



**LOCAL RESIDENTS' AWARENESS TOWARDS THE
ISSUE OF MANGROVE DEGRADATION IN KUALA
SELANGOR, MALAYSIA**

BY

MAZNI ADIBAH ABD RAHMAN

**A dissertation submitted in fulfilment of the requirement for
the degree of Master of Urban and Regional Planning**

**Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia**

JULY 2015

ABSTRACT

Malaysia is a hot and humid country. The climate makes it suitable for mangroves to live and breed. Mangrove forests are concentrated in West Coast of Malaysia, and its largest distribution is found in Perak. Its long list of usage has made mangroves popular since a long time ago. However over the past decades, Mangrove species have been reported to be disappearing from the map. This is due to several activities that have been introduced in order to meet the demands of increased population. These include illegal logging, agriculture activities and urbanization. Awareness of the local residents on the problem of mangrove depletion is important to curb the problem. Therefore, a questionnaire survey was conducted on 103 respondents to examine their awareness on the matter. The respondents were chosen randomly among residents of Kuala Selangor district. It is found that only twenty percent of the total number of respondents are aware of the issue and acted upon it; either participating in the efforts made by the government as well as those by the non-governmental bodies or practicing mangroves replanting at their backyard. In future, it is suggested that more studies on the distribution of Mangrove forests in Malaysia to be carried out so as to upgrade the existing database. This study is concluded with a recommendation on measures to promote and educate Kuala Selangor residents on the issue.

ملخص البحث

ماليزيا بلدة حارّة ورطبة، وهذا المناخ يجعلها مناسبة لنمو أشجار المانجروف الاستوائية وتكاثرها، وتتركز غابات المانجروف الاستوائية على طول الساحل الغربي لماليزيا، وتوجد أكبر مجموعة منها في ولاية فيراك؛ مما جعلها تحتل قمة قائمة طويلة في استخدام أشجار المانجروف المنتشرة هناك منذ زمن بعيد. ولكن على مدى العقود الماضية أشارت التقارير إلى أنّ أشجار المانجروف قد بدأت تختفي من الخريطة؛ ويعود ذلك إلى مجموعة من الأنشطة البشرية التي تتم استجابة لمتطلبات زيادة السكان هناك، إضافة إلى قطع الأشجار بطريقة غير قانونية. إنّ الأنشطة الزراعية والصحة الحضارية لدى السكان المحليين حول مشكلة نضوب أشجار المانجروف يمثلان أهم عاملين للحد من هذه المشكلة، ومن هذا المنطلق تمّ طرح استبانة على مئة وثلاثة (103) من مجتمع الدراسة؛ لقياس مدى وعيهم بأهمية هذه المشكلة. وقد تم اختيار العينة بطريقة عشوائية من بين السكان في منطقة كوالاسلانجور، وقد أظهرت النتائج أنّ عشرين في المئة فقط من إجمالي عدد المشاركين من يتفهم حقيقة هذه المشكلة ويتعامل معها إيجابياً، إمّا عن طريق المشاركة في الجهود المبذولة من لدن الحكومة أو من قِبَل الهيئات غير الحكومية، أو العمل على محاولة إعادة زراعة أشجار المانجروف في بيئتها الأصلية. أمّا فيما يتعلق بالدراسات المستقبلية فتقترح الدراسة التركيز على مزيد من الدراسات المتعلقة بتوزيع أشجار المانجروف في ماليزيا؛ وذلك من أجل رفع مستوى قاعدة البيانات المتاحة، وقد خلصت هذه الدراسة إلى التوصية بتكثيف الإجراءات الرامية إلى تعزيز الوعي الثقافي لدى سكان كوالاسلانجور بشأن هذه القضية.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Urban and Regional Planning.

.....
M. Zainora bt. Asmawi
Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Urban and Regional Planning.

.....
Muhammad Faris b. Abdullah
Examiner

This dissertation was submitted to the Department of Urban and Regional Planning and is accepted as a fulfilment of the requirement for the degree of Master of Urban and Regional Planning.

.....
Norzailawati bt. Mohd Noor
Head, Department of Urban and
Regional Planning.

This dissertation was submitted to the Kulliyah of Architecture and Environmental Design and is accepted as a fulfilment of the requirement for the degree of Master of Urban and Regional Planning.

