

**SUSTAINABLE DEVELOPMENT FACTORS FOR LAND DEVELOPMENT IN
UTM JOHOR BAHRU CAMPUS**

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**SUSTAINABLE DEVELOPMENT FACTORS FOR LAND DEVELOPMENT IN
UTM JOHOR BAHRU CAMPUS**

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A project report submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Science (Civil- Construction Management)

Faculty of civil engineering
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December 2010

I declare that this project report entitled “*Sustainable Development Factors For Land Development In UTM Johor Bahru Campus*” is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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To my beloved Family and Friends

To my respected supervisor

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ABSTRACT

Land development is one of dimensions which used to evaluate the development of nations. In Malaysia, universities occupy large land area, whilst in same time, universities' land considered as a valuable asset for these universities. University is a place where a growing population and various buildings complex which support activities that are not only limited to education and research activities. A university has a role for community development and should offer sustainable living within the neighborhood. Several universities around the world has taken an action to implement and carried out researches about sustainability in their zones. In this manner, Malaysian Higher Education targets to adapt sustainability in the campus so that Malaysian universities are compatible with the international inclination. Universiti Teknologi Malaysia (UTM) which is leading the engineering and technology knowledge in Malaysia is one of those universities which are craving to achieve sustainability in their campuses. Therefore, the necessity for sustainability development factors came to the surface in order to illustrate in how the improvements to achieve the proceeding of the plan. It is the aim of this study to identify the sustainable development factors that influence land development in UTM Johor Bahr campus. Data for this study was obtained through set of questionnaire and interviewing targeted respondents i.e campus community such as students and staffs. The the data was analysed by using statically analysis method and descriptive analysis method. The findings of this study found the increment of the population of UTM specially the students, and the need to erect new buildings to hold this increment are two main reasons contributing to propose the sustainable development contributing to propose the sustainable development factors that lead to control land development in UTM Johor Bahru campus.

ABSTRAK

Pembangunan tanah merupakan salah satu dimensi yang digunakan untuk menilai perkembangan sesebuah negara. Di Malaysia, kebanyakan universiti dibina dalam keluasan tanah yang besar, dalam masa yang sama, tanah universiti dianggap sebagai aset berharga untuk setiap universiti tersebut. Universiti merupakan tempat di mana perkembangan populasi dan pelbagai kompleks bangunan bukan hanya terhadap aktiviti bukan sahaja terhadap kepada aktiviti pendidikan dan penyelidikan. Universiti mempunyai peranan penting dalam pembangunan komuniti dan seharusnya menawarkan kehidupan yang seimbang dan lestari. Sesetengah universiti di seluruh dunia telah mengambil tindakan untuk melaksanakan dan membuat kajian mengenai kemapanan di kawasan masing-masing. Selaras dengan ini Kementerian Pelajaran Tinggi Malaysia juga mensasarkan pelaksanaan kampus lestari. Supaya Universiti-universiti di Malaysia selari dengan tahap antarabangsa. Universiti Teknologi Malaysia (UTM) yang terkemuka dengan pengetahuan kejuruteraan dan teknologi di Malaysia merupakan salah satu universiti yang merancang mencapai kelestarian kampus. Oleh itu, keperluan untuk faktor pembangunan kampus lestari kampus diutamakan. Tujuan kajian ini adalah untuk mengenalpasti faktor perkembangan pembangunan lestari yang mempengaruhi pembangunan tanah di UTM, kampus Johor Bahru. Data kajian ini diperolehi daripada kumpulan sasaran iaitu komuniti kampus seperti para mahasiswa dan kakitangan melalui set soal selidik. Data daripada kajian ini telah di analisis menggunakan kaedah analisis statistik dan kaedah analisis deskriptif. Dapatan kajian ini mendapati dua sebab utama iaitu peningkatan populasi universiti terutama bilangan pelajar dan permintaan membina bangunan baru untuk memenuhi keperluan peningkatan populasi menyumbang kepada faktor-faktor pembangunan lestari yang mengarah kepada pengawalan pembangunan tanah di UTM kampus Johor Bahru.

