

THESIS SUPERVISORS



Dr. Goutam Bairagi

Professor and Head, Department of Civil Engineering,
Jalpaiguri Government Engineering College, Jalpaiguri, District Jalpaiguri,
West Bengal, India.

*Professor and Head of the Department
of Civil Engineering
Jalpaiguri Government Engineering College
JALPAIGURI*

Dr. Subir Sarkar

Professor and Head, Department of Geography and Applied Geography,
University of North Bengal, Raja Rammohunpur, Siliguri, District Darjeeling,
West Bengal, India.

This There is believed to be believed that... common public, particularly the poor

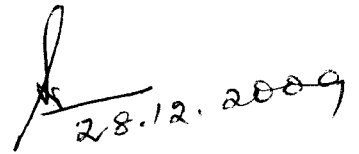
CERTIFICATE

This is to certify that the thesis “Addressing Poverty Through Appropriate Local Level Technologies – A case study of Jalpaiguri District” being submitted by Shri. A.Subbiah to University of North Bengal, Raja Rammohunpur, Siliguri, District Darjeeling, West Bengal, India is a bonafide original piece of investigation and record of research carried out by him under our guidance and supervision.

The thesis is fit for evaluation.



Dr. Goutam Bairagi
Professor and Head,
Department of Civil Engineering,
Jalpaiguri Government Engineering
College, Jalpaiguri,
District Jalpaiguri,
West Bengal,
India.



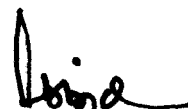
Dr. Subir Sarkar
Professor and Head,
Department of Geography and
Applied Geography,
University of North Bengal,
Raja Rammohunpur, Siliguri,
District Darjeeling,
West Bengal,
India.

*Professor and Head of the Department
of Civil Engineering
Jalpaiguri Government Engineering College
JALPAIGURI*

DECLARATION

The material embodied in this thesis “Addressing Poverty Through Appropriate Local Level Technologies – A case study of Jalpaiguri District” being submitted by Shri. A.Subbiah to University of North Bengal, Raja Rammohunpur, Siliguri, District Darjeeling, West Bengal, India is original and has not been submitted in part or full for any other diploma or degree of any university including associateship, fellowship or any other similar title or recognition. The work of other authors or any other organisations / agencies wherever made use of, in this study, has been duly acknowledged at relevant places.

December 2009



A. Subbiah

LIST OF TABLES

	Page
Chapter 1	
Table 1.1 Matrix of Quantitative and Qualitative Indicators	7
Chapter 3	
Table 3.1 Soil Conservation in Jalpaiguri District	38
Table 3.2 Methodological Framework for the Identification of Backwardness Index	51
Table 3.3 SC/ST Population / Primitiveness in Gram Panchayats	52
Table 3.4 BPL Population in Gram Panchayats	58
Table 3.5 Forest Villages and Closed Tea Gardens in Gram Panchayats	64
Table 3.6 Accessibility Status of Gram Panchayats in Jalpaiguri District	69
Table 3.7 Infrastructure Deficiency in Gram Panchayats	75
Table 3.8 Aggregate of Backwardness Indices of Gram Panchayats	84
Chapter 4	
Table 4.1 Field Areas for Fuel Efficient Irrigation Pump	95
Table 4.2 Field Areas for Water Harvesting Structure	101
Table 4.3 Field Areas for Field Channel	103

Chapter 5

Table 5.1	People's Organisations	116
Table 5.2	Comparative Analysis of Effectiveness of the Farmers' Organisations	118
Table 5.3	Self Help Groups	122
Table 5.4	Sector wise Beneficiary Groups under RSVY	126

Chapter 7

Table 7.1	Beneficiary Status under Fuel Efficient Pump and Dug Well Scheme	141
Table 7.2	Socio-Economic Impact using Bearing Fitted Potter Wheels	149
Table 7.3	Land Holdings and Income using Bearing Fitted Potter Wheels	149
Table 7.4	Socio-Economic Impact using Motorised Spinning Machines	150
Table 7.5	Beneficiary Status under Eri Host Plantation	150
Table 7.6	Beneficiary Status under Construction of Eri Rearing House	151
Table 7.7	Impact on Role of Technologies in Poverty Alleviation through People's Organisations	153