.....
Alias b. Abdullah
Dean, Kulliyah of Architecture and
Environmental Design

DECLARATION

I hereby declare that this dissertation is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Mazni Adibah Binti Abd Rahman

Signature

Date

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**DECLARATION OF COPYRIGHT AND AFFIRMATION
OF FAIR USE OF UNPUBLISHED RESEARCH**

Copyright © 2015 by Mazni Adibah Binti Abd Rahman. All right reserved.

**LOCAL RESIDENTS' AWARENESS TOWARDS THE ISSUE OF
MANGROVE DEGRADATION IN KUALA SELANGOR, MALAYSIA**

No part of this unpublished research may be reproduces, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the copyright holder expect as provided below.

1. Any material contained in or derived from this unpublished research may only be used by others in their writing with due acknowledgement.
2. IIUM or its library will have the right to make and transmit copies (print or electronic) for institutional and academic purposes.
3. The IIUM library will have the right to make sure, store in a retrieval system and supply copies of this unpublished research if requested by other universities and research libraries.

Affirmed by Mazni Adibah Binti Abd Rahman

.....
Signature

.....
Date

ACKNOWLEDGEMENTS

Bismillahirrahmanirrahim,

Alhamdulillah, praise to Him, I am grateful to Allah for the good health and wellbeing that were necessary to complete this book. I am also grateful to Associate Professor Dr. M. Zainora Asmawi, my supervisor, who I extremely thankful and indebted for sharing her expertise, valuable guidance and encouragement extended to me. I would also thank my parents for the unceasing encouragement, support and attention; who taught me to believe in myself and strive for my dreams. I am also grateful to my friend, who supported me throughout this venture. I also place on record, my sense of gratitude to everyone, who directly or indirectly, has lent his or her hand in this undertaking.

May this study benefit and contribute to future knowledge.

TABLE OF CONTENTS

Abstract.....	ii
Abstract in Arabic.....	iii
Approval Page.....	iv
Declaration Page.....	v
Copyright Page.....	vi
Acknowledgements.....	vii
List of Tables.....	xi
List of Figures.....	xiii
List of Abbreviations.....	xv

CHAPTER ONE: INTRODUCTION

1.1 Introduction.....	1
1.2 Statement of Problems.....	2
1.3 Research Questions.....	4
1.4 Aim and Objectives of Study.....	4
1.5 Significance of Study.....	5
1.5.1 Significance Towards Planning.....	5
1.5.2 Significance Towards Community.....	5
1.5.3 Significance Towards Environment.....	6
1.5.4 Significance Towards Authority.....	6
1.6 Dissertation Structure.....	6
1.6.1 Chapter One: Introduction.....	6
1.6.2 Chapter Two: Literature Review.....	7
1.6.3 Chapter Three: Methodology.....	7
1.6.4 Chapter Four: Study Area.....	7
1.6.5 Chapter Five: Analysis and Data Finding.....	8
1.6.6 Chapter Six: Recommendation and Conclusion.....	8
1.7 Limitations of Study.....	8
1.8 Conclusion.....	9

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction.....	10
2.2 Definitions and Terminologies.....	10
2.3 Functions and Values of Mangrove.....	12
2.3.1 Functions.....	12
2.3.2 Values.....	12
2.3.2.1 Economic Value.....	13
2.3.2.2 Community Value.....	15
2.3.2.3 Ecological Value.....	15
2.4 Mangrove Threats and Changes.....	16
2.5 Status of Mangrove in the World.....	18
2.6 Status of Mangrove in Southeast Asia.....	20

2.7 Mangrove Management in Peninsula Malaysia.....	20
2.7.1 Policy and Legislation.....	22
2.7.2 Management Issue.....	23
2.8 Efforts Done in Mangrove Rehabilitation.....	24
2.8.1 By the Government Body.....	24
2.8.2 By the Non-Governmental Organizations and Agencies.....	25
2.8.3 By the Public Community.....	26
2.9 The Roles of International NGOs in Mangrove Conservation.....	27
2.10. Public Awareness Of Environmental Issue.....	28
2.11. Community Based Conservation.....	29
2.12. Education for Wetlands.....	30
2.13 Case Study: Matang Mangrove Forest Reserve.....	31
2.13.1 Forest Management.....	32
2.13.2 Flora and Fauna.....	32
2.13.3 Lesson Learnt.....	33
2.14 Conclusion.....	33

