



**AN ANALYSIS OF THE PLANNING EFFECTIVENESS  
ON OPEN SPACE AS A SOCIAL PLACE USING GIS  
AND REMOTE SENSING TECHNIQUES**

**BY**

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the degree of Master of Urban and Regional Planning**

**Kulliyyah of Architecture and Environmental Design  
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## ABSTRACT

This study was to analyze the planning effectiveness on open space as a sociable place by using the GIS and Remote Sensing techniques. Since a long time ago, open spaces have always been threatened and sacrificed for the developments which affecting the distribution and the planning of open spaces in an area. The open space is essentially needed by human to perform social activities because it offers numerous advantages for them. Thus, the objectives of the study are; to identify the current planning practice of open space towards the social activities at the study area, to assess the users' satisfaction regarding the open space quality, to investigate on how GIS and remote sensing can assist in providing spatial data to handle planning problems and to underline some recommendations. The assessment focused on the open space's hierarchy (size and type), location, accessibility, facilities and vegetation. The study was conducted at four sections in Petaling Jaya; SS 22, SS 23, SS 24 and SS 26. The GIS data was adopted to identify the current open space planning practice towards social activities at the study area in terms of the open space hierarchy, the location and the accessibility. The SPOT 2 (1990) and SPOT 5 (2011) satellite image were used to investigate the land cover changes, open space distribution and the presence of the vegetation at the open space. The face to face questionnaire survey was done at the study area to get the user's perception and their satisfaction level towards the open space's size, location, accessibility, facilities and vegetation. However, a general Google online survey was also done to support the findings where it concerned on the general opinion from other open space's users within Malaysia. These surveys involved 100 respondents. The result indicated, the open space planning in study areas has improved in 2011 and remained until now. This proved that GIS and remote sensing has greatly helped in handling the urban planning matters by providing relevant spatial data. For the assessment, it was found that the effective elements in open space planning towards social activities are; the hierarchy, the location in terms of the visibility and the inviting sense, the accessibility (only at the study area, not for other open spaces in Malaysia) and the vegetation, meanwhile, ineffective elements are; the location aspect in terms of the safety, the accessibility in terms of the distance at other open spaces in Malaysia and the facilities provided. For social activities, the participation of users is reasonably good.

## ملخص

كانت هذه الدراسة تهدف إلى تحليل فعالية التخطيط على الفضاء المفتوح بوصفه مكانا اجتماعيا باستخدام تقنيات نظم المعلومات الجغرافية والاستشعار عن بعد. منذ زمن طويل، كانت المساحات المفتوحة مهددة دائما وتم التضحية بالتطورات التي تؤثر على توزيع وتخطيط المساحات المفتوحة في منطقة ما. إن الفضاء المفتوح ضروري أساسا من قبل الإنسان لأداء الأنشطة الاجتماعية لأنه يوفر العديد من المزايا بالنسبة لهم. وبالتالي، فإن أهداف الدراسة هي؛ لتحديد ممارسة التخطيط الحالية للفضاء المفتوح نحو الأنشطة الاجتماعية في منطقة الدراسة، وتقييم مدى رضا المستخدمين عن نوعية الفضاء المفتوح، والتحقق في الكيفية التي يمكن أن تساعد بها نظم المعلومات الجغرافية والاستشعار عن بعد في توفير البيانات المكانية لمعالجة مشاكل التخطيط وعلى بعض التوصيات. وركز التقييم على التسلسل الهرمي للمساحات المفتوحة (الحجم والنوع)، والموقع، وإمكانية الوصول، والمرافق والنباتات. وأجريت الدراسة في أربعة أقسام في بيتالينغ جايا؛ س.س. 22، و س.س. 23، و س.س. 24 و س.س. 26. تم اعتماد بيانات نظام المعلومات الجغرافية لتحديد الممارسة الحالية لتخطيط الفضاء المفتوح نحو الأنشطة الاجتماعية في منطقة الدراسة من حيث التسلسل الهرمي للمساحة المفتوحة، والموقع وإمكانية الوصول. واستخدمت الصورة الساتلية سبوت 2 (1990) وسبوت 5 (2011) للتحقق في تغيرات الغطاء الأرضي، وتوزيع المساحات المفتوحة، ووجود الغطاء النباتي في الفضاء المفتوح. وجرى إجراء مسح استبيان في منطقة الدراسة للحصول على تصور المستخدمين ومستوى رضاهم تجاه حجم المساحات المفتوحة، والموقع، وإمكانية الوصول، والمرافق والنباتات. ومع ذلك، تم إجراء استطلاع عام على الإنترنت من غوغل أيضا لدعم النتائج التي تتعلق فيها بالرأي العام من المستخدمين الآخرين في الفضاء المفتوح داخل ماليزيا. وشملت هذه الدراسات الاستقصائية 100 عينة. وتشير النتيجة إلى أن تخطيط المساحات المفتوحة في مناطق الدراسة قد تحسن في عام 2011 وظل قائما حتى الآن. وقد أثبت ذلك أن نظم المعلومات الجغرافية والاستشعار عن بعد ساعدتا كثيرا في معالجة مسائل التخطيط الحضري من خلال توفير البيانات المكانية ذات الصلة. وللإطلاع على التقييم، تبين أن العناصر الفعالة في تخطيط الأماكن المفتوحة نحو الأنشطة الاجتماعية هي: والتسلسل الهرمي، والموقع من حيث الرؤية والشعور الجذاب، وإمكانية الوصول (فقط في منطقة الدراسة، وليس للمساحات المفتوحة الأخرى في ماليزيا) والغطاء النباتي، وفي الوقت نفسه، العناصر غير الفعالة هي؛ وجانب الموقع من حيث السلامة، وإمكانية الوصول من حيث المسافة في الأماكن المفتوحة الأخرى في ماليزيا والمرافق المقدمة. وبالنسبة للأنشطة الاجتماعية، فإن مشاركة المستخدمين جيدة إلى حد معقول.