LIST OF FIGURES

	Page
Chapter 1	
Figure 1.1 Enabling Tools for Poverty Alleviation	5
Chapter 3	
Figure 3.1 Correlation between SC Population and Backwardness	56
Figure 3.2 Correlation between ST Population and Backwardness	58
Figure 3.3 Correlation between BPL Population and Backwardness	62
Figure 3.4 Correlation between Remoteness and Backwardness	72
Figure 3.5 Correlation between Education Infrastructure and Backwardness	74
Figure 3.6 Correlation between Infrastructure and Backwardness	82
Chapter 4	
Figure 4.1 Fuel Efficient Irrigation Pump	94
Figure 4.2 Stone Hammer Drilling Arrangement	97
Figure 4.3 Stone Hammer Drill Bit	98
Figure 4.4 Cross Section of a Field Channel	102
Figure 4.5 A Typical Topography of Field Channels	103
Figure 4.6 Bearing Fitted Potter Wheel Design	105
Figure 4.7 Cross Section of Bearing Fitted Potter Wheel	105
Figure 4.8 Motorised cum Pedal Operated Spinning Machine	108
Chapter 5	
Figure 5.1 Tools for Sustainable Development	114
Figure 5.2 Caste Composition of Beneficiary Groups	127
Figure 5.3 Family Size Composition of Beneficiary Groups	127

Figure 5.4	Land Holding Pattern of Beneficiary Groups	128
Figure 5.5	Family Income Pattern of Beneficiary Groups	128
Figure 5.6	Sector wise Distribution of APL and BPL Families	129
Figure 5.7	Sector wise Caste Composition of Beneficiary Groups	129
Figure 5.8	Sector wise Land Holding Composition of Beneficiary Groups	130
Figure 5.9	Sector wise Family Income of Beneficiary Groups	130

Chapter 7

Figure 7.1	Beneficiary Status in Different Schemes under Agriculture and Soil Conservation Sector – Caste wise	142
Figure 7.2	Beneficiary Status in Different Schemes under Agriculture and Soil Conservation Sector – Poverty Line wise	142
Figure 7.3	Beneficiary Status under the Fuel Efficient Pump and dug well Schemes – Caste and Poverty Line wise	142
Figure 7.4	Beneficiary Family Size under Minor Irrigation Schemes	148

LIST OF MAPS

		Page
Chapter 1		
Map 1.1	Administrative Map of Jalpaiguri District	11
Map 1.2	Gram Panchayats Map of Jalpaiguri District	12
Chapter 3		
Map 3.1	Gram Panchayat wise Primitiveness Index of Jalpaiguri District	57
Map 3.2	Gram Panchayat wise Economic Backwardness Index of Jalpaiguri District	63
Map 3.3	Gram Panchayat wise Remoteness Index of Jalpaiguri District	73
Map 3.4	Gram Panchayat wise Infrastructure Deficiency Index of Jalpaiguri District	83
Map 3.5	Gram Panchayat wise Backwardness Index of Jalpaiguri District	90

LIST OF PHOTOGRAPHS

		Page
Chapter 4		
Photo 4.1	Water Harvesting at Murti River Side	100
Photo 4.2	A Beneficiary group of Eri-spinning	111
Chapter 7		
Photo 7.1	Water Harvesting Structure at Latabari	153
Photo 7.2	Drainage and Irrigation Canal at Dhupguri	153
Photo 7.3	Composed Pit at Kharibari	154
Photo 7.4	Field Channel at Manikganj	154
Photo 7.5	Renovation of Irrigation Channel at Chanabandh	154
Photo 7.6	Community Orchard at Kathalguri	154
Photo 7.7	Mushroom Cultivation at Kathalguri	155
Photo 7.8	Self Help Group at Ramsai	155
Photo 7.9	Community Dugwell at Dheklapara	155
Photo 7.10	Eri-host Plantation at Salkumar	155
Photo 7.11	Eri-rearing House at Salkumar	156
Photo 7.12	Mulberry Rearing House at Barodighi	156
Photo 7.13	Soil Conservation Structure at Murti Forest	156
Photo 7.14	Village Woodlots at Chawaphelli	156
Photo 7.15	Craftsmen at Work in Sadar	157
Photo 7.16	Low Cost Workshed at Magurmari	157