CHAPTER THREE: METHODOLOGY

3.1 Introduction.....	34
3.2 Applied Method in Research.....	34
3.3 Variables.....	34
3.4 Data Collection.....	35
3.5 Data Analysis.....	36
3.7 Conclusion.....	38

CHAPTER FOUR: STUDY AREA

4.1 Introduction.....	40
4.2 Mangroves in Malaysia.....	40
4.3 Mangroves in Selangor.....	44
4.3.1 Mangrove Changes in Selangor.....	46
4.4 District of Kuala Selangor.....	48
4.4.1 Location.....	49
4.4.2 Historical Background.....	50
4.4.3 Population.....	50
4.4.4 Mangroves in Kuala Selangor.....	52
4.5 Conclusion.....	55

CHAPTER FIVE: DATA ANALYSIS AND FINDINGS

5.1 Introduction.....	57
5.2 Respondents Profile.....	57
5.3 Analysis on General Knowledge on Mangrove Forest.....	60
5.4 Determining the Level of Awareness Towards Mangrove Forest.....	64
5.5 Cross-tabulation Analysis.....	68
5.5 Findings of Study.....	71
5.6 Conclusion.....	72

CHAPTER SIX: RECOMMENDATIONS AND CONCLUSION	
6.1 Introduction.....	73
6.2 Discussion of Findings.....	73
6.3 Recommendations.....	76
6.3.1 Awareness Aspects.....	77
6.3.2 Education Aspects.....	78
6.4 Area of Further Studies.....	79
6.5 Conclusion.....	80
REFERENCES.....	xvii
APPENDIX: QUESTIONNAIRE.....	xxii

LIST OF TABLES

<u>Table No.</u>		<u>Page No.</u>
1.1	The changes of mangrove areas in the last two decades.	2
1.2	Changes in mangrove areas in Selangor for the last two decades.	3
2.1	Landing of marine fish by state in Peninsula Malaysia.	14
2.2	Timber quality and uses of mangrove tress.	14
2.3	Mangrove area by region (1980-2005).	9
2.4	Trends and status of mangroves in Asia (1980-2005).	21
2.5	List of Non-Government Organization; which participated in mangrove awareness programmes and supported by Forest Department of Peninsula Malaysia.	28
4.1	Forest types and distribution in Malaysia in 2008 (Million hectare).	41
4.2	Areas of mangrove forests in each state in Peninsula Malaysia as of December 31st, 2010.	42
4.3	Changes in Mangrove areas in the last two decades (1990-2010).	47
4.4	Population of Kuala Selangor district according to mukim, year 2011.	51
4.5	Population projection according to Planning Block (2005-2015).	52
4.6	Kuala Selangor District Council proposal in protecting the natural resources and environment.	54
5.1	Respondents' age group.	58
5.2	Respondents' gender group.	58
5.3	Mukim of Kuala Selangor where the respondent lives in.	59
5.4	Respondents' education level.	59
5.5	Respondents' employment group.	60

5.6	Awareness on the mangrove forest degradation issue in Kuala Selangor.	65
5.7	Medium respondent encounter the issue of mangrove degradation from.	66
5.8	Reasons of mangrove degradation on the respondents' opinion.	66
5.9	Responsible bodies in taking care of the mangrove forest.	68
5.10	Cross-tabulation between awareness and education level.	69
5.11	One-way ANOVA test on the awareness level determined by education level.	69
5.12	Cross-tabulation between awareness level and medium encountering the issue.	70
5.13	Cross-tabulation between awareness level and responsibility.	70
5.14	Cross-tabulation between awareness level and reasons of mangrove depletion.	71

LIST OF FIGURES

<u>Figure No.</u>		<u>Page No.</u>
2.1	Extent of mangrove area worldwide.	19
2.2	Distribution of mangrove forest in Southeast Asia.	22
2.3	Evaluating the current substrate condition before rehabilitation works carried on.	26
2.4	Measuring substrate depth during high tide.	26
2.5	Matang Mangrove Forest Reserve, Perak.	31
3.1	Relationship between dependent variable and independent variable.	35
3.2	Resident responded to the survey.	37
3.3	A screen snapshot of Raosoft. Inc calculating the right number of data sampling.	37
3.4	Survey location points based on mukim in Kuala Selangor.	38
4.1	Distribution map of mangroves in Peninsula Malaysia.	43
4.2	Mangrove extent in Selangor as of December 2010.	44
4.3	Distribution map of mangrove in Selangor by December 2012.	45
4.4	Firefly observation area in Sungai Kuantan Kuala Selangor.	46
4.5	Percentage of factors contributing to the changes in mangrove areas.	47
4.6	Taman Alam Kuala Selangor is the home of many species flora and fauna.	48
4.7	Map of districts in Selangor.	49
4.8	Population distribution according to mukim, year 2011.	51
4.9	Raja Musa Forest Reserve replanting program organized by GEC.	53
4.10	Proposal on natural resources and environmental protection.	55

