

CAMPUS SUSTAINABILITY: A CASE STUDY IN UNIVERSITI MALAYSIA SABAH (UMS)

NURUL FADILAH MOHD. NAWI*¹ AND ER AH CHOY²

¹Environment Management Programme, ²Social, Environmental and Developmental Sustainability (SEEDS) Research Centre, Faculty of Social Sciences and Humanities (FSSK), The National University of Malaysia, 43600, UKM Bangi, Selangor, Malaysia.

*Corresponding author: nurulfadilah.mohdnawi@gmail.com

Abstract: University Malaysia Sabah (UMS) created history by being recognized as the first university and the first higher learning institute in Malaysia to launch the first Eco-Campus Action Plan and is currently ranked 44th in the standings of the IU-Green Metric Campus in the world. This position is an evidence that UMS has taken serious efforts in achieving a well-established campus at the university level. Emphasis on the importance of sustainable practices will be met if university students and staff play their part in realizing it. However, poor awareness about the concept of sustainability among the campus community is the main issue in the Malaysia's sustainable campus. Therefore, the objective of this preliminary study is to identify the level of knowledge and practices of sustainability among UMS campus community. Questionnaires were distributed to 65 random samplings from UMS's students and staff. The results show that the awareness of sustainable campus among the students and staff is high, however, their willingness to adopt the practices is still at a moderate level. Lack of activities involving the campus community, namely the students and staff will create a large communication gap if it is not seriously addressed and the necessary improvements be introduced from time to time. A committed and comprehensive partnership between all stakeholders should be intensified in efforts to contribute to a sustainable campus development.

Keywords: Campus sustainability, campus community, understanding, practices.

Introduction

Velazquez *et al.* (2006) defined sustainable university as "a higher educational institution as a whole or as a part that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal and health effects generated in the use of their resources in order to fulfill its functions of teaching, research, outreach and partnership and stewardship in ways to help society make the transition to sustainable lifestyles". Universities should promote a pattern of development that would be compatible with a safe environment, biodiversity, ecological balance and intergenerational equity (Alshuwaikhath & Abu Bakar, 2008). In addition, university students are future graduates and leaders of a nation (Cole, 2003). They will return to the communities and serve them about the concept of sustainability. Therefore, the university was chosen as the ideal place to apply

this concept and it is important to ensure that all the currently available resources can be utilized with care without compromising the interests of the future generation (Er & Rewathi, 2016).

In Malaysia, the implementation of sustainable campus in higher learning institutes including University Malaysia Sabah (UMS) is increasingly widespread in order to preserve the sustainability of the surrounding nature for the use of future generations. To strengthen the role of UMS as a higher learning institute, the former Vice Chancellor, Prof. Dr. Mohd. Harun Abdullah inspired the establishment of this institution as a sustainable campus to realize the idea of sustainable development. Currently, University Malaysia Sabah (UMS) is the only university that has set a target to become an eco-campus by 2018 (Norazah *et al.*, 2015). The Eco-Campus Centre was established in 2013 to encourage and practice the concept

of sustainability focusing on the campus community, namely the students, lecturers and staffs in the campus. The establishment of Eco-Campus Centre is also an effort to realize the idea of sustainable development and an ideal concept of sustainability to balance the social needs with the economic growth and environmental integrity, particularly in UMS and in generally in Sabah (Eco-Campus Management Center 2016). Meanwhile, Eco-Campus as a reference centre that acts as the caretaker of the environment, contributing to global sustainability efforts by introducing excellence in teaching and learning, research, infrastructure development, environmental management and operations (Rosazman & Velan, 2015). Lack of research or past studies on campus sustainability in Sabah is a barrier in knowing the awareness and practice of sustainability by the campus community. Rosazman and Velan (2015) analysed that most of the studies about sustainable campus in the country were carried out and focus on peninsular Malaysia, but none in Sabah. Therefore, the objective of this study is to identify the level of knowledge and practices of sustainability among UMS's students and staff.

Campus Sustainability

The university is an institution of research and education plays an important role in educating prospective future leaders to give emphasis on the issue of sustainability to ensure the sustainability of the communities in the future (Tillbury *et al.*, 2010). The Talloires Declaration is a declaration created in 1990 aiming at each university's building, creating, supporting and applying the sustainability idea in their university system (Norfadillah *et al.*, 2011). Emphasis on the importance of sustainable practices will be fulfilled if students and staff of a university play their roles in making it happen. Poor awareness about the concept of sustainability among the campus community is one of the issues in Malaysia's sustainable campus (Hooi, Hassan and Che Mat 2012). Thus, awareness, knowledge and practices of the principles of sustainability in higher learning

institutes are viewed as something that cannot be ignored (Nor Kalsum 2016). Furthermore, the students and staff are the majority in the university community (Norfadillah *et al.*, 2012).