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CHAPTER 1

INTRODUCTION OF RESEARCH

1.1 Introduction

The word *Sustainability* derived from the word sustain which's one of its numerous meanings "a cause to continue or be prolonged for an extended period or without interruption", but when it refers to an ecology perspective sustainability describes on how biological systems could remain diverse and productive over time. For humans it is the potential for long-term maintenance of well being, which in turn depends on the wellbeing of the natural world and the responsible use of natural resources.

Juxtapose, the intention of sustainable development has being recognized and introduce a concept of environmental concerns. Sustainable development means different things to different people,

But the most frequently quoted definition is from the report of United Nations In 1987, called the Brundtland Report, which defines sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs (United Nations, 1978) ”.

The concern of sustainable development is not only focusing on how to preserve the environment, although this is important. It is also concerned with the quality of life, the range and distribution of resources and benefits, the interaction between environment and development and provision for the future. Furthermore, the field of sustainable development can be conceptually broken into three constituent parts:

- i. Environmental sustainability;
- ii. Economic sustainability; and
- iii. Socio-political sustainability.

In order to develop according to these three aspects land is one of the most crucial elements of sustainable development. In the identical time, land is a valuable asset for all various sectors that is why the way we manage our land shows how sustainable we are. In urban development, usage of land involves housings, central business districts, universities and etc.

The environmental pollution and degradation caused by consumptions of energy and materials in universities are getting greater concerns not only within the community in universities but also from the larger populations. The efforts in managing the ecosystem stand from the enormous opportunities that can be gained in adopting systems based integrated approach and design towards sustainable campus.

Thus, sustainable campus has become an issue of global concern and the Stockholm Declaration of 1972 was the first to make reference to sustainability in higher education and has recognized the interdependency between humanity and the environment and suggests several ways of achieving environmental sustainability (UNESCO, 1972). Over 300 universities in over 40 countries have signed the Talloires Declaration in 1990. Where a 10 points of action plan has been listed for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities (UNESCO, 1990).

Therefore, the face of increasing pressure on sustainable and environment resources caused by campuses development, need and urgent practical tools to achieve sustainable development in the campuses.

In Chapter 35, Agenda 21 notes that one of the roles of the sciences is to provide information to better enable formulation and selection of environment and development policies in the decision-making process. It recognized that it will be essential to enhance scientific understanding, improve long-term scientific assessments, strengthen scientific capacities and ensure that the sciences are responsive to emerging needs. Agenda 21 recommended that countries with the assistance of international organizations develop, apply and institute the necessary tools for sustainable development including developing quality-of-life indicators covering, for example, health, education, social welfare, state of the environment, and the economy (United Nations, 1993).

Numerous researches and plans have been deployed in many countries. They applied different aspect of suitable development in their campuses to determine and evaluate whether they are going according to their green and sustainable plans. For instance, University of Michigan become Energy Star's Partner of the year 2004 while in Harvard has developed a Green Campus Initiative to achieve campus environmental

suitability. In Canada, the university of British Columbia's Campus Suitability Office facilitates related-research funding, green building program other researches had been done by Lindsay Cole Director with Sustainability Solutions Group, working on sustainability assessments, green building and sustainable community development projects in Canada, while in Malaysia, Universiti Sains Malaysia embarked on a initiative inclusive of developing a suitable campus.

To be compatible with, Universiti Teknologi Malaysia (UTM) is looking forward to be a sustainable campus. With a tremendous increasing in number of students who affiliate with UTM in different academic levels and from various locations nationally and internationally never mention the rank of UTM which jumped to the best 320 university in whole world. In addition to that, UTM acquires the second largest public university campus in Malaysia after Universiti Putra Malaysia with 12.22 km² land area.

The geographical location of the UTM is strategically as well, it is about 20 km from the state capital of Johor Bahru, and is located relatively close to the Sultan Ismail Airport, Senai. For all this, it was emboldening to take a step forward to be not only a sustainable campus but also a leader in this field to lead both national and international universities to become sustainable.

It is the purpose of this research a spot light on UTM plan towards being sustainable campus. Not only that but also to determine, identify, and to propose how to control the most affective factors which affect sustainable land development in order to protect the green land in the campus This will taking into consideration the three different dimensions of sustainability development simultaneously which are ecological, social and economical aspects of sustainability .

