

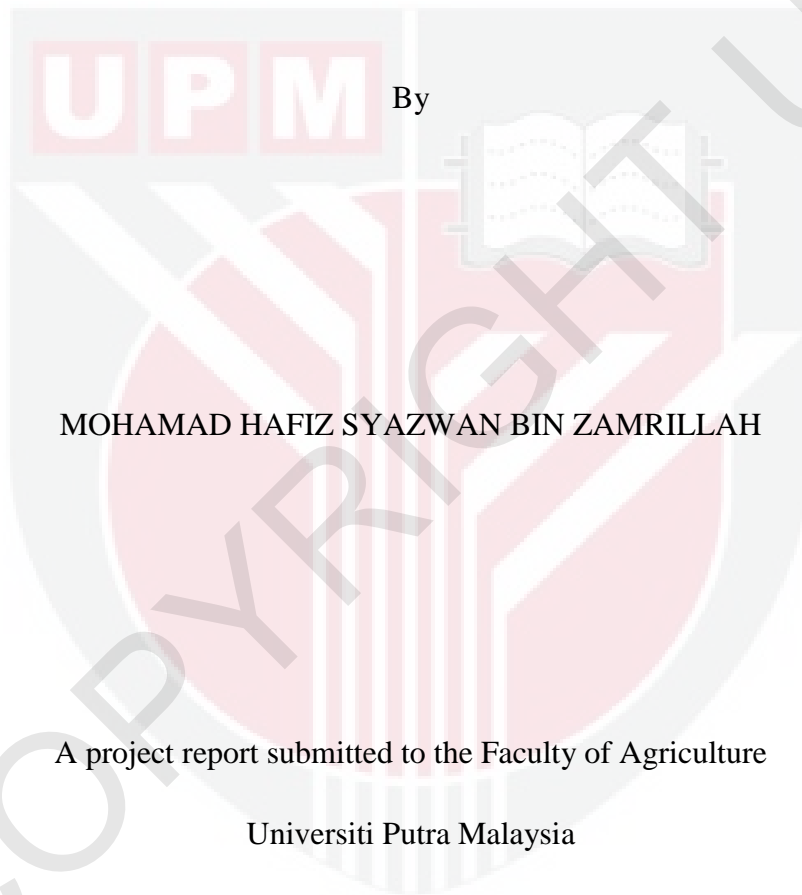


***ASSESSING THE ECOSYSTEM SERVICES OF URBAN ARGICULTURE  
IN KLANG VALLEY***

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ASSESSING THE ECOSYSTEM SERVICES OF URBAN ARGICULTURE  
IN KLANG VALLEY



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## CERTIFICATION

This study report entitled “ASSESSING THE ECOSYSTEM SERVICES OF URBA AGRICULTURE IN KLANG VALLEY” is prepared by Mohamad Hafiz Syazwan bin Zamrillah and submitted to the Faculty of Agriculture in fulfillment of the requirement of PPT4999 (Final Year Project) for the award of the degree of Bachelor of Science (Agribusiness).

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## ABSTRACT

Natural ecosystems are an important contributor to the sustainability of a country, especially Malaysia. Among the benefits available from natural ecosystems are food needs, transportation of energy sources and medicines. As urbanization progresses in many areas of Malaysia, it has raised issues such as food safety, pollution of nature, as well as devaluation of landscapes in urban areas. Urban agricultural practices are a concern in Malaysia because of the potential for food safety, the sustainability of urban areas. Benefits available through urban agricultural practices are the reason for community assessment of ecosystem services based on urban agricultural practices. Cross-section data was collected through structured questionnaires, to obtain information on community awareness of the environmental quality of the city, as well as their perceptions of urban agricultural practices. Descriptive analysis is used to know about the socio-demographic profile of respondents. Factor analysis is used to identify the link between the level of community awareness of the environmental quality of the city and their perceptions of the ecosystem services nature with their socio-demographic profile.

## ABSTRAK

Ekosistem semula jadi merupakan penyumbang penting kepada kelestarian sesebuah Negara khususnya Malaysia. Antara manfaat yang boleh didapati daripada ekosistem semula jadi adalah keperluan makanan, pengangkutan sumber tenaga dan juga ubat-ubatan. Sebagaimana proses pembangunan berkembang di banyak kawasan dalam Malaysia, ia telah menimbulkan beberapa isu seperti keselamatan makanan, pencemaran alam, dan juga penurunan nilai landskap di kawasan bandar. Amalan pertanian bandar menjadi perhatian di Malaysia kerana berpotensi kepada keselamatan makanan, kelestarian kawasan bandar. Manfaat yang boleh didapati melalui amalan pertanian bandar menjadi sebab untuk mengetahui penilaian masyarakat tentang perkhidmatan ekosistem berdasarkan amalan pertanian bandar. Data keratan rentas telah dikumpulkan melalui soal selidik berstruktur, untuk mendapatkan informasi berkaitan kesedaran masyarakat mengenai kualiti alam sekitar di bandar, serta persepsi mereka terhadap amalan pertanian bandar. Analisis deskriptif digunakan untuk mengetahui tentang profil sosio-demografik responden. Analisis faktor pula digunakan untuk mengenalpasti kaitan antara tahap kesedaran masyarakat mengenai kualiti alam sekitar di bandar dan persepsi mereka terhadap alam perkhidmatan ekosistem dengan profil sosio-demografik mereka.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of study

