



Faculty of Social Sciences and Humanities

**Rajang Riverine Communities in Sarawak: Living and Coping with
Disasters**

Iris Ng Pei Yi

**Master of Social Science
2018**

UNIVERSITI MALAYSIA SARAWAK

Grade: _____

Please tick (✓)

Final Year Project Report

Masters

PhD

DECLARATION OF ORIGINAL WORK

This declaration is made on the 1st day of October 2018.

Student's Declaration:

I Iris Ng Pei Yi, 15020361, Faculty of Social Sciences and Humanities hereby declare that the work entitled, **Rajang Riverine Communities in Sarawak: Living and Coping with Disasters** is my original work. I have not copied from any other students' work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

1st October 2018

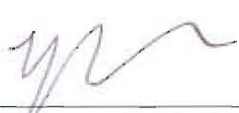


Iris Ng Pei Yi (15020361)

Supervisor's Declaration:

I Elena Gregoria Chai Chin Fern hereby certifies that the work entitled **Rajang Riverine Communities in Sarawak: Living and Coping with Disasters** was prepared by the above named student, and was submitted to the Faculty of Social Sciences and Humanities as a full fulfillment for the conferment of Master of Social Science, and the aforementioned work, to the best of my knowledge, is the said student's work

Received for examination by: _____


(Elena Gregoria Chai Chin Fern)

Date: _____

1st October 2018

Dr. Elena Chai
Pensyarah Kanan
Fakulti Sains Sosial
Universiti Malaysia Sarawak
94300 Kota Samarahan

I declare this Project/Thesis is classified as (Please tick (√)):

- CONFIDENTIAL**(Contains confidential information under the Official Secret Act 1972)*
- RESTRICTED** (Contains restricted information as specified by the organisation where research was done)*
- OPEN ACCESS**

Validation of Project/Thesis

I therefore duly affirmed with free consent and willingness declared that this said Project/Thesis shall be placed officially in the Centre for Academic Information Services with the abide interest and rights as follows:

- This Project/Thesis is the sole legal property of Universiti Malaysia Sarawak (UNIMAS).
- The Centre for Academic Information Services has the lawful right to make copies for the purpose of academic and research only and not for other purpose.
- The Centre for Academic Information Services has the lawful right to digitise the content to for the Local Content Database.
- The Centre for Academic Information Services has the lawful right to make copies of the Project/Thesis for academic exchange between Higher Learning Institute.
- No dispute or any claim shall arise from the student itself neither third party on this Project/Thesis once it becomes sole property of UNIMAS.
- This Project/Thesis or any material, data and information related to it shall not be distributed, published or disclosed to any party by the student except with UNIMAS permission.

Student's signature



(1st October 2018)

Supervisor's signature:



(1st October 2018)

Current Address:

7, Jalan Sri Mewah 17, Taman Sri Mewah 3,
86200 Simpang Renggam, Johor Darul Takzim.

Notes: * If the Project/Thesis is **CONFIDENTIAL** or **RESTRICTED**, please attach together as annexure a letter from the organisation with the period and reasons of confidentiality and restriction.

[The instrument was duly prepared by The Centre for Academic Information Services]

Rajang Riverine Communities in Sarawak: Living and Coping with Disasters

Iris Ng Pei Yi

A thesis submitted

In fulfilment of the requirements for the degree of Master of Social Science

(Anthropology & Sociology)

Faculty of Social Sciences and Humanities
UNIVERSITI MALAYSIA SARAWAK
2018

DECLARATION

I, Iris Ng Pei Yi (15020361, Faculty of Social Sciences), hereby declare that the work entitled **‘Rajang Riverine Communities in Sarawak: Living and Coping with Disasters’** is my original work. I have not copied from any other students’ work or from any other sources except where due references acknowledgement is made explicitly in the text, nor has any part been written for me by another person. The thesis has not been accepted for any degree and is not concurrently submitted in candidature for any other degree.