Dyball (2010) found that the main obstacle to establish a sustainable campus at a university in Australia is lack of awareness, knowledge and understanding of sustainability among the staff. The different levels of education among the campus community can be the cause of the existence of the differences of interest and understanding in maintaining the environmental sustainability. In The National University of Malaysia (UKM), Zurina and Norjan (2003) found that although the UKM students' awareness on the environment is high, but the practice is still at a medium level. The staff's contribution towards a sustainable campus is still low, however, they can contribute ideas for the implementation of UKM's sustainability (Norfadillah *et al.*, 2011). Meanwhile, the positive level of awareness, knowledge and attitude of the Universiti Pendidikan Sultan Ismail (UPSI) students in the implementation sustainable practises of the principles of sustainability campus does not necessarily guarantee an outstanding sustainable-practices among them. Encouragement of sustainable behaviour among the UPSI's students requires other elements such as enforcement or recognition to be implemented (Nor Kalsum, 2016). Therefore, knowledge, awareness and practices are important to ensure the enhancement of the concept of sustainability in campuses.

Conceptual Framework

Figure 1 shows a conceptual framework of the initial survey of the UMS community with the knowledge and awareness of sustainability practices. The purpose of this preliminary study is to identify the level of knowledge and practices of UMS's students and staff towards sustainable campus and to review their readiness to practice it. Thus, knowledge plays an important role in determining the extent of their understanding on sustainability efforts that

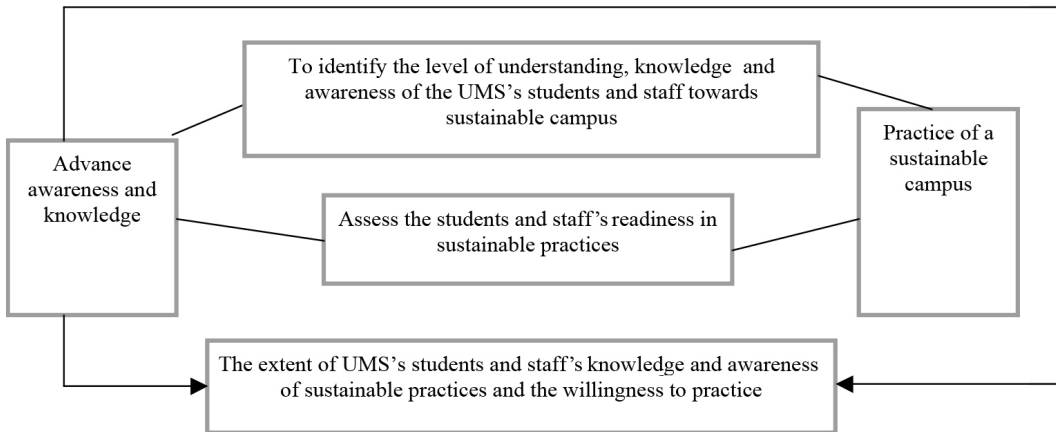


Figure 1: The conceptual framework (Adaptation from Blumer, 2010; Fazli & Yong, 2006; Zurina & Er, 2016)

have been implemented by the Eco-Campus Management.

Methodology

A total number of 65 respondents were randomly selected among UMS's students and staffs. Probability sampling involved selection of samples from a population that has been identified based on the criteria set. The respondents are randomly selected and consist of students who are studying at UMS and the academic and non-academic staff working at UMS. Primary data collection (interview and observation) and secondary data (through Internet, newspaper and others) were carried out. The questionnaire form is used as a research instrument, consisting of four sections, namely the socio demographic background of the students and staffs, understanding of the campus sustainability, identify sustainable practices on campus in the economic section (energy management, water management, waste management) and identify sustainable practices on campus in the design section (infrastructure and facilities, transportation, landscape and recreation and safety and security). Likert Scale is used which consists of a selection of answers "strongly agreed", "agree", "neutral", "disagree" and "strongly disagree". The data was analyzed using the Statistical Package for Social Sciences (SPSS) using descriptive technique, frequency and cross-tab.