5.1	Respondents' awareness on the values of mangrove forests.	61
5.2	Respondents' awareness on mangrove as the first nature belt from the sea.	61
5.3	If respondents have visited any mangrove forest in Malaysia.	62
5.4	Times respondents visit mangrove forest in a year.	62
5.5	Mangrove forest to be an open access area.	63
5.6	Importance of educating the next generation on mangrove forest.	64
5.7	Response on do mangrove must be protected and preserved.	64
5.8	The importance in educating people of Kuala Selangor towards the issue of mangrove depletion.	67
6.1	Changes in Kuala Selangor shoreline in 1990 and 2010.	75
6.2	Situation and condition of mangrove area in Parit 3 Kg Sg Burung.	76
6.3	Fisherman village jetty during low tide in Kg Bagan Pasir.	76

LIST OF ABBREVIATIONS

CBC	Community Based Conservation
CBD	Convention on Biological Diversity
EIA	Environment Impact Assessment
ESA	Environment Sensitive Area
FAO	Food and Agriculture Organization
FDPM	Forestry Department Peninsula Malaysia
FRIM	Forest Research Institute Malaysia
GEC	Global Environment Centre
IECAM	Persatuan Kawalan Hakisan Antarabangsa
IRIM	Institut Rimbawan Malaysia
JARING	Jaringan Bertindak Nelayan Pantai Semenanjung
MAP	Mangrove Action Project
MMFR	Matang Mangrove Forest Reserve
MNS	Malaysia Nature Society
MP10 th	10 th Malaysian Plan
MTC	Malaysia Timber Council
NBP	National Biodiversity Policy
NEP	National Environment Policy
NFA	National Forestry Act
NFP	National Forestry Policy
NGO	Non-Government Organization
NLC	National Land Code
NPP	National Physical Plan

NPP	National Physical Plan
NRE	Natural Resources and Environment
PFR	Permanent Forest Reserve
PIFWA	Persatuan Kebajikan Nelayan Pantai
R&D	Research and Development
RURAL CITIZEN	Pertubuhan Muafakat Warga Desa Negeri Kedah
SAM	Sahabat Alam Malaysia
SPSS	Statistical Package for the Social Sciences
WI Malaysia	Wetlands International, Malaysia
WWF-Malaysia	World Wide Fund for Nature
RCC	Ramsar Convention Centre
KSDC	Kuala Selangor District Council

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This study is to draw the attention of Malaysian, on the issue of mangrove degradation in the country. Despite being the third highest mangrove forest distribution, Selangor has been recorded to lose the highest percentage among the states in Peninsular Malaysia since 1990 (Forest Research Institute Malaysia [FRIM], 2012). Hamdan et al. (2010) in his report published in ‘Status of Mangroves in Peninsular Malaysia by Forest Research Institute Malaysia (FRIM), stated that Selangor has lost 6,424.40 hectares since 1990 to 2010 (Refer table 1.1) (FRIM, 2012).

Mangrove forest is usually seen as ‘wasteland’. They are not a worthy scene to be taken care of. However only recently, mangrove forests receive a full attention. The number of research papers and studies on mangrove is increasingly around the world. Mangrove came to be appreciated and acknowledged due to their function of protection coastal from sea harshness. Without this ecosystem, coastlines are easily penetrated by strong winds, cyclones and storms.

Several activities are classified to be the reasons of mangrove depleting on the area (Macintosh et al., 2002; Kathiresan, 2002; Valeila et al., 2009 and Field, 1998). For instance, according to Macintosh et al. (2002) Mangrove forest in Thailand are sacrificed due to aquaculture activities; as they build shrimp ponds in replacing the forests (Macintosh et al., 2002).

In essence, this study will provide a better understanding to Malaysian on their awareness and acceptance towards the issue, specifically to the local residents of

Kuala Selangor. Recorded by Forestry Department of Kuala Selangor in Local Plan Kuala Selangor 2015, there are two types of forests which are gazetted under Permanent Forest Reserve; they are peatland and mangrove forest (Kuala Selangor District Council, 2010).

