

**INDIGENOUS KNOWLEDGE AND PRACTICE IN
IRRIGATION MANAGEMENT SYSTEM
(A CASE STUDY OF THE CHANDRAPUR KULO)**



A Thesis

Submitted to

Central Department of Rural Development

Faculty of Humanities and Social Sciences

Tribhuvan University

Kirtipur, Kathmandu, Nepal

**In Partial Fulfillment of the Requirement for
the Master of Arts in Rural Development**



By

Bipana Devkota

Tribhuvan University

T.U. Registration No.: 31196-95

Second Year Roll No.: 3097

August 2006

LETTER OF RECOMMENDATION

This is to certify that Mrs. Bipana Devkota has completed her dissertations entitled "Indigenous Knowledge and Practice in Irrigation management System: A Case Study of the Chandrapur Kulo from Satakhani VDC, Surkhet District" under my supervision and guidance. I, therefore, recommend this dissertation for final approval and acceptance.

Tulasi Sharan Sigdel

Lecturer

Central Department of Rural Development

Faculty of Humanities and Social Sciences

Tribhuvan University

Kirtipur, Kathmandu

Nepal

Date:

LETTER OF ACCEPTANCE

The dissertation entitled "Indigenous Knowledge and Practice in Irrigation Management System: A Case Study of the Chandrapur Kulo of Satakhani VDC, Surkhet District, Nepal" Prepared and submitted by Mrs. Bipana Devkota has been accepted as the partial fulfillment of the requirements for the Degree of Master's of Humanities & Social Sciences in Rural Development.

Approved by

Head of Department

Pro. Dr. Pradeep Kumar Khadka

Supervisor

Tulasi Sharan Sigdel
(Asst. Lecturer)

External Examinor

Umesh Acharya

(Lecturer)

ACKNOWLEDGEMENT

First of all, I would like to express my sincere gratitude to my research supervisor Mr. Tulsi Sharan Sigdel Department of Rural Development University Campus, T.U., Kirtipur of his constant guidance and support.

Similarly, I would like to express my sincere gratitude to Prof. Dr. Pradeep Kumar Khadka, Head of CDRD, T.U., and Chair Person of the advisory committee for his consistent encouragement.

I cannot resist myself without extending my gratitude to all my respected lectures and personal of CDRD, T.U. for their co-operation and assistance for this work and other suggestion to study. I would also like to appreciate to different organizations, institutions, all the respondents CHANDRAPUR Surkhet.

I would like to express my sincere gratitude to my mother Sushila Devkota, Father Dr. Padam Lal Devkota, Grand Mother Hira Devi Dhamala, Father-in-law Ramchandra Dhakal, Mother-in-law Ratna Dhakal for their continuous encouragement and help in every step to my life up to this level.

I most respectfully would like to thank my husband Aishwarya Prasad Dhakal for his continuous encouragement and kind enough to support me to accomplish this dissertation in time.

I would like to thank my brother-in-law Govinda Dhakal, sister Kalpana, brothers Sushil and Sunil, my daughter yaliza Dhakal, sister-in-law Anju Dhakal. Who were kind co-operation during my study.

Bipana Devkota

ABSTRACT

This study on Indigenous Knowledge and Practice in Irrigation Management System had been taken a case study of the Chandrapur Kulo, Satakhani VDC of Surkhet district.

Mainly agricultural production in Nepal depends on monsoon rains while its uncertainly has made the low productivity. Hence, irrigation has proved to be one of the most importances for agricultural production.

Irrigation includes all open action or practices in artificially applying water to the soil for growing crops. Irrigation management system is the process of the supplying the necessary amount of water artificially for the agricultural production or plants.

This study through light to investigate the indigenous knowledge and practice of the local people on the process of adaptation in the local environment adopting fundamental and empirical skills, methods and technology.

In this study both secondary and primary sources were used for the purpose of data collection. Questionnaire and checklist were used for primary data collection. This study is a micro-level study of the Chandrapur Kulo FMIS with the emit approach and on the process of field study, census was used to select the respondents for the analysis of holistic aspects of the universe, old aged, knowledgeable and intellectual persons were selected for providing insights and views in to the irrigation management system. The methodologies applied to analyze various activities; interview, operational variables and indicators, household census, questionnaire, focus group discussions and data analysis.

The local people using empirical knowledge, skills, methods and technology for subsistence in the local environment have maintained the system. The system has been acknowledged on the socio-economic and the socio-cultural identities having objective to fulfill the food requirements for livelihood.

CONTENT

Page No.

