

Towards Sustainable Campus Environment: Case Study of Universiti Teknologi Malaysia Campus, Johor Bahru, Malaysia

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ABSTRACT

There are many important criteria that should be taken into consideration to make a sustainable campus environment. Among them are bringing ideas together with consumers, designing spaces that are not only just for the facility, balancing flexibility and control on campus, enhancing the relationship with the environment, planting of plants and reducing traffic jams of vehicles. This paper highlights some of the environmental problems found in the campus mainly at Universiti Teknologi Malaysia (UTM) in Johor Bahru, Malaysia. These include vehicle problems, not enough outdoor areas for students to do work and unfriendly pedestrian walkways. With the recent government calls to conserve energy and to manage buildings together with their surrounding context to be more sustainable, it has led the top management in UTM to outline a sustainability campus policy since the year 2010. Various strategies have been established and implemented to improve the quality of student life on campus such as encouraging students to cycle or walk to their respective faculties and promoting a healthy and active lifestyle within a secure environment.

INTRODUCTION

There is now a considerable awareness on achieving sustainable campus in Malaysia. This is due to the high energy consumption trend in Higher Educational Institutions.

For example, according to Choong et.al. (2009), the Higher Educational Institutions in Malaysia spend more than ten million ringgit annually on the expensive electricity bills. Irina Safitri Zen (2011) found that 3.2 tonnes per capita of Carbon Dioxide (CO₂) is released in UTM annually. According to her again, other greenhouse gases released in UTM are caused by the high electricity consumption, traffic on campus by staff and students as well as through waste disposal.

Sustainable Campus Trend In Malaysia

There is now a considerable awareness on achieving sustainable campus in Malaysia. This is due to the high energy consumption trend in Higher Educational Institutions. For example, according to Choong et.al. (2009), the Higher Educational Institutions in Malaysia spend more than ten million ringgit annually on the expensive electricity bills.

UTM Sustainable Campus Policy

The UTM sustainable campus policy and framework were officially launched in 2011. The previous Vice Chancellor of UTM, Datuk Professor Dr Zaini Ujang, stated that the Campus Preservation Policy and Framework is a comprehensive conservation program to achieve a natural balance and reduce carbon emissions, promote minimum garbage, recycle and adopt eco-friendly food packaging. A more structured plan is also made by UTM to conserve and replanting the existing plants, and to enhance the surrounding ecology. In addition, the environmental awareness and behaviours were instilled among students and staff through health and

environmental campaigns and activities (such as to encourage walking and outdoor recreational activities), the use of environmentally material, and a sustainable travel plan to reduce car commuting.

RESEARCH METHOD

This paper offers statistical data on a recent study in UTM to examine the perception of UTM's students towards sustainable campus. A total of 100 questionnaires were used in this study. The questionnaires were distributed among the students who live in the residential colleges nearby their faculties. 80 respondents had answered the survey forms. 16 respondents were from the College of Rahman Putra, 30 respondents from the College of Tun Razak, 10 respondents from the College of Tun Fatimah and 8 respondents from the College of Tun Hussein Onn. The remainder of the respondents were students from the College of Datin Sri Endon, the College of Tunku Chancellor and others. The research was aimed to investigate the perception of students under the UTM Sustainable Campus initiatives and their participations in the sustainable programs provided by UTM. The data obtained were statistically analysed using Microsoft Excel.

FINDINGS

Transportation and Commuting Problems

The survey made by the author found out that the majority of the respondents (72.5%) were not happy with the traffic conditions in UTM. According to them, the traffic flow becomes congested especially during the peak hours when students and staff come or go home from work.

Since UTM has no public transport network, it makes matters worse since almost all 5319 number of staff commute using their own private cars. It makes the existing parking not able to cater for the amount of cars hence, forcing the staff, students and visitors to park their cars along the road shoulders. To reduce the use of vehicles by staff and students, Glasson (2009) suggested the use of public transportation in campus. According to him, this policy needs to be enforced by the university to observe the effectiveness of the sustainable campus implementation.

