075 / 05 / 28 (2018 – 09 - 13 AD)

ii

Approval Letter

This thesis entitled Contribution of Biogas in Pathari Schanischare Municipality of

Morang District has been submitted by Ms. Gita Devi Sharma to the Central

Department of Economic, Faculty of Humanities and social Science. Tribhuvan

University, in partial fulfillment of the requirement for the Degree of Master of Arts in

Economics has been found satisfactory in scope and quality. Therefore we accept this

thesis as a part of the said degree.

Thesis Committee

Prof. Dr. Kushum Shakya

Head of Department

Tara Prasad Bhusal

Associate professor

External Examiner

Dr. Yogesh Ranjit

Associate Professor, T. U.

Thesis Supervisor

Date: B.S. 2075 / 05 / 28

(2018 – 09 - 13 A. D.)

iii

Acknowledgements

This study is undertaken for the partial fulfillment of Master's Degree in Economics, in the Central Department of Economics, Tribhuvan University Kirtipur. I owe my sincere gratitude to my supervisor Dr. Yogesh Ranjit, Associate Professor for his constant guidance, creative suggestions, supervision and encouragement through the research period. It was almost impossible to complete the study in this from without his cooperation. I would like to express my sincere and respectful regard.

Similarly, I would like to thank Prof. Dr. Kushum Shakya, Head of Department and other faculty members who always encourage and support me to complete the study.

Similarly, I would like to thank all my friends for their suggestions and valuable help to complete this thesis.

I also express my gratitude to all the respondents of the study area who had provided material, sharing ideas and filling the questionnaire curiously in spite of their busy schedule.

I am very much grateful my father Ambika Prasad Sharma, Sister Ranjana Koirala and rest of all family members for their perpetual supports to every aspects in completion of this study.

Ms. Gita Devi Sharma

Table of Contents

| Recommendation Letter | | i |
|-----------------------|---|-------|
| App | ii | |
| Ack | iii | |
| Tab | iv - vi | |
| List | vii | |
| List | of Figures | viii |
| List | of Abbreviations / Acronyms | ix |
| CHA | APTER - I: INTRODUCTION | 1-5 |
| 1.1 | Background of the Study | 1 |
| 1.2 | Statement of the Problem | 3 |
| 1.3 | Objectives of the study | 4 |
| 1.4 | Signification of the study | 4 |
| 1.5 | Limitations of the study | 5 |
| 1.6 | Organization of the study | 5 |
| CHA | APTER – II: REVIEW OF LITERATURE | 6-15 |
| 2.1 | International Context | 6 |
| 2.2 | National Context | 10 |
| 2.3 | Research Gap | 15 |
| CHA | APER – III: RESEARCH METHODOLOGY | 16-20 |
| 3.1 | Introduction of the Study Area | 16 |
| 3.2 | Research Design | 17 |
| 3.3 | Nature and Sources of Data | 17 |
| 3.4 | Selection of the Study Area | 18 |
| 3.5 | Population, Sample and Sampling Procedure | 18 |
| 3.6 | Tools and Method of Primary Data Collection | 18 |
| 3.7 | Data Organization and Processing | 20 |
| 3.8 | Tools and Method of Data Analysis | 20 |

| CHA | APTER – | IV: PRESENTATION AND ANALYSIS OF DATA | 21-46 |
|-------|------------------------------------|---|-------|
| 4.1 | Socio - | economic Features of Sample Households | 21-32 |
| | 4.1.1 | Age Group Distribution | 21 |
| | 4.1.2 | Family Size | 22 |
| | 4.1.3 | Types of Family | 23 |
| | 4.1.4 | Caste / Ethnic Composition | 24 |
| | 4.1.5 | Occupational Distribution | 26 |
| | 4.1.6 | Size of Land Holding | 28 |
| | 4.1.7 | Size of Livestock Keeping | 29 |
| | 4.1.8 | Livestock Distribution of Sample Households | 30 |
| | 4.1.9 | Income Distribution of the Sample Households | 31 |
| | 4.1.10 | Educational Status | 32 |
| 4.2 | Use of Bio | ogas in the Study Area | 34-40 |
| | 4.2.1 | Reasons for Installing Biogas | 34 |
| | 4.2.2 | Motivating Factors for Installation of Biogas Plant | 35 |
| | 4.2.3 | Size of Biogas Plant | 37 |
| | 4.2.4 | Use of Biogas | 38 |
| | 4.2.5 | Operation of Biogas Plant | 39 |
| | 4.2.6 | Cleaning of Vessels (filter of biogas plant) | 40 |
| | 4.2.7 | Toilet Attached to Biogas Plant | 40 |
| 4.3 E | 4.3 Benefits of Using Biogas Plant | | 40-46 |
| | 4.3.1 | Saving of Firewood | 41 |
| | 4.3.2 | Saving of Kerosene after Installation of Biogas | 42 |
| | 4.3.3 | Cooking Time | 42 |
| | 4.3.4 | Benefits of Slurry in Agriculture Production | 42 |
| | 4.3.5 | Methods of Using Slurry on Farm Land | 43 |
| | 4.3.6 | Using of Slurry and Agricultural Production | 44 |
| | 4.3.7 | Effectiveness of Using Slurry for Agricultural Production | 45 |
| | 4.3.8 | Social Benefits | 45 |
| | 4.3.9 | Environmental Benefits | 46 |