Iris Ng Pei Yi

Date

ACKNOWLEDGEMENT

This thesis owes its existence to the help, support and inspiration of several people. Firstly, I would like to express my sincere appreciation and gratitude to Dr. Elena Gregoria Chai for her guidance during my research. Her support and inspiring suggestions have been precious for the development of this thesis content. She is more than a lecturer and mentor to me, who has explicitly taught me numerous life lessons since my first year in this university. She inspires me to achieve more and work hard towards my dream of being an educator. I am also indebted to Mr Kelvin Egay, a very influential lecturer in this field of Anthropology and Sociology, who has been a constant source of encouragement and enthusiasm, not only during this thesis project but also during my four years in UNIMAS. In addition, deepest appreciation to Dr. Nwanesi Peter Karubi for his endless support and motivation to me along my learning journey. From him I realised that the power of encouragement of an educator is always so inspiring and motivating. Thank you to all the lecturers in the Faculty of Social Sciences and Humanities, who deserve a special appreciation for shaping me from a newbie in this field until who I am today.

I would also like to convey my sincere thanks to all villagers in Rumah Benjamin Angki, Rantau Kemiding, Kanowit who constantly welcome me each time I visited the longhouse. A special thank you to Mak Jenifer Peter who never failed to take care of my accommodation and meal, as well as the motherly courtesy. Also, thank you all the members who helped me along this one year of visit to Kanowit particularly Tuai Rumah Benjamin Angki, Mdm Margaret, Uncle Musa Alang, Kak Janet Peter, Uncle Jackson Panyau, Kak Janet Barnabas, Uncle George, Aki Peter and the kids who cheer up each and every visit to this place. They always welcomed and encouraged me to take part in their activities and made me feel part

of their big family. Special thanks to Kak Piana Binti Tapa from the Centre of Graduate Studies (CGS) UNIMAS and Ms Pauline Patrick from the faculty who never failed to give me the earnest assistance in all administration procedure.

These two years Master programme journey would not be a blissful wrap without the constant support, love, and friendship from my one and only best friend, Nicky, who never left me during all my ups and downs despite her own struggle in her thesis. Thank you for being more than a friend, a sister and a study mate. Thank you for all your support, prayers and patience in going through every single day within these two years. Not forgetting all friends who share their time and ears for some discussion and midnight sharing, especially Aimi Wahidah, Nisa, Robinson Benedict, Sally Yap, You Hui Wei, Mohd Effendee, and Izzat Arif. I would like to thank Yi for your immeasurable patience during these two years of studies, projects, and telephone chats. Thank you for believing in my research and supporting me from far.

Finally, my deepest gratitude goes to my mom, Mdm Lau Lee Choo, and dad Mr Lee Chor Sun, for their unflagging love and unconditional support throughout my life and studies. I kept my promise to make this journey on my own but without the both of you this journey would never have ended seamlessly. Thank you to my one and only big brother in this world, Ivan Tao, who pushed me to a higher limit to achieve my goal despite all obstacles.

ABSTRACT

This research examines the perceptions of riverine communities along Rajang River in Sarawak towards the occurrences of disasters such as severe flood, riverbank erosion, and fire. Such occurrences cause damages and losses to their livelihoods. The idea of “disaster” is alien to the local communities and most of the times they have their local interpretation especially cultural-based explanation. The perception of disaster is looked through the local context and how these communities react to these events. A disaster management mechanism is in place, under the Sarawak Welfare Department (JKMNS). However, the mechanism is towards the role and coordination of various agencies in the event of disaster. At the riverine community’s level, there exist only the protocol to inform the District Office about a disaster and in severe cases, evacuation is the usual action taken. While awaiting aid to arrive, the riverine communities are left on their own to cope with the untoward happenings. A better disaster management and intervention mechanism should be in place to reduce social, economic as well as psychological impact of the victims. The empirical data for this research were gathered through interview and observation in 29 longhouses and villages along the Rajang River. Headmen of these villages and longhouses are interviewed on their views and experiences about disasters. Additionally, rituals are documented to grasp a better understanding of how riverine communities perceive disasters happen and how they cope with. Disasters are perceived as uncontrollable events but with reasons. The religious riverine communities hold the view that disasters happened due to rapid development and industrialisation. They normally adhere to the directives of the authorities by informing the District Office and wait for aid to arrive. On the other hand, the communities who are still practicing the traditional *adat* religion perceive that disasters are the impact of distorted human action. Thus, some of them blame such happenings as actions that have inflicted and

angered the spiritual world. While waiting for government aid to arrive, the communities hold rituals to appease the spirits or “antu”. Religious beliefs play an important role in how the riverine communities in Rajang River perceive the cause and occurrence of disasters. Religious beliefs therefore influence the kind of resilience measures taken by the communities. The study is embedded in Cultural theory introduced by Mary Douglas and Aaron Wildavsky in 1982, which is important to discuss individual perceptions and interpretations towards the risks surround them.