Table 1.1
The changes of mangrove areas in the last two decades.

State	Mangrove area (ha) 1990	Mangrove area (ha) 2000	Mangrove area (ha) 2010	Mangrove loss (ha) 1990-2010	Mangrove loss (%) 1990-2010
Johor	29,797.13	25,477.19	23,6767.43	61020.70	20.54
Kedah	9,236.24	8,322.79	7841.25	1394.99	15.10
Pahang	11,467.03	10,791.42	9039.26	2427.77	21.17
Perak	52,562.00	46,057.00	43291.97	9270.03	17.64
Selangor	28,954.60	24,213.14	22530.20	6424.40	22.19
Total	132,017.00	114,861.54	106379.11	25637.89	19.42

(Source: Hamdan et al., 2010 in FRIM, 2012.)

1.2 STATEMENT OF PROBLEMS

It is a devastating situation where the natural environment is sacrificed in meeting the demands of 6.0 billion of people on the planet (Valeila et al., 2009). Permanent Reserve Forest is an asset to the country and contributed to the nations' economy, biodiversity and environment. According to the Food and Agriculture Organization (FAO) in 1980, mangrove forests are recorded to be 674,000 ha in Malaysia (FAO, 2007). However, readings are changing in the next ten years with a decreasing of 0.5 percent, with only 642,000 ha in 1990 (FAO, 2007). Finally, record of 2005, Malaysia has only 565,000 ha of mangrove forest, with decreasing 1.62 percent (FAO, 2007). Selangor has the highest total loss of mangrove area for the past two decades, from 1990-2010 (Refer table 1.2). According to Kamariah et al., (2014), compared to the worlds' land based forests, destruction on the mangrove ecosystem went four times

faster and one fifth of the world's mangrove were lost since 1980; at 35,500 square kilometer (Kamariah et al., 2014).

Table 1.2
Changes in mangrove areas in Selangor for the last two decades.

State	Mangrove area (ha) 1990	Mangrove area (ha) 2000	Mangrove area (ha) 2010	Mangrove loss (ha) 1990-2010	Mangrove loss (%) 1990-2010
Selangor	28,954.60	24,213.14	22530.20	6424.40	22.19

(Source: Hamdan et al., 2010 in FRIM, 2012)

Mohammed Amer Younus (2013) in his research did mention something about the complexity of a coastal and mangrove area identity, where both of them give a great impact towards the surrounding environment; either to the natural environment or to the human landscape. Among the reasons for mangrove depletion in Kuala Selangor is the hectic urbanization in the coastline, land use activity, and aquaculture activity (Kathiresan, 2002). These reasons might see as benefiting the people. Aquaculture activity for shrimp ponds in Forest Reserve Banjar Utara and cockle in Permatang Pasir are the reason why mangrove forests are cleared out.

Thus, the local residents' awareness and involvement in this pertaining matter is definitely important and crucial in helping the authority or planning department to plan ahead for the development of Kuala Selangor. Awareness of the residents determines the effectiveness of rehabilitation programs done by either the Government or the Non-Government organization. A good and successful environment management depends on the awareness that depicted perfectly in accommodating the issues and problem while rehabilitation programs are well implemented and enforced. Therefore, it is the argument of this research that there is not enough awareness in

some of the residents, and the lack of this awareness is the reason for poor participation in mangrove rehabilitation programs.

1.3 RESEARCH QUESTIONS

- 1) What is the level of awareness among the local residents in dealing and managing the issue of mangrove degradation?
- 2) What causes the mangrove forest to deplete in Kuala Selangor?
- 3) What are the recommended ways to improve the awareness of Kuala Selangor residents' on mangrove degradation?

1.4 AIM AND OBJECTIVES OF STUDY

The aim of this study is to investigate the residents' awareness towards the saddening status of mangrove depletion in Selangor recently. In reaching the aim, objectives supporting are as follows:

- 1) To gather data on the awareness level of local residents related to mangrove degradation.
- 2) To acknowledge the local residents on the causal factors of mangrove degradation in Kuala Selangor specifically and Malaysia wholly.
- 3) To formulate recommendations to improve the knowledge of the residents in Kuala Selangor on this issue.

1.5 SIGNIFICANCE OF STUDY

This study will further benefiting in aspects, towards the planning, community, environment, and authority. Explanation below will further describe into the subject matter.

