Socio-Economic Impact of Thotnekhola Mini Hydropower Project; A Case Study of Okhaldhunga District

Submitted to the Central Department of Economics Faculty of Humanities and Social Sciences

Tribhuvan University, Kirtipur, Kathmandu, Nepal in Partial Fulfillment of the Requirements for the Degree of Master of Arts

In

Economics

By

Chandra Dip Rai Roll No. 350/064 Central Department of Economics Tribhuvan University, Kirtipur Kathmandu, Nepal February 2014

APPROVAL SHEET

We certify that this thesis entitled "Socio-Economic Impact of Thotnekhola Mini Hydropower Project; A Case Study of Okhaldhunga District" submitted by Mr. Chandra Dip Rai to the Central Department of Economics, Faculty of Humanities and Social Sciences, Tribhuvan University, in partial fulfilment of the requirements 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 master degree.

Thesis Committee:

Prof. Dr. Ram Prasad Gyanwali Head of Department

Prof. Dr. Kamal Raj Dhungel External Examiner

> Prof. Dr. Komal Dhital Thesis Supervisor

Date: March 3, 2014

LETTER OF RECOMMENDATION

This thesis entitled "Socio-Economic Impact of Thotnekhola Mini Hydropower Project; A Case Study of Okhaldhunga District" has been prepared by Mr. Chandra Dip Rai under my supervision. I hereby recommend this thesis for examination by the Thesis Committee as a partial fulfilment of the requirements for the Degree of Master of Arts in Economics.

> Dr. Komal Dhital Professor Central Department of Economics Tribhuvan University Kirtipur, Kathmandu Nepal

Date: February 7, 2014

ACKNOWLEDGEMENT

This research report is prepared as a thesis in the partial fulfillment of the requirement for the masters' degree in economics. The basis objective of the study is to identify the socio-economic impact of the Thotnekhola mini hydro-power project of Okhaldhunga district.

This thesis would never have been completed without the generous help of many individuals. First of all, I would like to express my heartily gratitude to my supervisor Prof. Dr.Komal Dhital, Professor central department of Economics for his considerable care, exhortative and substantial time extended to me daring whose course of this research.

I am highly indebted to Prof. Dr. Ram Prasad Gyanwali, head of department for his encouragement and valuable suggestions to undertake the present study.

I have no words to express my sincere gratitude to my father Subash Chandra Rai and mother Bhim shova Rai. I am also obliged to depart staff and other person like eld Brother BiswojitRai and little brother Prem for their supporting my study. I am always debtful to my wife Nirmala Rai (Nimy) who always ready to help me to my every task. She is very grateful to me to inspire me towards my study. She is only a person who helps me to reach in this position. I am also thankful to my friends Surendra, MouliRaj, Shashikala, Krishna, Birendra, Jeebanata, Iswor, Chirinjibi, Damini, Arati, Amin for their direct and indirect help and good suggestions.

I am very thankfull to my uncles (mama) Naresh Rai, Shree kumar Rai and Gyanu Rai for their help and good suggestions in my study.

At last, It would be patiently observed that this little contribution would help in filling up the gap in this sector providing as tonic to the researcher and policy maker. February, 2014

TABLES OF CONTENTS

Page

RECOMMENDATION LETTER

APPROVAL SHEET ACKNOLEDGEMENTS

TABLES OF CONTENTS LIST OF TABLES LIST OF FIGURES

ABBRIVIATIONS

CHA	CHAPTER I: INTRODUCTION	
15		
1.1	Background	1
1.2	Statement of the Problem	7
1.3	Objectives of the Study	10
1.4	Significant of the Study	10
1.5	Research Methodology	13
1.5.1	Method of Data Collection	13
1.5.2	Sample Selection	13
1.5.3	Data Processing	14
1.5.4	Nature of Data	14
1.5.5	Data Analysis	14
1.6	Limitation of the Study	14

CHAPTER II: REVIEW OF THE LITERATURE

15-32

Empirical Review

2.2

2.1	Conceptual Review	16
-----	-------------------	----

19

CHAPTER III: POTENTIALITY AND PRESENT STATUS OF HYDROPOWER IN NEPAL

33-40

3.1	Introduction	33
3.2	Potentiality of Hydropower in Nepal	34
3.2.1	Theoretical Potentiality	34
3.2.2	Technical Potentiality	36
3.2.3	Economical Potentiality	38
3.3	Present Status of Hydropower	39

CHAPTER IV: DATA ANALYSIS AND MAJOR FINDING 41-65

4.1	Introduction of the Study	41
4.2	Socio Economic Impacts	41
4.2.1	Caste/ Ethnicity	42
4.2.2	Change in Living Standard	43
4.2.3	People Perception about the Income in their Income after MHP	44
4.2.4	Agriculture Product Promotion due to MHP	46
4.2.5	Status of Sanitation	47
4.2.6	Effect in Drinking Water	48
4.2.7	Establishment of Industries	49
4.2.8	Status of Education	51
4.2.8.	1 Effects on Children Study Habits after Electricity	51