Keywords: Disaster, resilience, vulnerability, religious belief, Rajang River, riverine disaster, disaster management, disaster relief protocol

Komuniti Sungai Rajang di Sarawak: Hidup dan Menghadapi Bencana

ABSTRAK

Kajian ini membincangkan persepsi komuniti tempatan sepanjang Sungai Rajang di Sarawak terhadap kejadian bencana seperti banjir, hakisan tanah dan kebakaran. Bencana seperti ini membawa kerosakan dan kerugian kepada kehidupan seharian dan ada kalanya sehingga membawa maut dalam kalangan ahli komuniti. Konsep “bencana” kelihatan kurang dikenali oleh komuniti tempatan. Malah, mereka mempunyai tafsiran tersendiri tentang konsep ini dengan berdasarkan pemahaman dari segi budaya. Persepsi terhadap bencana turut dilihat dari konteks tempatan termasuk cara mereka bertindak apabila berlakunya kejadian-kejadian ini. Suatu mekanisma pengurusan bencana telah diwujudkan di bawah Jabatan Kebajikan Masyarakat Sarawak (JKMNS). Namun, mekanisma tersebut lebih cenderung kepada peranan dan koordinasi agensi-agensi tertentu sekiranya bencana berlaku. Bagi komuniti di Sungai Rajang, protokol yang sedia ada hanya memaklumkan kepada Pejabat Daerah tentang sesuatu bencana. Perpindahan hanya dilakukan sekiranya bencana yang berlaku itu amat serius. Sementara menunggu ketibaan bantuan, komuniti tempatan ditinggalkan bersendirian untuk menghadapi kejadian yang berlaku. Satu pengurusan bencana yang lebih menyeluruh serta mekanisma campur tangan perlu diterapkan untuk mengurangkan impak sosial, ekonomi dan juga psikologi dalam kalangan mangsa kejadian. Data empirikal dalam kajian ini telah dikumpul melalui proses temu ramah dan pemerhatian di 29 rumah panjang/kampung sepanjang Sungai Rajang. Ketua kampung dan tuai rumah telah ditemu ramah tentang pendapat dan pengalaman mereka terhadap bencana. Maklumat berkaitan tatacara upacara keagamaan yang dijalankan telah dikumpulkan untuk memberi pemahaman yang lebih jelas tentang perspesi komuniti

tempatan terhadap bencana dan cara untuk mengurangkan kejadian tersebut pada masa akan datang. Bencana dilihat sebagai aktiviti yang tidak terkawal tetapi bersebab. Komuniti sungai memegang pandangan bahawa ia berlaku disebabkan oleh pembangunan dan perindustrian yang pesat. Mereka biasanya mematuhi arahan pihak berkuasa dengan memaklumkan Pejabat Daerah sementara menunggu ketibaan bantuan. Namun begitu, bagi masyarakat yang masih mengamalkan agama adat tradisional, mereka yakin bahawa bencana adalah akibat daripada tindakan manusia. Oleh itu, sebahagian daripada mereka menyalahkan kejadian sebagai akibat tindakan yang disengajakan dan menimbulkan kemarahan dunia roh. Sementara menunggu bantuan kerajaan tiba, masyarakat mengadakan upacara untuk menenangkan roh-roh atau "Antu". Kepercayaan agama memainkan peranan penting dalam masyarakat sungai di Sungai Rajang dalam menilai punca-punca dan kejadian bencana yang sekali gus mempengaruhi jenis langkah-langkah daya tahan yang dilaksanakan oleh masyarakat. Kajian ini turut membincangkan Teori Kultural yang dilancarkan oleh Mary Douglas dan Aaron Wildavsky pada tahun 1982 untuk mengaji persepsi individu serta tafsiran terhadap risiko yang mengelilingi mereka.