Cycling and Walking Alternatives

In order to achieve the objective of sustainable transportation and commuting system, Glasson (2009) also promoted cycling and walking amongst students and staff. The efficient and friendly pedestrian linkages will encourage students to commute within the campus area and Noorfazlenawati (2010). Pedestrian paths should be increased to encourage staff and students using it. Besides, the comfort should be given to consumers who use the route by path improvements and covered walkways, attracting their attention to use the path as an alternative to commuting. Nur Haziela Najat (2011). In order to encourage students to walk from the residential units to faculties, UTM has provided pedestrian pathways along the main road. Some of the pedestrian paths have been built since the campus was built in 1985. Hence the condition of the pathway is quite bad due to age. However, some pedestrian pathways have been upgraded to better conditions.

A question was also asked about the students' means of commuting to their respective faculties. Most respondents (57 out of 80 students) were studying at the Faculty of Built Environment. This faculty was the nearest to the above colleges mentioned before, i.e., between 250 meters to 1kilometer range only from the above faculty. With their close proximities, students were expected to commute to the faculty by foot.

When asked about the travel modes made by the students to commute to their respective faculties, overall, the majority of the students (31.3%) found it comfortable to take the bus service to their faculties. 30% of the students use their own private cars. Out of 80 students, only 7 students (8.8%) walk to the faculty every day. However, 15% of the students admitted that sometimes they walk to the campus, but usually they ride motorcycles or cars together with their friends. Cycling is the least mode of transport made by students, despite the campaign made by UTM in its Sustainable Campus website.

Students were also asked about the reasons that contribute to their unwillingness to walk or cycle to the faculty. Amongst the reasons given are: uncertainty of climatic conditions in Malaysia (53.8%), need to arrive on time for classes (15%), and unsatisfactory conditions of the pedestrian walkways (31.2%).

Continuity of the network of roads and paths allows for easier travel (Litman, 2008). This research has found that there were similarities in the aspect of circulation in UTM. Based on visual observation, less emphasis is given on the comfort of pedestrians and cyclists. The majority of respondents complained that there is no continuity of covered walkways on UTM and 26% of them agreed that their security is not guaranteed when walking on the

pedestrian path at UTM especially at night. Walkways should be designed separately from vehicle circulation (Sulong Mohamad, 1983) to ensure pedestrian safety and should be covered to provide comfort to the users (Aldrin et. al. 2006).

There is also a strong expression of dissatisfaction with the unavailability of bike lanes to ensure safe rides in the campus. Even though UTM has provided some bicycles for the usage of students, they were hardly being used. According to students, UTM should provide better facilities for bicycle parking both at the colleges and at the faculty. The unavailability of covered bicycle parking forced them to park their bikes along corridors or under stairways. *“The bike lanes should be provided and must be segregated from the vehicular lane”*, state some of the respondents.

Green Environment

Landscaping is one of the aspects that must be emphasised in campus planning. Rather than simply beautifying and brightening the campus area, landscaping plays multiple roles. Landscaping can adjust components of the campus microclimate (Zulkifli Hanafi, 1999), set psychological boundaries that define a space, help ‘wayfinding’ and, most importantly, complement the architecture (Walker and McGough, 1962). Shuhana Samsuddin et.al. (2007) recommended that space around and between buildings should be enhanced with landscape and other street furniture to attract not only students but also enhance the interaction of a conducive environment and increase flora and fauna around the campus. Therefore, the element of landscape is one of the most important components in creating a comfortable campus environment. This is consistent with the objective of a sustainable campus, which is emphasized in improving the quality of life.

To reduce greenhouse gas release, UTM has a theme to create a ‘university in the garden’ and to emphasize aspects of a comfortable learning environment. Trees on the UTM campus cannot easily be cut down or thrown away, so the matured trees remain as campus heritage assets, which maintain a natural environment that provides peace and comfort to help students in the learning process. The landscape look neat and well maintained, providing a pleasant visual experience and learning environment, which can impact the campus community and especially the students.

UTM also provides several recreation areas such as Lake Ilmu 1, 2 and Desa Bakti Lake. They are located in the low areas that are considered near to the residential areas and at the centre of the campus. Entering UTM,

visitors can enjoy the beauty of this lake as well as join in the recreational activities offered here. UTM Lake Ilmu and Desa Bakti are often visited by people in UTM as well as the public who would like to enjoy the relaxing atmosphere comprising academic and administrative buildings intertwined with the natural flora and fauna.

