

## TABLE OF CONTENTS

<b>Acknowledgements</b>	<b>iii</b>
<b>Abstract</b>	<b>v</b>
<b>List of Boxes</b>	<b>xii</b>
<b>List of Figures</b>	<b>xii</b>
<b>List of Maps</b>	<b>xii</b>
<b>List of Photographs</b>	<b>xiii</b>
<b>List of Tables</b>	<b>xiii</b>
<b>List of Abbreviations</b>	<b>xix</b>
<b>Deutsche Zusammenfassung (German Summary)</b>	<b>I</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background of research	1
1.2 Research objectives	4
1.3 Research questions	5
1.4 Methodology and data collection	6
1.4.1 Case selection	6
1.4.2 Research approaches	8
1.4.3 Methods of data collection	.....10
1.4.3.1 Qualitative method	10
1.4.3.2 Quantitative method	11
1.4.4 Validity of collected data	16
1.4.5 The constraints of methods	16
1.5 Research framework	19
1.6 Structure of the dissertation	21
<b>2 Policy Problem Identification: Access to Electricity in Remote Rural Areas of Western China</b>	<b>24</b>
2.1 Policy problem identification	24
2.2 Electricity access for human development	26
2.3 Electricity access in China	30
2.4 Policy problem: Electricity access in remote rural areas of western China	34
2.4.1 The triggering factor: Political leaders	34
2.4.2 The interests of the political leaders: Social stability	36
2.5 Policy problem identification: Renewable energy-based rural electrification programs	39

2.5.1 Geographic limitations	39
2.5.2 Government's national development plan to promote renewable energy	42
2.6 Brightness Program	49
2.7 International cooperation	50
2.8 Township Electrification Program	52
<b>3 Policy Formulation and Adoption: The 'Township Electrification Program'</b>	<b>54</b>
3.1 Policy formulation and policy adoption	54
3.2 Political framework of People's Republic of China	55
3.2.1 Development of China's contemporary political structure	55
3.2.2 Political framework	58
3.2.3 Legislative process and policy making process	66
3.2.3 Characteristics of the political framework	70
3.3 Policy formulation of the 'Township Electrification Program'	71
3.3.1 The actor	71
3.3.2 The process	72
3.4 Policy adoption of the 'Township Electrification Program'	74
3.4.1 The actor	74
3.4.2 The process	75
3.5 The pros and cons of 'centralized public sector energy initiatives'	76
3.5.1 The pros	76
3.5.2 The cons	77
<b>4 Policy Implementation of the 'Township Electrification Program' in Remote Rural Areas of Western China</b>	<b>79</b>
4.1 Policy implementation	79
4.2 Policy implementation of the 'Township Electrification Program' in remote rural areas of western China: An overview	80
4.3 Policy implementation of the 'Township Electrification Program' in the two selected townships	84
4.3.1 Policy implementation of the 'Township Electrification Program' in the two selected provinces: An overview	85
4.3.1.1 Qinghai province	85
4.3.1.2 Tibet AR	87
4.3.2 Policy implementation of the 'Township Electrification Program' in the two selected townships	88

4.3.2.1 Saierlong Township	88
4.3.2.2 Namcuo Township	93
4.3.3 Current energy situation in the two selected townships	97
4.3.3.1 Lighting	97
4.3.3.2 Entertainment and information	99
4.3.3.3 Cooking	102
4.3.3.4 Heating	103
4.3.3.5 Transportation	105
4.3.3.6 Overall evaluation of current energy situation	106
4.4 Implementation problems of the ‘Township Electrification Program’ in the two selected townships	106
4.4.1 Technical aspect	108
4.4.2 Financial aspect	109
4.4.3 Human resource aspect	117
4.4.4 Institutional aspect	123
4.5 Overall evaluation of policy implementation of the ‘Township Electrification Program’ in the two selected townships	126
<b>5 Policy Evaluation I – Policy Output of the ‘Township Electrification Program’ in the Two Selected Townships: Electricity Supply with Solar Energy</b>	<b>128</b>
5.1 Policy evaluation	128
5.2 Policy outputs	134
5.2.1 Electricity supply	134
5.2.1 Electricity service	135
5.3 Evaluation of policy output: Electricity supply	137
5.3.1 Policy output	137
5.3.2 Evaluation	140
5.3.3 Discussion: How can policy makers estimate sufficient electricity supply for households in remote rural areas?	141
5.4 Evaluation of policy output: Electricity service	148
5.4.1 Policy output	148
5.4.2 Evaluation	151
5.4.3 Discussion: How can ‘reliable’ electricity service be achieved in remote rural areas?	153
5.5 Overall evaluation of policy outputs of the ‘Township Electrification Program’	154

<b>6 Policy Evaluation II – Policy outcome of the ‘Township Electrification Program’ in the Two Selected Townships: A Shift from Traditional Energy Sources to Renewable Energy Sources</b>	<b>155</b>
6.1 Policy outcomes	155
6.1.1 Direct policy outcome: Changes in energy use pattern	155
6.1.2 Indirect policy outcomes	157
6.2 Evaluation of direct policy outcome: Changes in energy use pattern	159
6.2.1 Direct policy outcome	159
6.2.2 Evaluation	163
6.2.3 Discussion: How come electricity from solar PV power stations did not replace traditional energy sources in the two selected townships?	163
6.3 Evaluation of indirect policy outcomes	164
6.3.1 Indirect policy outcomes	164
6.3.2 Evaluation	169
6.4 Overall evaluation of policy outcomes of the ‘Township Electrification Program’	170
<b>7 Policy Evaluation III - Policy Impacts of the ‘Township Electrification Program’ in the Two Selected Townships: Socio-economic Benefits for Households, Township Development, and Environmental Impact</b>	<b>171</b>
7.1 Policy impacts	171
7.1.1 Improvement of socio-economic benefits for households	172
7.1.2 Improvement of township development	175
7.1.3 Environmental impact	176
7.2 Evaluation of policy impact: Improvement of socio-economic benefits for households	178
7.2.1 Policy impact	178
7.2.2 Evaluation	180
7.2.3 Discussion: Why did the Township Electrification Program fail to have a significant impact on economic benefits for the households in the two selected townships?	184
7.3 Evaluation of policy impact: Improvement of township development	185
7.3.1 Policy impact	185
7.3.2 Evaluation	186
7.3.3 Discussion: Why did the Township Electrification Program only significantly contribute to the improvement of education services in the two selected townships?	191
7.4 Evaluation of policy impact: Environmental impact	192

7.4.1 Policy impact	192
7.4.2 Evaluation	193
7.4.3 Discussion: Why did the Township Electrification Program fail to have significant environmental impacts in the two selected townships?	194
7.5 Overall evaluation of policy impacts of the ‘Township Electrification Program’	194
<b>8 Conclusions and Recommendations</b>	<b>196</b>
8.1 Summary of research findings	196
8.2 Conclusions	202
8.3 To what extent the Township Electrification Program achieves sustainable energy supply in remote rural areas of western China?	203
8.4 Policy recommendations for the Chinese government	206
8.5 Policy implications for other developing countries	211
8.6 Recommendations for future research	214
<b>References</b>	<b>216</b>
<b>Appendix</b>	<b>238</b>
Appendix A: Questionnaire	238
Appendix B: List of Household Code Mentioned in The Dissertation	252