Kata kunci: *Bencana, daya tahan, kelemahan, kepercayaan agama, Sungai Rajang, bencana sungai, pengurusan bencana, protokol bantuan bencana*

TABLE OF CONTENTS

	Page
DECLARATION	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iv
ABSTRAK	vi
TABLE OF CONTENTS	viii
LIST OF TABLES	xiv
LIST OF FIGURES	xv
LIST OF ABBREVIATIONS	xxi
CHAPTER 1: INTRODUCTION	1
1.1 Background of Study.....	1
1.2 Disasters in Sarawak.....	3
1.2.1 Relationship between local communities and disaster in natural environment.....	5
1.2.2 Religious belief influences the kind of resilience measures undertaken by local communities.....	7
1.3 Problem Statements.....	9
1.3.1 Rajang River annually struck with disasters that bring social impact to the local communities.....	10

1.3.2 Intervention measures are ad hoc and their effectiveness are doubtful.....	14
1.4 Research Questions.....	15
1.5 Research Objectives.....	15
1.6 Significances of Study.....	16
1.7 Conclusion.....	17
CHAPTER 2: LITERATURE REVIEW	18
2.1 Introduction.....	18
2.2 Changing Idea about Disaster: Defining Disaster	18
2.2.1 Meaning of disaster is manifested for governance purpose.....	19
2.3 Vulnerability and Resilience.....	23
2.4 The Concept and Perceptions of Disaster	25
2.4.1 Local communities in disaster management.....	28
2.5 Disaster as a cultural discourse.....	32
2.6 Cultural Theory and the Perception of Disaster	34
2.6.1 Cultural Theory: Local communities’ attitude and perception towards disaster.....	35
2.6.2 Religious factor in perceiving disaster: Personal experience and goals play a role.....	36

2.6.3 Drought in Pastoral Pokot: God’s displeasure with sinful human conduct.....	37
2.6.4 Traditional knowledge, practices and beliefs: The belief on ‘Our Lady of the Dew’ who protect locals from calamities.....	38
2.6.5 The Hakka Spirit: Social beliefs increases the resilience capacity of people in Tung Shih, Taiwan	39
2.6.6 The Dayaks: Doing <i>mali</i> incur the displeasure of gods and spirits.....	41
2.7 Disaster and Sustainable Industrialization	42
2.8 Disaster Aids.....	44
2.9 Conceptual Framework.....	45
2.10 Conclusion.....	46
CHAPTER 3: METHODOLOGY.....	47
3.1 Introduction.....	47
3.2 Research Method Used.....	47
3.3 Research Population.....	48
3.4 Research Sampling	49
3.5 Data Collection.....	49
3.5.1 Primary data collection	49
3.5.2 Secondary data collection	52

3.6 Study Instruments.....	52
3.6.1 In-depth Interview.....	53
3.6.2 Observation.....	54
3.7 Study Area.....	55
3.7.1 Villages and longhouse svisited.....	57
3.8 Key Informants and Respondents	58
3.9 Code of Ethics	62
3.10 Conclusion.....	63
CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS OF DATA	64
4.1 Introduction.....	64
4.2 The Perception of the Rajang Riverine Communities on Disaster, and the Extent of Religious Belief in Building up their Resilience Measures	65
4.2.1 Disaster in local languages.....	66
4.2.2 Perceptions of local riverine communities: What is a disaster?.....	68
4.2.3 Perceptions of local riverine communities: Root causes of disaster	71
4.2.4 Industrialisation or supernatural?.....	74
4.2.5 Religious belief and worldview	83

4.3 The Coping Mechanisms Employed by the Local Communities in Coping with Riverine Disasters to Survive the Everyday Living	87
4.3.1 Coping mechanisms: Living and adapting	88
4.3.1.1 Flood	90
4.3.1.1.1 Local knowledge in surviving	91
4.3.1.1.2 Architecture construction.....	93
4.3.1.1.3 Utilization of equipment for spontaneous respond	94
4.3.1.1.4 Drainage system	96
4.3.1.2 Riverbank erosion.....	98
4.3.1.2.1 Moving the settlements.....	98
4.3.1.2.2 Embankment and new jetty.....	100
4.3.1.3 Fire.....	102
4.3.1.3.1 Building materials.....	102
4.4 Essential Disaster Protocol that could be Developed in order to Improve the Disaster Mitigation among Local Communities in the events of Disasters	104
4.4.1 Relief protocol for flood.....	104
4.4.2 Relief protocol for riverbank erosion	108
4.4.3 Relief protocol for fire.....	110
4.5 Conclusion.....	112

