

**UNIVERSITI TEKNOLOGI MARA**

**URBAN ENERGY FLOW AND  
ENVIRONMENTAL IMPACTS AT  
KUALA LUMPUR**

**SITI BISTARI BINTI OMAR**

Project submitted in fulfillment of the requirements for  
the degree of  
**Bachelor in Environmental Health and Safety**  
**(Hons.)**

**Faculty of Health Sciences**

July 2017

## DECLARATION BY STUDENT

Project entitled “Urban Energy Flow and Environmental Impacts at Kuala Lumpur” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Dr. Farah Ayuni Bt Shafie. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

Student’s signature:

.....

(Siti Bistari binti Omar)

2014889672

910204-08-6444

Date: .....

## **ACKNOWLEDGEMENT**

Alhamdulillah, praise to Allah SWT because He had granted me the wills to complete the Final Year Project successfully.

I would like to gratefully acknowledge the valuable contributions of people around me which had been guiding me throughout this study. My utmost gratitude and appreciation is to my project supervisor, Dr Farah Ayuni binti Shafie for her non-stop guidance, advices and encouragements to make this study possible.

My special thanks goes to my teammate, Ahmad Afiq bin Shahidan for his excellent cooperation in gathering data and information. Without his continuous assistance it would be much tougher for me to complete this study. My sincere appreciation goes to my beloved parents, for their loves and sacrifices. Without their constant encouragements, I might not be where I am today.

Many thanks also go to all the parties involved in providing data especially to Energy Commission and Tenaga Nasional Berhad, to all beloved classmates whom helping directly or indirectly in my study, as well as to all lectures and staff of the Department of Environmental Health, UiTM Puncak Alam who helped me in so many ways.

## **TABLE OF CONTENTS**

<b>TITLE PAGE</b>	
<b>DECLARATION BY STUDENT</b>	<b>ii</b>
<b>INTELECTUAL PROPERTIES</b>	<b>iii</b>
<b>APPROVAL BY SUPERVISOR</b>	<b>v</b>
<b>ACKNOWLEDGEMENT</b>	<b>vi</b>
<b>TABLE OF CONTENTS</b>	<b>vii</b>
<b>LIST OF TABLES</b>	<b>xi</b>
<b>LIST OF FIGURES</b>	<b>xii</b>
<b>LIST APPENDICES</b>	<b>xiii</b>
<b>LIST ABBREVIATION</b>	<b>xiv</b>
<b>ABSTRACT</b>	<b>xv</b>
<b>ABSTRAK</b>	<b>xvi</b>
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1 Background	1
1.2 Problem statement	2
1.3 Study justification	4
1.4 Terminologies	
1.4.1 Energy generation	6
1.4.2 Carbon dioxide emission	6
1.4.3 Greenhouse gases	7
1.4.4 Climate change	7
1.5 Objectives	
1.5.1 General objective	8
1.5.2 Specific objectives	8

## ABSTRACT

Cities are one of the main factors contributed to many environmental problems and key to addressing the challenges from worldwide changes. Urbanisation is one of the irreversible human impacts on earth that accelerates the impacts of energy demand, climate changes and population growth. The aim of the study is to assess the urban metabolism of Kuala Lumpur in the energy sector and its environmental impacts by using Material Flow Analysis (MFA). The flow of electrical inputs and carbon dioxide outputs were analysed through Material Flow Analysis (MFA). Primary data through questionnaire were collected from 223 respondents. Secondary data were collected from related agencies that provided information on national and regional data. The result shows that the total consumption of electricity and production of carbon dioxide in Kuala Lumpur increases from 2011 until 2014. Residential, commercial and industry are the main sectors in Kuala Lumpur that lead to the economic development. Since Kuala Lumpur is categorised as the most urbanised states in Malaysia, the rapid development and population influenced the total consumption of electricity and production of carbon dioxide. 1.0 koe/cap/day of electrical consumption in Kuala Lumpur produced 20.21 kg/cap/day of carbon dioxide. It can be concluded that the number of population is the main factor contributed to the result of the total inputs and output of each city being studied.

Keyword: *Urbanisation, urban metabolism, material flow analysis, inputs and outputs*