Results and Discussion

Profile of the Respondents

Table 1 shows the respondents' profile consisting of students and staff of University Malaysia Sabah (UMS). For the staff's category, the female academic staff represents the highest number of respondents (seven people) and it is the same for the female non-academic staffs which represent 15 people. While for students, there are more male undergraduate students (five respondents) and postgraduate representing the same amount (eight respondents), most of the respondents are Malaysian. There were only one non-Malaysian in the category of academic staffs. While for the age category, majority of the academic staffs aged 41 years and above, followed by 12 respondents for non-academic staffs aged 26 to 30 years. For the students' category, majority of the students age are between 18 to 25 years, each presented by their respective category i.e. undergraduate students (six respondents) and postgraduate students (nine respondents). Meanwhile, most of the staffs (academic and non-academic) live outside the campus, 13 respondents (academic) and 28 respondents (non-academic) respectively. Six undergraduate and 14 postgraduate students live outside the campus.

Table 1: Profile of the respondents

| Criteria | Academic staff | (%) | Non-academic | (%) | Under-graduate Students | (%) | Post-graduate Students | (%) |
|--|----------------|-------|--------------|-------|-------------------------|-------|------------------------|------|
| Age | | | | | | | | |
| - 18-25 years | - | - | 6 | 100.0 | 6 | 40.0 | 9 | 60.0 |
| - 26-30 years | 3 | 20.0 | 12 | 80.0 | 2 | 22.2 | 7 | 77.8 |
| - 31-40 years | 3 | 23.1 | 10 | 76.9 | - | - | - | - |
| - 41 years and above | 7 | 100.0 | - | - | - | - | - | - |
| Gender | | | | | | | | |
| - Male | 6 | 31.6 | 13 | 68.4 | 5 | 38.5 | 8 | 61.5 |
| - Female | 7 | 31.8 | 15 | 68.2 | 3 | 27.3 | 8 | 72.7 |
| Nationality | | | | | | | | |
| - Malaysian | 12 | 30.0 | 28 | 70.0 | 8 | 33.3 | 16 | 66.7 |
| - Non-Malaysian | 1 | 100.0 | - | - | - | - | - | - |
| Residence | | | | | | | | |
| - Outside Campus | 13 | 31.7 | 28 | 68.3 | 6 | 30.0 | 14 | 70.0 |
| - In Campus | - | - | - | - | 2 | 50.0 | 2 | 50.0 |
| Educational Level | | | | | | | | |
| - PMR/SPM/STPM/ - Diploma | - | - | 9 | 100.0 | 1 | 100.0 | - | - |
| - Degree | - | - | 17 | 100.0 | 6 | 50.0 | 6 | 50.0 |
| - Master | 9 | 81.8 | 2 | 18.2 | 1 | 9.1 | 10 | 90.9 |
| - PhD | 4 | 100.0 | - | - | - | - | - | - |
| Faculty/Department | | | | | | | | |
| - Faculty of Business, Economics & Accountancy | 5 | 31.3 | 11 | 68.8 | 3 | 60.0 | 2 | 40.0 |
| - Faculty of Psychology & Education | 4 | 100.0 | - | - | - | - | - | - |
| - Faculty of Science & Natural Resources | - | - | - | - | 1 | 100.0 | - | - |
| - Biotechnology Research Institute | 1 | 20.0 | 4 | 80.0 | 1 | 6.7 | 14 | 93.3 |
| - Development & Maintenance Department | - | - | 1 | 100.0 | - | - | - | - |
| - Registrar's Department | - | - | 1 | 100.0 | - | - | - | - |
| - Department of Information Technology & Communication | - | - | 8 | 100.0 | 1 | - | - | - |
| - Preparatory Centre for Science & Technology | 3 | 50.0 | 3 | 50.0 | 2 | 100.0 | - | - |
| - Centre for Research & Innovation | - | - | - | - | 1 | 100.0 | - | - |