RECOMMENDATION

APPROVAL LETTER

ACKNOWLEDGEMENT

ABSTRACT

ACRONYMS

GLOSSARY OF THE LOCAL TERMS

CHAPTER ONE : INTRODUCTION	1
1.1 Background	1
1.2 Statement of the problem	4
1.3 Objectives of the study	8
1.4 Significance of the study	9
1.5 Organization of the study	9
CHAPTER TWO : LITERATURE REVIEW	12
2.1 History of irrigation management	13
2.2 Indigenous knowledge and practice	13
2.3 Review of previous studies	15
2.4 Indigenous irrigation management systems	19
CHAPTER THREE: RESEARCH METHODOLOGY	24
3.1 Selection of the study area	24
3.2 Research design	25
3.3 Nature and Sources of data	25
3.4 Household Census	29

3.5 Data collection techniques	29
3.5.1 Questionnaire schedule	29
3.5.2 Key information interview	29
3.5.3 Focus group discussion (FGD)	30
3.5.4 Observation	30
3.5.5 Social mapping	31
3.5.6 Data analysis	31
3.5.7 Limitations of the study	32

CHAPTER FOUR : PHYSICAL SETTING AND SOCIO-ECONOMIC CHARACTERISTICS OF IRRIGATION USERS 34

4.1 Physical setting of the study area	34
4.1.1 Location of the study area	34
4.1.2 Topography	34
4.1.3 Environmental aspect	35
4.1.3.1 Climate	35
4.1.3.2 Population	35
4.1.3.3 Land use pattern	35
4.2 Socio-economic characteristics of water user groups	36
4.2.1 Population distribution and composition	36
4.2.2 Ethnic composition of the kulo users	37
4.2.3 Educational Status	38
4.2.4 Types of family	40
4.2.5 Caste wise occupation	42
4.2.6 Land Status	44
4.2.7 Cropping pattern	46
4.2.8 Variety of Paddy	48
4.2.9 Food sufficiency	49
4.2.10 Types and number of livestock species	50

4.2.11 Indigenous tools/implements and natural resources	51
--	----

CHAPTER FIVE : INDIGENOUS IRRIGATION MANAGEMENT SYSTEM 53

5.1 Water use activities	55
5.1.1 Water acquisition	55
5.1.2 Water allocation	56
5.1.3 Drainage	58
5.2 Control structure activities	59
5.2.1 Design	59
5.2.2 Construction	60
5.2.3 Operation	61
5.2.4 Maintenance	62
5.3 Organizational activities	63
5.3.1 Decision making	64
5.3.2 Resource Mobilization	65
5.3.2.1 Local materials and technology	66
5.3.2.2 Natural resource management system	67
5.3.2.3 Human resource	68
5.3.3 Communication	69
5.3.4 Conflict management	70

CHAPTER SIX : SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 73

6.1 Summary	73
6.2 Conclusions	76
6.3 Recommendations	77

BIBLIOGRAPHY

ANEX

LIST OF TABLE

Table 1	Variables, indicators and tools/techniques	27
Table 2	Population composition by sex	36
Table 3	Caste wise distribution of the kulo users	37
Table 4	Caste wise educational level	39
Table 5	Caste wise family size	41
Table 6	Case wise occupational level of the kulo users	42
Table 7	Land holding pattern of the kulo users	45
Table 8	Cropping calendar	47
Table 9	Variety of paddy	48
Table 10	Well-being status	49
Table 11	Types and numbers of livestock	50
Table 12	Indigenous tools/implements and natural resources	51

LIST OF FIGURE

Physical Structure Of Chandrapur Kulo	28
Modality Of Indigenous Irrigation System	72

ACRONYMS

CBS	-	Central Bureau of Statistics
DIO	-	District Irrigation Office
DOI	-	Department of Irrigation
ERIP	-	East Rapti Irrigation Project
FGDs	-	Focus Group Discussions
FMIS	-	farmer Managed Irrigation System
GDP	-	Grass Domestic Products
GI	-	Group Informants
GNP	-	Gross National Products
IIMI	-	International Irrigation Management Institute
KI	-	Key Informants
MOWR	-	Ministry of Water Resources
NDP	-	Nepal District Profile
NGOs	-	Non-government Organizations
NIA	-	National Irrigation Administration
NPC	-	National Planning Commission
PRA	-	Rapid Rural Appraisal
SFMIS	-	Small Farmer Managed Irrigation System
TIP	-	Thana Irrigation Project
VDC	-	Village Development Committee
WECS	-	water and Energy Commission Secretariat
WUA	-	Water Users' Association
WUCs	-	Water Users' Committees