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS	113
5.1 Introduction.....	113
5.2 Recommendations.....	114
5.2.1 Flood protocol.....	122
5.2.2 Riverbank erosion protocol.....	124
5.2.3 Fire protocol.....	125
5.2.4 Regular maintenance of fire extinguisher	127
5.2.5 Elevate awareness and exposure of related knowledge	128
5.2.6 Establish trained volunteers on fire Save and Rescue Training.....	131
5.2.7 Aids.....	133
5.2.8 Infrastructure at longhouses.....	135
5.2.9 Protection methods against riverbank erosion.....	136
5.3 Conclusion.....	137
5.3.1 Summary of protocol in community level.....	142
REFERENCES	144
APPENDICES	152

LIST OF TABLES

	Page
Table 1.1 Records of disasters in Sarawak in the past 5 years from 2010 to 2014.....	4
Table 2.1 Relative frequency of disaster hazards in Malaysia.....	26
Table 3.1 Villages and longhouses visited.....	57
Table 4.1 Local names for the events of flood, drought, thunderstorm, landslides (riverbank erosion) and fire.....	67
Table 5.1 Type of disaster and their predictability and possible prevention measures....	121
Table 5.2 The life span of fire extinguishers according to type.....	131

LIST OF FIGURES

	Page
Figure 1.1 Riverbank erosion has resulted in the widening of Rajang River.....	10
Figure 1.2 The photos above were provided by the informants, showing the situations during flood in 2007. Villagers used boat to replace road vehicles during flood, some of them overnight on the boat while waiting for the water to recede.....	11
Figure 1.3 Extracted from Borneo Post on the fire case in Rumah Anthony Ajut.....	14
Figure 2.1 Conceptual framework.....	45
Figure 3.1 Number of key informant interviewed.....	59
Figure 3.2 The total number of respondents interviewed	59
Figure 3.3 Number of male and female informants	60
Figure 3.4 Number of villagers respondents according to ethnicity	60
Figure 3.5 Number of villagers respondents according to religious belief	61
Figure 3.6 The map above is plotted with GPS coordination of all villages visited.....	61
Figure 4.1 Musa Alang, 45 years old, with the keli fish caught during flood in 2010 at Rantau Kemiding.....	71
Figure 4.2 Perception of local respondents on root cause of flood.....	72
Figure 4.3 Industrialization of logging along Rajang River (from Baram down to Sibul) is said to be contributing to the induction of strong wave that results in the widening of Rajang River and riverbank erosion.....	76

Figure 4.4	Damaged jetty at Nanga Dap.....	76
Figure 4.5	Flood water covering the jetty which local villagers use everyday.....	77
Figure 4.6	Eroded riverbank at Batu Luking.....	77
Figure 4.7	Flood often result in uprooting of fruit trees which lead to loss in crops and agriculture yield.....	77
Figure 4.8	Role of religion during flood.....	80
Figure 4.9	Headman from Nanga Mam showing Mulung leaves hanging on the door of the <i>bilek</i>	84
Figure 4.10	The picture shows one of the <i>tresang</i> (bamboo pole) used for the miring ritual. Some of the villagers in Rumah Muran Anak Kilau, Poi believe that the events of flood could be the enragement of <i>Petara</i>	85
Figure 4.11	In Rumah Merom Anak Serukan, Teluk Jambu, offerings used in <i>Miring</i> was placed by the jetty to seek protection from the river spirit.....	85
Figure 4.12	<i>Miring</i> in Rumah Bennet Anak Ringgit, Nanga Dap to protect the longhouse from riverbank erosion.....	86
Figure 4.13	Practice of <i>adat</i> belief is still common among some villages. The communities believe that hanging items like hornest's nest could prevent dirty and evil thing from entering the house.....	86
Figure 4.14	Practices of different religion under one roof.....	87