4.2.8.2 Change in Children's Daily Activities Using Electronic

	Instruments (TV/Radio/Computer)	52	
4.2.9	O Condition of Environmental Pollution on the Constructed Area		
	after MHP by Project	53	
4.2.10) Trend of Migration	55	
4.3	Attitude of Community towards MHP	56-	
65			
4.3.1	Social and Cultural Affect	56	
4.3.2	Feeling /Concept of People	58	
4.3.3	Interest of Loan	60	
4.3.4	Operation of Schedule	61	
4.3.5	People's Responsibility	62	
4.3.6	Women's Participation	64	
СНА	PTER V: SUMMERY, CONCLUSION		
	AND RECOMMENDATIONS		
	66-74		
5.1	Summery	66	
5.2	Conclusion	69	
5.3	Recommendations and Suggestions	71	
BIBI	LIOGRAPHY	73	

APPENDIX	78
QUESTIONAIRE	82

ABBREVIATION

ADB/N	:	Agriculture Development Bank of Nepal
AEPC	:	Alternative Energy Promotion Centre
BOOT	:	Built Own Operate and Transfer
CBS	:	Central Bureau of Statistics
CDR	:	Central Development Region
EDR	:	Eastern Development Region
ES	:	Economic Survey
ESAP	:	Energy Sector Assistance Program
FY	:	Fiscal Year
FWDR	:	Far West Development Region
GDP	:	Gross Domestic Production
GON	:	Government of Nepal
GWH	:	Giga Watt Hour
ICIMOD	:	International centre for Integrated Mountain
		Development

KW	:	Kilo Watt
MHP	:	Mini Hydro Power
MHPs	:	Micro Hydro Plants
MPPUs	:	Multi Purpose Power Units
MW	:	Mega Watt
NEA	:	Nepal Electricity Authority
NPC	:	National Planning Commission
PDF	:	Power Development Fund
REDP	:	Rural Energy Development Program
SHDB	:	Small Hydro Development Board
UK	:	United Kingdom
UNDP	:	United Nation Development Program
USA	:	United State America
VDC	:	Village Development Committee
WDR	:	West Development Region
WECS	:	Water and Energy Commission Secretariat
WTO	:	World Trade Organization

LIST OF TABLES

σ	ρ
š	v
0	-

Table 3.1	: Basin wise Theoretical Potentiality of Hydropower in Nepal
35	
Table 3.2	: Basin wise Technical Potentiality of Hydropower in Nepal
37	
Table 3.3	: Basin wise Economical Potentiality of Hydropower in Nepal
38	
Table 4.1	: Distribution of Respondents by Cast/Ethnicity
42	
Table 4.2	: Status of Using the Electrical Facilities after MHP
43	
Table 4.3	: People's Perception about the Income in their Income
	after MHP
45	
Table 4.4	: Agriculture Product Promotion due to MHP
46	
Table 4.5	: Status of Sanitation after Electricity
47	
Table 4.6	: Effect of Project in Drinking Water Supply
49	

Table 4.7	: Establishment of Industries after Electricity
50	
Table 4.8	: Effects on Children Study Habits after Electricity
51	
Table 4.9	: Change in Children's Activities Using Electronic
	Instruments (TV/Radio/Computer)
53	
Table 4.10	: Type of Pollution Occurred after Project
54	
Table 4.11	: Trend of Migration after Project
55	
Table 4.12	: Effect of Plant in Social and cultural Properties
56	
Table 4.13	: Factor Affected by Project
57	
Table 4.14	: Feeling of People towards Electricity
59	
Table 4.15	: Feeling of Respondents towards Interest Rate of the Loan
60	
Table 4.16	: Status of Operation Schedule in Power House
61	
Table 4.17	: Concept of People towards Maintenance Responsibility
	63
Table 4.18	: Status of Women's Participation in Maintenance and
	Use of Electricity
	64

LIST OF FIGURES

Figure 3.1	: Basin wise Theoretical Potentiality of Hydropower in Nepal
36	
Figure 3.2	: Basin wise Technical Potentiality of Hydropower in Nepal
37	
Figure 3.3	: Basin wise Economical Potentiality of Hydropower in Nepal
39	
Figure 4.1	: Distribution of Respondents by Cast/Ethnicity
42	
Figure 4.2	: Status of Using the Electrical Facilities after MHP
44	
Figure 4.3	: People's Perception about the Income in their Income
	after MHP
45 Fig	gure 4.4 : Agriculture Product Promotion due to MHP
	46
Figure 4.5	: Status of Sanitation after Electricity
48	
Figure 4.6	: Effect of Project in Drinking Water Supply
49	
Figure 4.7	: Effects on Children Study Habits after Electricity
52	
Figure 4.8	: Type of Pollution Occurred after Project
54	
Figure 4.9	: Trend of Migration after Project
55	
Figure 4.10	: Effect of Plant in Social and cultural Properties
57	
Figure 4.11	: Factor Affected by Project
58	

Pa

ge

Figure 4.12 : Feeling of People towards Electricity

59

- Figure 4.13 : Feeling of Respondents towards Interest Rate of the Loan 60
- Figure 4.14 : Status of Operation Schedule in Power House 62
- Figure 4.15 : Concept of People towards Maintenance Responsibility 63
- Figure 4.16 : Status of Women's Participation in Maintenance and Use of Electricity

64