LIST OF APPENDICES

		Appendix	Page
1	Abbreviations and Terminologies	I	173
2	Base Line Survey Form	II	177
3	People's Organisations in Jalpaiguri District	III	179
4	Socio-Economic Impact Assessment Questionnaire Form	IV	183
5	Sub-division wise/Block wise GPs' Backwardness Index	V	187
6	Model Estimate of Components in a Socio-Economic Scheme	VI	192
7	Model Engineering Estimate for a Field Channel	VII	194
8	Forest Map of Jalpaiguri District	VIII	196
9	Tea Garden Map of Jalpaiguri District	IX	197

Acknowledgement

I express my deepest gratitude and indebtedness to my thesis Supervisors Dr.Subir Sarkar, Professor and Head, Department of Geography and Applied Geography, University of North Bengal and Dr.Goutam Bairagi, Professor and Head, Department of Civil Engineering, Jalpaiguri Government Engineering College, Jalpaiguri. Their valuable guidance, constant encouragement and active involvement made this thesis possible.

It is needless to state that doing this research and writing this thesis has only been possible through the support of lots of different people. It is nearly impossible to thank everybody separately here without forgetting to mention anybody.

I express my gratitude to Dr. Rajeshwar Mishra, President, Centre for Development of Human Initiatives, Jalpaiguri for his valuable suggestions. I express my sincere thanks to the District Planning Officer, Jalpaiguri district and his team of staff for their timely assistance during the field work and research in the area of study, that is, Jalpaiguri District as a whole.

Also special mention should be made about the field support provided by various Non Governmental Organisations which are doing excellent work in Jalpaiguri district for enhancing the quality of life of the poor.

Finally, I am deeply indebted to my mother who has always blessed me with endless love and affection. My brother, whose inspiration and guidance helped me in completing this thesis, deserves special mention. I am also thankful to my wife and my children for their constant support and for having to put up with, lot of patience and sacrifice, as always.

December, 2009

A. SUBBIAH

Preface

While reading this thesis, one may realise that, it has been neither written by a sociologist nor by an engineer, but by a Socio-Engineer. It is the combination of different fields of practice that allows interesting stand points and perspectives in this thesis.

Redressal of poverty is attempted by usage of appropriate local level technologies in the study area, that is, Jalpaiguri district. The local level technologies have been so identified, for these are suitable to adopt effectively. These local level technologies are helpful in improving the work or yield, which would be directly affecting the Income of local people, Quality of life, Welfare of marginalised sections including Scheduled Castes and Scheduled Tribes people, Women empowerment, Alternative livelihood etc. But it is strongly believed that these two elements namely **Poverty and Technology can be better interfaced through people's organisations in their respective areas of functioning.**

What I mean people's organisation is that a few number or may be bigger number of people, whether able bodied or not, form certain functional groups to take up an economic and / or social activity in such a way that it may result in the positive side of the factors such as income etc. The appropriate local level technologies are better absorbed to increase the income level and to alleviate poverty to a larger extent. In this thesis, the poverty pockets have been broadly identified by evolving a backwardness index based on certain absolute parameters and the appropriate local level technologies have been delved upon in the area of study. It has also been attempted to analyse the functioning of various people's organisations in the study area and for drawing conclusions, a matrix has been framed showing interface of these three major elements that is **Poverty, Technology and People's Organisations and their Interface** on happy parameters.

I have also attempted to reflect on certain areas, which I came across during this research. As a result of this, I have tried to combine different fields of knowledge; what initially appeared to be the technical one, when placed in sociological context to address a particular major problem i.e. poverty, resulted in some interesting new insights and the same is presented vividly in this thesis.