Overall, the majority of the respondents stated that the landscapes and recreational facilities on their residential colleges and faculties are adequate and create a comfortable campus environment. The survey made found out that the majority of students (85.%) agreed that landscape aided the learning process, but the rest of respondents felt that more seating areas and wifi hubs should be provided to ensure students can get access to internet easily.

“Say no to Polystyrene”

Results from a study conducted by the Institute for Energy and Environmental Research (IEER), polystyrene could threaten the environment 5 times higher when compared with other materials. (Shuhana Samsuddin et. al. 2007). UTM has also campaigned for sustainable cafés, where the café operators are now using plastic or biodegradable food containers instead of using polystyrene previously.

However, research has found that a few cafeterias are still using polystyrene containers and students are still using them to reduce the cost (students are charged 30 cents for each plastic container). When the students were asked to recycle the plastic containers to reduce costs, they say it is quite a hassle to bring the containers in their bags around the campus. “Sometimes we forget, and only remember about the container when we want to pack our dinner”, says one of the respondents.

CONCLUSION

The UTM Sustainable Campus campaigns and programs have been implemented since 2010. It has been recognised that a sustainable campus provides a better environment for the campus community, especially for students in terms of their environmental, social and economic quality of life. However, the success of the programs depends on the determination of UTM’s own community to participate in the programs. The Asset and Development Office should provide more facilities such as mentioned before such as covered pedestrian walkways, covered bicycle parking, and more recycle bins

in each college. The broken pedestrian walkways need to be improved and more lamp posts to be installed along the pedestrian walkways to ensure the safety of students walking at night. The UTM's top management need to provide more funds to ensure that more programs can be implemented successfully. Without a consistent commitment from the many stakeholders, it will limit the success of campus sustainability.

REFERENCES

- Aldrin Abdullah, Lee LikMeng, Lim Yoke Mui, NurwatiBadarulzaman&AziziBahauddin. (2006). Pedestrian Network And Landscape Design Proposal. The University In A Garden. USM, Pulau Pinang.
- Choong, W. W., Abdul Hakim and Low, S.T. (2009). The Needs for Raising Energy Awareness and Improving Energy Use Behaviours in Malaysia Public Universities. *Malaysia Journal of Real Estate*, 4(1), 1-9.
- Glasson, J. (2009). Sustainable Transportation Planning on College Campuses, Sustainability Forum, October 2009, Retrieved September 28th 2012, from <http://www.utm.my/sustainability>.
- Irina Safitri Zen. (2011). Sustainability Issues and Global Challenges. Sustainability Forum, Universiti Teknologi Malaysia.
- Litman, T. (2008). Measuring Transportation: Traffic, Mobility and Accessibility. Victoria Transport Policy Institute. Victoria. 4 November 2008; at <http://www.vtppi.org/measure.pdf>.
- Noorfazlenawati Mohamad Nor Azli. (2010). Sustainable Campus Design: Case Study of University of Technology Petronas. Faculty of Built Environment. Universiti Teknologi Malaysia.
- Nur Haziela Najat. (2011). "Corak Perjalanan Mahasiswa Universiti Teknologi Malaysia dari Kolej Kediaman ke Kampus". Kajian Topikal, Jabatan Senibina, Universiti Teknologi Malaysia.
- Shuhana Shamsuddin, Ahmad Bashri Sulaiman, Hasanuddin Lamit, Rozeyta Omar, Norsiah Abd. Aziz, Masliana Md. Noor. (2007). Kompedium Perancangan Dan Reka Bentuk Kampus Kondusif. Skudai: Penerbit Universiti Teknologi Malaysia
- Sulong Mohamad. (1983). Perancangan Kemudahan Awam Dan Infrastruktur Sosial: Konsep, Prinsip Dan Amalan. Bangi: Penerbit Universiti Kebangsaan Malaysia.
- Walker & McGough. (1962). University of Washington Campus Planning. Analysis and Guide.
- Zaini Ujang. (2011). Towards Sustainable Campus, Sustainability Forum, 28th October 2011, Retrieved

September 28th 2012, from <http://www.utm.my/sustainability>.

Zulkifli Hanafi. (1999) Reka Bentuk Bangunan Dalam Iklim Panas Dan Lembab Di Malaysia. Kuala Lumpur: Dewan Bahasa Dan Pustaka.



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