1.5.1 Significance Towards Planning

This study is significance to the local residents as it will support and make them understand on the issue of mangrove depletion around their area. Furthermore, this study will also acknowledge the efforts made by the government and non-government on rehabilitating the forests. This study will also provide a platform for the residents to understand that they are also part of the ecosystem in making sure the success rate of each mangrove rehabilitation program. This research will look forward to a better collaboration between the local residents and authority in managing an improved and managed mangrove forest.

1.5.2 Significance Towards Community

Understanding the community and nature is essential in rehabilitating the ecosystem; as they are considered one. This study will provide a better understanding to the resident on their tasks in taking care of the ecosystem. Later on, with a better understanding on the issue, together they will hand in hand in creating for a healthier ecosystem. Furthermore, it also provides a sense of ownership, which makes the community a sense of responsibility of taking care of the environment for the long-term sustainability of resources.

1.5.3 Significance Towards Environment

Sustainable environment components are desirable by all bodies either community or authority. This promotes a positive outcome that able to support all living creatures in the area; humanely, animals and plants. Living creatures such as fish and the crustacean family depends entirely on the mangrove forest. They breed and live in the marshland of mangrove forest. Furthermore, mangrove forests are the nature belt to the coastline, local residents and coastal community from the tsunami, winds and huge waves. A preparation towards disaster is definitely required in living a life in the coastal area.

1.5.4 Significance Towards Authority

The role of authority might hardly to count as they manage the whole city or mukim. They might sometimes overlook one tiny detail of the development. It came down to the community response and awareness to notify those items. Thus, this study is significance to the authority in educate and aware the residents on the issue. Later on to include residents in their planning proposal that will involve the natural environment.

1.6 DISSERTATION STRUCTURE

The structure of this study includes six chapters with a definite idea discussed per each chapter.

1.6.1 Chapter One: Introduction

This chapter discusses the problem statement of this research. Later on, it will discuss the objectives and aim of the study. Moreover, it also explains the details of the study;

its limitations, significance towards the planning, community, environment and authority and finally it discusses the structure of the study, chapter by chapter.

1.6.2 Chapter Two: Literature Review

In chapter two, the literature review will explore more in the mangrove forest, its existence, trends and patterns around the world; as well in the South East Asia and finally in Malaysia. In this chapter also will be discussing the definitions and terminologies used in the research, mangrove threats, and changes. Further into the discussion, it tells us the current situation of mangrove management in Peninsular Malaysia. Carry on with the efforts made by either the Government bodies, Non-Government bodies or the public participation on rehabilitating the mangrove all over Malaysia. The chapter closes with a discussion of a profound case study; Matang Mangrove Reserve Forest as one of the best-managed mangrove forest in Malaysia, which located in Perak Darul Ridzuan.

1.6.3 Chapter Three: Methodology

Later in chapter three, discussion on methodology starts with an introduction and follows up with the applied method used in the research. It will explain more on the study variables, sets of data collection and analysis method for the study. It will then explain the sampling size taken throughout the study.

1.6.4 Chapter Four: Study Area

What one could expect in chapter four is that it discusses deeply in the idea of mangrove in Malaysia, specifically in Selangor and Kuala Selangor as the site study chosen for this research. Later on, chapter four will be discussing on details of Kuala

Selangor, population, planning profile, statistic readings, awareness and management of mangroves in Kuala Selangor.

1.6.5 Chapter Five: Analysis and Data Findings

In chapter five, sampling data was collected and listed out. With the help of analytical software, data sampling will be analyzed thoroughly, and findings of the study will be listed out according to the survey questions given.

1.6.6 Chapter Six: Recommendation and Conclusion

Further into the research and in the final chapter of the study, a summary of the findings will be explained and arrange according to the research questions and objectives of the study. Here onward, we will know either awareness level in the area is sufficient or not to help in the rehabilitation process of the mangrove forest. It will then be a source of formula to formulate a better planning and management of mangrove forest in Kuala Selangor as well as the whole Malaysia. A recommendation will be formulate to the aspects of awareness and education. Finally, before concluding the chapter, area of further studies in mangrove environment will further highlighted.

1.7 LIMITATION OF STUDY

The main aim of this study is to present a better understanding on the awareness level of the local residents of mangrove degradation. However, in completing the task, one may or may not face several obstacles in reaching the conclusion. The biggest obstacle in this study is time.