Figure 4.15	The villager believed that the leaf on his hat could avoid rain ghost “hantu gerasi” from recognizing him.....	89
Figure 4.16	Some strategies employed by the villagers in sustaining their agriculture produce	89
Figure 4.17	The level of flood in 30 th December 2013 was marked at the pillar in <i>ruai</i> ..	91
Figure 4.18	New crops are planted at higher ground to reduce loss during flood season..	92
Figure 4.19	Planting tree is one of the ecological manners in flood prevention	92
Figure 4.20	Rumah Muran Anak Kilau, Poi: An inclined part in the middle of a <i>bilek</i> ...	93
Figure 4.21	Dwelling of headman in kampong Bedil I was reconstructed.....	94
Figure 4.22	Rumah Leo Anak Bakum in Nanga Lipis was rebuilt after a fire in 1998....	94
Figure 4.23	Rumah Benjamin Angki: Pigs are kept inside the blue huge water tank (as in yellow circle) during flood.....	95
Figure 4.24	Villagers in Rumah Benjamin Angki cleaning the longhouse after flood receded	95
Figure 4.25	During flood season, oil tanks and plywood are always used as a tool to pad high important items like refrigerators and devices.....	96
Figure 4.26	Picture shows that one of the families in Rumah Benjamin Angki locating their refrigerator on a plank. In Rumah Barnabas Anak Rovat, water tank is placed higher too.....	96
Figure 4.27	Drainage system in Rumah Chua Anak Paulas, Nanga Mam.....	97

Figure 4.28	Stagnant waste water resulted from poor drainage system in Rumah Barnabas Anak Rovat, Batu Luking.....	97
Figure 4.29	The “third layer” of current Rumah Barnabas Anak Rovat, Batu Luking.....	99
Figure 4.30	Site of the old longhouse before the villagers of Rumah Chua Anak Paulas moved to the current longhouse. The old site of longhouse is now the plantation of pepper and cocoa.....	100
Figure 4.31	Relocation of longhouse is one of the mechanisms employed by riverine communities in facing with riverbank erosion in a daily basis.....	100
Figure 4.32	Rebuilding the jetty in “L” shape is one of the ways the villagers in Rumah Johny Anak Kadok k David employed to ensure a stronger jetty after being tumble down by riverbank erosion.....	101
Figure 4.33	Embankment project given to Rumah Merom Anak Selutan by the Song District Office.....	101
Figure 4.34	Asbestos and brick are preferred rather than the traditional building material like wood.....	103
Figure 4.35	Usage of modern building materials in Rumah Leo Anak Baja, Nanga Lipus	103
Figure 4.36	Disaster relief protocol proposed for flooding.....	105
Figure 4.37	Disaster relief protocol proposed for riverbank erosion	108
Figure 4.38	Disaster relief protocol proposed for fire.....	110
Figure 5.1	Structure of some longhouses in Nanga Ngungun	115

Figure 5.2	The authorities made an initiative to create some awareness on emergency contacts among the villagers.....	115
Figure 5.3	Community Emergency Response Team (CERT) was established in Rumah Benjamin Angki, Rantau Kemiding.....	116
Figure 5.4	Life Saver and Water Purification System are provided to some of the villagers for clean water.....	116
Figure 5.5	Disaster Management Board.....	117
Figure 5.6	Flow of a disaster management protocol.....	120
Figure 5.7	Flow of a disaster management protocol proposed for flooding.....	122
Figure 5.8	Flow of a disaster management protocol proposed for riverbank erosion....	124
Figure 5.9	Flow of a disaster management protocol proposed for fire.....	125
Figure 5.10	Fire extinguishers in villager of Kampung Bedil I (left), Nanga Ngemah and Nanga Dap (bottom) show that some of the villagers are uncertain of the actual usage and way to place a fire extinguisher.....	130
Figure 5.11	Among villages visited, many of the fire extinguishers are found to have exceeded the expiry date stated on the label.....	130
Figure 5.12	Example of fire extinguishers which have been more almost ten years since the last installation.....	130
Figure 5.13	Aids given to the fire victims in Nanga Nyirok like thick and oversized	

jeans did not hit the needs of the villagers.....	133
Figure 5.14 Aids of building material given by YB are brought from town to Nanga Nyirok are gathered by the Bat Jetty to be brought to Rumah Anthony Ajut for rebuilding	135
Figure 5.15 The interconnection of two religions among communities.....	139
Figure 5.16 Rumah Bangau is located right opposite to Rumah Anthony Anak Ajut.....	140
Figure 5.17 Effective stages in the disaster management planning at community level...	143