CHAPTER-V: MAJOR FINDGINGS, CONCLUSION AND **RECOMMENDATIONS** 47-51 **Major Finding** 47 5.1 Conclusion 5.2 49 5.3 51 Recommendations **REFERENCES** 52-54 Appendix -I: Map of the study Area 55 **Appendix -II : Household Questionnaire** 56-58

59-60

Appendix –III: Photographs of Biogas Operation

List of Tables

| Table No. | <u>Title</u> | Page No. |
|-----------|--|----------|
| 4.1 | Age Group Distribution of Family Members in Sample Household | ds 21 |
| 4.2 | Distribution Sample Households by Family Size | 22 |
| 4.3 | Types of Family | 24 |
| 4.4 | Caste / Ethnic Composition of Sample Households | 25 |
| 4.5 | Occupational Distribution of Sample Households | 26 |
| 4.6 | Distribution of Land Holding Among Sample Households | 28 |
| 4.7 | Size and Composition of Livestock Keeping | 29 |
| 4.8 | Livestock Distribution of Sample Households | 30 |
| 4.9 | Income Distribution of Sample Households | 31 |
| 4.10 | Educational Status of Family Members of Biogas User Household | ds 33 |
| 4.11 | Reasons for Installation of Biogas | 34 |
| 4.12 | Motivating Factors for the Biogas plant installation | 36 |
| 4.13 | Size of Biogas Plant Used | 36 |
| 4.14 | Distribution of Use of Biogas | 37 |
| 4.15 | Toilet Attached with Biogas Plant | 38 |
| 4.16 | Used of Firewood before and after Installation of Biogas Plant | 40 |
| 4.17 | Required Time for Cooking before and after Using Biogas | 41 |
| 4.18 | Method of Slurry Used | 42 |
| 4.19 | Use of Slurry and Agricultural Production | 43 |
| 4.20 | Effectiveness of Using Slurry for Various Crops | 44 |

List of Figures

| <u>Figure No.</u> | <u>Title</u> | Page No. |
|-------------------|--|------------|
| 4.1 | Distribution of Family Members of Sample Households by Age | e Group 22 |
| 4.2 | Distribution Households by Family Size | 23 |
| 4.3 | Type of Family | 24 |
| 4.4 | Caste/Ethic Compositions of Sample Households | 25 |
| 4.5 | Occupational Distribution of Sample Households | 27 |
| 4.6 | Distribution of Land Holding Among Sample Households | 28 |
| 4.7 | Size and Composition of Livestock Keeping | 30 |
| 4.8 | Distribution of Livestock | 31 |
| 4.9 | Income Distribution of Sample Households | 32 |
| 4.10 | Educational Distribution of Family Members of Biogas Users | |
| | Households | 33 |
| 4.11 | Reasons for Installation of Biogas | 35 |
| 4.12 | Motivating Factors for the Biogas Plant Installation | 36 |
| 4.13 | Distribution of Size of Biogas Plant | 37 |
| 4.14 | Distribution of Use of Biogas | 39 |
| 4.15 | Use of Slurry and Agricultural Production | 44 |

Abbreviations / Acronyms

ADBN Agriculture Development Bank of Nepal
AEPC Alternative Energy Promotion Centre
BSP/N Biogas Support Programme of Nepal

BP Biogas Plants

BSE Bovine Spongy form encephalopathy

CBS Central bureau of stations

CDM Clean Development Mechanism

CEN Clean Energy Nepal

CEDA Center for economic development and administration

CER Certificated emission reductions

CMF Centre for Microfinance

CO2 Carbon dioxide

DEA Data envelopment analysis

FYM From yard manure GGC Gobar Gas Company

INGO International Government Organization

KG Kilogram
KM Kilometer

LPG Liquefied Petroleum Gas

MCDA Multi-criteria decision aiding

MOF Ministry of finance

NGO National government organization

PBSP Purnima Biogas plant

PVT Private Limited

RET Renewable energy technology

SLC School Level Certificate

UNFCC United nation fram work convention climate change

VDC Village Development Committee