The biodiversity can be defined as the variety of species living in a particular area. Malaysia is in ranking number 12 of the world's mega diverse countries. According to the National Biodiversity Index, Malaysia has richness in four terrestrial vertebrate classes and vascular plants. The biodiversity provide humans with three types of services, such as direct services, indirect services and aesthetic effect. Foods, shelter, clothes, transportation, medicines, and even energy sources are the services that are directly come from biodiversity. The indirect services that biodiversity delivered to human is by having healthy ecosystems. The urbanization has keep develop in Malaysia especially in Peninsular Malaysia. As an effect of globalization phenomenon, urbanization representing the migration of the population organizing in urban areas, the center that have multiple option to residents. The urban areas can be defined as development areas which had a combined population of 10,000 or above since the Census 2010 with at least 60% of the population (aged 15 years and above) were involved in non-agricultural activities (Department of Statistics Malaysia). According to Malaysia's census report, 75% of the population in Malaysia will live in urban areas by 2020 (Tenth Malaysia Plan, 2010). The improvement condition of life and increasing of individual welfare are the result of substantial expansion of urban areas. In contrast, the urbanization gives bad impacts on resources, environment and ecosystems (Bradbury, A., (2009) "Understanding the evolution of community severance and its consequences on mobility and social cohesion" European Transport Conference).

Table 1: Urban, rural and total population, 1960-2030.

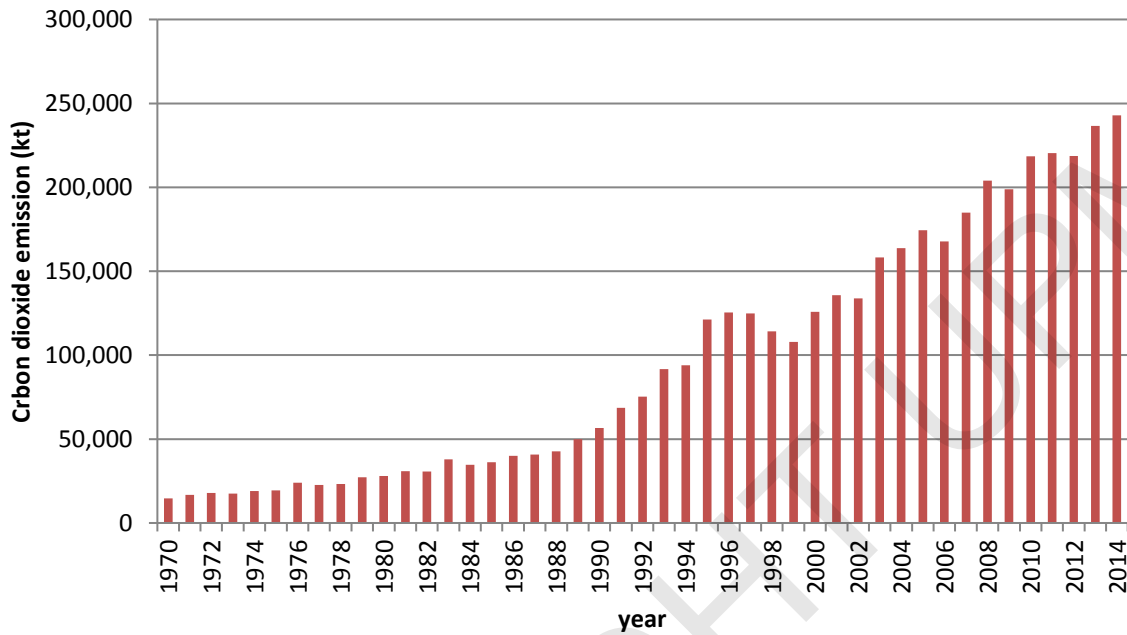
| <b>Year</b> | <b>Total population ('000)</b> | <b>Urban population ('000)</b> | <b>% Urban</b> | <b>Rural population ('000)</b> | <b>% Rural</b> |
|-------------|--------------------------------|--------------------------------|----------------|--------------------------------|----------------|
| <b>1960</b> | 8140                           | 2165                           | 26.6           | 5975                           | 73.4           |
| <b>1965</b> | 9502                           | 2842                           | 29.9           | 6660                           | 70.1           |
| <b>1970</b> | 10,853                         | 3631                           | 33.5           | 7222                           | 66.5           |
| <b>1975</b> | 12,258                         | 4615                           | 37.7           | 7642                           | 62.3           |
| <b>1980</b> | 13,763                         | 5787                           | 42.0           | 7977                           | 58.0           |
| <b>1985</b> | 15,677                         | 7197                           | 45.9           | 8480                           | 54.1           |
| <b>1990</b> | 17,845                         | 8891                           | 49.8           | 8955                           | 50.2           |
| <b>1995</b> | 20,363                         | 11,326                         | 55.6           | 9038                           | 44.4           |
| <b>2000</b> | 23,001                         | 14,212                         | 61.8           | 8790                           | 38.2           |
| <b>2005</b> | 25,325                         | 16,479                         | 65.1           | 8846                           | 34.9           |
| <b>2010</b> | 27,513                         | 18,768                         | 68.2           | 8745                           | 31.8           |
| <b>2015</b> | 29,563                         | 20,998                         | 71.0           | 8565                           | 29.0           |
| <b>2020</b> | 31,580                         | 23,218                         | 73.5           | 8362                           | 26.5           |
| <b>2025</b> | 33,479                         | 25,351                         | 75.7           | 8128                           | 24.3           |
| <b>2030</b> | 35,191                         | 27,324                         | 77.6           | 7867                           | 22.4           |