1.2 Research Problem

Sustainable development is a key requirement to success and wellbeing, not only economically but ecologically and socially as well. Furthermore, important effort to achieve sustainable development has been one of the major concerns of modern societies. In 1972 Talloiries Declaration was the first reference to sustainability in higher education. (UNESCO, 1990).

Sustainable campus objectives are not only focusing on the ecological aspects of sustainability it is also consider the spatial entity of all school sites that are interrelated with their (urban) environment. Apart from existing buildings, all open spaces (both in-between and neighboring the buildings) are part of the campus and should be included in sustainable considerations. High quality of architecture and open space design is a prerequisite for the development of a sustainable campus. The environmental consciousness of all campus users is to be encouraged through science related learning and practical everyday experience. Utilized construction materials and expendables as well as energy production on the campus fulfill requirements of sustainability and CO₂-neutrality and knowledge of life cycle costs will play a role within all campus investments.

As mentioned before, land is one of the most essential sustainability elements. It is a valuable asset for every single human activity. The way we manage our land is one of dimensions that shows to which extended our life is sustain. In Malaysia the Ministry of Higher Education (MOHE) adopted a movement toward sustainability. This mission uphold by UTM with the effort establishing campus initiatives.

Many universities in Malaysia took responsive action after the higher education across the country has adopted the movement towards sustainability. Creating frameworks and plans to gain their goals as they understood it is not easy take to be suitable campus their ordinary way of implementation. They start changing their perception about sustainability as a single dimension to three dimensions which is ecological, social and economical aspects.

The way to greener and more sustainable environment as Zaini Ujang, 2009 elucidate "The whole university community is encouraged to take environmentally-conscious steps and adopt sustainable practices toward a greener environment".

The key to going greener is to think greener. If each of us contributes in our own little ways by taking simple steps towards saving energy and preserving the environment, we can all make a big difference towards a better future (Zaini, 2009) ".

Therefore, this study carried out by focusing on the current state and the recent development of the university in many stages. Due to this development the decision makers decided to erect new buildings for the activities which are concomitant to this recent development. The consequence of this erection is deforestation for spacious green area around the university to find spaces for the new buildings. Therefore, it becomes substantial to determine, identify and propose the factors for sustainable development to enhance and confirm the UTM's sustainable campus initiatives.

1.3 Aim of the Research

This research aim to determine current state of land development factors for sustainable UTM campus. In addition to that, the research guides the community of UTM to control measures of sustainable campus and the best way of controlling the most affective factors of sustainable campus to enhance Universiti Tecknologi Malsysia community to achieve their goals towards sustainable campus.

1.4 Objective of the Research

The objective of this sturdy are as follow:

1. To determine sustainable development factors for land development.
2. To identify current stage of land factors that caused UTM Johor Bahru campus development.
3. To propose sustainable development factors that lead to control land development in UTM Johor Bahru campus.

1.5 Limitation of Scope

This research took place in UTM Johor Bahru campus, where it is parallel to UTM Skudai campus sustainability initiatives. Since sustainable campus is new

initiatives, there might be difficulties in finding and establishing the sustainable development factors for land development in the campus due to improper recording data center that should provide by UTM and MOHE. Therefore, the study limited its scope on determining, identifying and proposing the sustainable land development factors which affects the green land and green spaces in the campus, thus trying to propose the appropriate way to control these factors in order to make a balance between our development needs and preserving green areas. The targeted respondents were UTM Johor Bahru staff and students.

1.6 Expected Finding

The research showed the current UTM sustainable plan toward sustainable campus, controlling and measuring this plan according to sustainability development taking in consideration the three aspects of the sustainability, ecological, social and economical. In addition to that, it is important to understand and consider the work already done in the campus sustainability assessment field in order to learn from the experiences and perspectives of those who created and used the existing tools, and to improve upon their work in meeting the objectives of this research.

Eventually, the research proposed recommendations in order to improve the sustainable development in UTM Johor Bahru campus, and to meet the university sustainable plans. The result of this research founded by using various international requirements which lead to the ideal requirements of land development and green areas needed in the campus. Following are the steps of expected findings:

- 1- Determination of sustainable development factors for land development.
- 2- Identification of sustainable development factors that cause of land development in UTM Johor Bahru campus.
- 3- Proposing sustainable development factors that lead to control sustainable land development in UTM Skudai campus.