## 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.

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## DECLARATION

I hereby declare that this dissertation is the result of my own investigations, 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.

Wan Ramlah Wan Mohamad

Signature .....

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*This dissertation is dedicated to my beloved family for their love and also to open space lovers who enjoy the feel of liveability, the beauty of greeneries and who delight always towards attachment with their community and the nature.*

*“If you had started doing anything two weeks ago, by today you would have been two weeks better at it.”*

*-John Mayer-*

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## ABBREVIATIONS

ARSM	Malaysian Remote Sensing Agency
FDTCP	Federal Department of Town and Country Planning
GCP	Ground Control Points
GIS	Geographic Information System
<i>GPP TLKR</i>	<i>Garis Panduan dan Piawaian Tanah Lapang dan Rekreasi</i>
GPS	Global Positioning System
GP005-A	Planning Standards and Guidelines for Open Space and Recreation
MBPJ	Petaling Jaya City Council
NDVI	Normalized Difference Vegetation Index
NPPC	National Physical Planning Council
NUP	National Urban Planning
RS	Remote Sensing
SDGs	Sustainable Development Goals
SPOT	Satellites Pour l'Observation de la Terre
SPSS	Statistical Package for the Social Science
TCPA	Town and Country Planning Act 1976

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

Open space is well-known as an important source in upgrading human life quality in terms of social, health, environment and economy. The community's demand for open spaces as a spot to perform social activities is very crucial especially in urban areas. As a social place, open space offers to help people releasing themselves from a stressful city living. There are numerous of benefits obtained when involving in social activities like playing in a group, greetings and conversation with each other. For instance, it can revitalize the physical and mental health, strengthen the families bonding, upgrade neighborliness, alleviate anti-social behavior and lessen the crime level.

In order to create a successful open space planning as a social place, it relies on several factors such as the distribution of open spaces including the size, type, location and accessibility, and the physical features which are the facilities and vegetation. These factors must be taken into the consideration and planned carefully.

In short, this research focused on the analysis of the planning effectiveness on open space as a social place by using GIS and Remote Sensing techniques. The attributes of open space were analyzed using GIS and Remote Sensing, while user's perception was used to investigate the satisfaction level among users about the quality of open space planning and also their recommendation.

## 1.2 BACKGROUND

Open space has been recognized as an important element in people's life, (Frisman, 2006; Mohnen et al., 2014; Montenegro et al., 2012). Its characteristics such as the green lush and surrounded by nature, creates a peaceful and serene ambience mainly in a compact developing city. The history and the development of open space in Malaysia started during the British era where the concept of *padang* was raised to function as a social center for the community, (FDTCP Malaysia, 2005).

As Malaysia is developing from time to time, the population become denser and heavier, many lands have to be sacrificed for the development. The area of Kuala Lumpur was cramped with the population and the development, forcing to the establishment of Petaling Jaya as a satellite town in 1950s. Under the British administration, England planning practices were brought into Malaysia such as Garden City by Ebenezer Howard, (FDTCP Malaysia, 2005), and also Perry's Neighborhood Unit concept (Ju et al., 2011). These concepts were initially applied to Petaling Jaya as a New Town at that time.