Source: Population Distribution by Local Authority Areas and Mukim. Department of Statistics, Kuala Lumpur (2010); and UNDP (2011).

In 1980s, there is more than 50% population in developing states who employed around Klang Valley, Ipoh, Johor Bahru and Penang. In contrast, low population experienced by less developed areas such as Terengganu, Kedah, Kelantan, Sabah and Sarawak. This has driven the rural people move to urban areas for seeking jobs, and comfortable living environment. Table 1 shows that 80% of the total population in Malaysia will live in urban cities by 2030 that caused by rapid urbanization during 1990s.

However, the phenomenon of urbanization has affecting the global environment landscape (Parikh J & Shukla V, 1995). The change of landscape can be characterized by conversion of ecological land into construction land (Weng, 2007; Liu et al., 2011), which is highly fragmented feature. Thus, the fragmented landscape resulting in environmental problems (Li et al., 2010; Jacobs, 2011) such as urban heat island effect, environmental pollution, soil erosion and so on (Wu, 2010; Schneiders et al., 2012; He et al., 2014; Zhou et al., 2014).

Figure 1: Malaysia Carbon dioxide (CO2) emissions



Source: TheGlobalEconomy.com

From the data provided by the World Bank since 1970 until 2014, the value of CO2 emission increase gradually with 14,601.99 kt in 1970 to 56,592.81 kt in 1990.

The Global Economy state that carbon dioxide emissions came from the combustion of fossil fuel, and during consumption of gas fuel and gas flaring.

Urban agriculture can be an effective alternative to improving the landscape and environmental quality in the cities. Instead of supplying food and beverages for people, urban agriculture also can create greener city environment (Hussain et al., 2017). Besides that, people nowadays are concern about healthy environment and lifestyles (Bellows, Brown & Smit, 2003). Also, urban agriculture act as filtering water surface bodies, controlling flood prone and handling sludge treatment (Lydecker & Drechsel, 2010).

## 1.2 Problem statement

The biodiversity is very important, specifically to human in the form of ecosystem services. There are so many things that humans get directly from biodiversity, such as food, medicines, clothes, transportation, house, and even energy in some cases. The phenomenon of urbanization is quite developing in Malaysia from day to day. The urbanization does not only the migration of people from rural areas to urban space, but also the rural areas becoming urban areas. Urban area consist of human structure such as houses, commercial building, roads, bridges and railways. Based on a study, there will be 75% of urban population in Malaysia. This increasing number will lead to the rising of deforestation in order to develop more buildings and other facilities.

As the urban areas are becoming large, there is decreasing in environmental quality in urban areas. The very small quantity of floras lead to the decreasing absorption of carbon dioxide.

The urbanization will also cause other pollution such as air pollution. One of the factor of air pollution is the carbon footprint. The carbon footprint can be defined as the total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO<sub>2</sub>). Generally, carbon dioxide is emitted from the vehicles consumption. The further the distance, the higher the amount of carbon dioxide released.

### **1.3 Objective of study**

The main goal of this study is to assess the ecosystem services of urban agriculture in Klang Valley. To achieve this goal, the following specific objectives have been determined:

- a) To identify the relationship of socio-demographic on ecosystem services of urban agriculture.
- b) To value the ecosystem services of urban agriculture



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