One of the Perry's neighborhood principle is the provision of 10% from the neighborhood area for open spaces, (Liu, 1978), and this principle is still being implemented in Malaysia's open space planning standard until today. The Federal Department of Town and Country Planning (FDTCP) Peninsular Malaysia has produced *Garis Panduan dan Piawaian Tanah Lapang dan Rekreasi (GPP TLKR)* or the Planning Standards and Guidelines for Open Space and Recreation to ensure the provision of open spaces for all types of development and to achieve Malaysia's mission of '2 hectare for 1000 population' as stated in National Physical Plan Council (NPPC) No.5/2005, (FDTCP Malaysia, 2012).

Furthermore, the provision of the open space is associated with the aspiration of sustainable development. A sustainable program known as The Sustainable Development Goals (SDGs) has been established to raise the quality of human life in a sustainable way, it is headed by the United Nations and aims to end the poverty, protect the earth and ensure a serene and a prosperous life by 2030, (UNDP, n.d.). The SDGs comprises 17 goals with 169 targets.

The Goal 11 has emphasized on the preservation of green spaces with the motto, *'make cities and human settlements inclusive, safe, resilient and sustainable'*. This Goal is intended to protect the green and public spaces to build a sustainable city and its target is to provide a secure, inclusive and reachable green and public spaces for women, children, elderly and disabled persons. According to UNChronicle (2015), the green and public spaces will be vanished if they are not protected because they are often jeopardized by the migration to cities where they usually converted to residential housing and businesses area.

Functioning as a social place, open space serves a platform for people to perform social activities like playing in a group, greeting each other, hearing and seeing people. People can release their stress, improve their mental and physical health, and strengthen the social ties. The need for open space for social activities becomes more vital especially in urban areas with rapid urbanization and constant increase in the urban population. Besides, open space acts as a green lung and a focal point for an area.

There are various factors used to ensure a good planning of open space such as the easiness of accessibility and the strategic location. Therefore, it is important to analyze the effectiveness of open space planning towards social activities by identifying on how the open space is planned and the community's perception towards its planning quality.

### **1.3 PROBLEM STATEMENT**

In a developing country, a good urban planning is an essential point to be conceived. The development and the preservation of open spaces must be balanced. As a part of the land use designation, open space planning should not be ignored.

In an urban area, open spaces have always been threatened by the development. Petaling Jaya for example, built by British as a solution for the problem of overpopulation in Kuala Lumpur. The site was previously an estate, and according to MBPJ (2008), 1200 acres of the Effingham Rubber Estate was allocated for the establishment of Petaling Jaya as a satellite town in 1952. It comprised of residential, commercial, education and many other developments, and completed with transportation facilities and infrastructures.

Since that time, Petaling Jaya has experienced a dramatic growth in terms of population and development. Some examples can be seen where Phang (2016) reported in The Star Online, during his visit to Petaling Jaya, a small project of 18 terrace houses threatened a well-established park known as Taman Aman and it evoked worriedness among the nearby community. Phang (2016) also added, previously, there were issues about Bukit Gasing and Kota Damansara Community Forest, both were prone to be sacrificed for development and in 2010, Kota Damansara Community Forest was able to be gazetted.

Referring to these situations, it may lead to the problem of unequal distribution of open spaces in an area, as stated by Kabisch and Haase (2014), the rapid growth of population in cities and the urban planning policies of re-densification can cause the conversion of open spaces into residential land in which resulting to uneven distribution of open spaces. Nasution and Zahrah (2014) mentioned, open spaces should be considered as one of the development priorities in the urban planning policy, by

improving the quantity and quality of the open space in urban and neighborhood scale. A proper planning of open spaces plays important roles for spatial organization, (Legacy, 2010).

Lowe et al. (2013) also supported, in a livable city, open space is a crucial factor need to be considered in urban planning for a livability of an area because it is able to promote many activities and can positively impact human life. The concept of livability and sustainability concern more on the integration of human living area with the open space through the equity of open space distribution.

City living is stressful with the daily rush hour routine and highly competitive living environment. Thus, to alleviate the stress and pressure, open space is a great platform and making it as an important component of a city. Open spaces must be vigilantly designed to achieve a good quality of space and attract users as explained by Gehl (2011), there are three categories of outdoor activities which are the necessary, optional and social activities, if the space is in poor quality, then, only necessary activities occur, but if it is in a good quality, a broad spectrum of human activities can take place. A recent study by Abbasi et al. (2016) proved that a poor quality of an open space will affect the social space.

Moreover, open spaces should be planned based on the attributes of the environment and human needs. Most planning have been done without the awareness of the principles of human ecology, (Antrop, 2001). As claimed by Montenegro et al. (2012), urban planning is the process of examining, envisioning, determining and enforcing plans for adapting social system to fulfil community's needs, while Herzele and Wiedeman (2003) stated, understanding the needs of societies is vital in planning aspect in order to ensure the optimal use of open spaces by residents. In Petaling Jaya,