Knowledge towards campus sustainability

According to Birdsall (2013), an individual who has awareness and understanding will be able to understand more about sustainability. As described, sustainable campus at UMS was first introduced in 2013 and operated under Eco-Campus management. Based on Figure 2, a total of eight non-academic respondents stated that a sustainable campus is the reused of every existing resource on campus, followed by two respondents (66.7%) from undergraduate students and one respondent (11.1%) from the academic staffs and one respondent (33.3%) from postgraduate students. For the concept of improving the practice of sustainability on campus, a total of four (57.1%) respondents (non-academic) choose these criterias as their choices, followed by three (42.9%) respondents (academic staff and postgraduate students) and two (40.0%) from undergraduate students. The non-academic staff is the highest number of respondents who choose sustainability criteria and the campus as a concept for raising awareness among staffs and students about sustainability, i.e. by five respondents (71.4%), while graduate students are about four respondents (80.0%), two respondents (28.6%) for academic staff and one respondent (20.0%) for undergraduate student. The co-operation between communities towards campus sustainability receives the highest option for the non-academic staff, i.e., a total of 11

respondents (64.7%), eight (72.7%) respondents from the postgraduate students, seven (33.3%) respondents for academic staffs and three (27.3%) respondents for undergraduate students. This clearly shows that the non-academic staff is more understandable and appreciative of the concept of sustainability in UMS compared to the academic staff and the students. This finding is supported by the study by Norfadillah *et al.* (2011) in which most of the students in UKM are less aware of the concept of sustainability.

Although the respondents stated that they have the knowledge on the concept of “Sustainable Campus”, but the truth is that they do not have the knowledge about Talloires Declaration (refer Figure 3). The Talloires Declaration is an effort by the universities to implement the idea of sustainability in the respective university management (Norfadillah *et al.*, 2011) and held in October 1990 in Talloires, France. Only three respondents (75.0%) from the non-academic staffs and one respondent (25.0%) from the academic staffs know about this declaration. In addition, a total of 13 respondents (86.7%) from the non-academic stated that they do not know about the declaration, followed by six respondents (27.3%) from the academic staff, 13 respondents (86.7%) from postgraduate students and two respondents (13.3%) from undergraduate students. The management of the university should be able to use the word Talloires as a keyword to organize

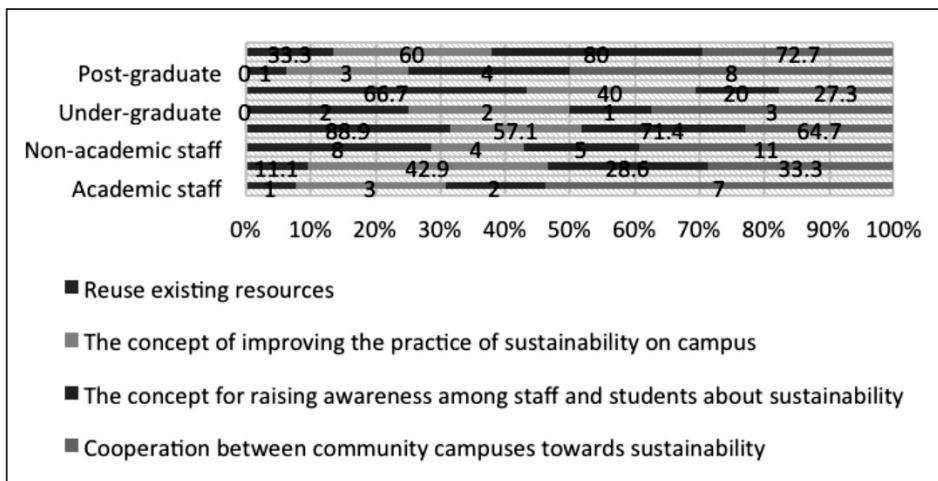


Figure 2: What do you know about sustainable campus?

programmes related to campus sustainability to facilitate the understanding of the campus.

Hence, in order to implement the improvements of the understanding of the concept of campus sustainability expansion plan, the respondents (student and staff) were asked on the initiatives that can be taken by the university to support of a sustainable campus (refer Figure 4). A total of 13 respondents (76.5%) from the non-academic staffs stated that the campaign or awareness seminar among the initiatives should be undertaken by the university, followed by five respondents (83.3%) from postgraduate students, four respondents (23.5%) from the academic staffs and only one respondents (16.7%) from the undergraduate student. The seminar is easily organized because it involves various parties and the sharing of opinions can be carried out in two directions. This is followed by enforcing regulations and laws on sustainability across UMS which involves seven respondents from the non-academic staffs (77.8%) and postgraduate students (100.0%) stated the same, followed by only two respondents (22.2%) from the academic staffs and no response from the undergraduate students. For funds for sustainability research criteria, six persons (66.7%) from the academic staffs support the statement, followed by three respondents (33.3%) from the non-academic staffs, two respondents (66.7%) from postgraduate students and only one respondent (33.3%) from undergraduate. The subject of sustainability in the syllabus only obtained the response from the

non-academic staff which is three respondents (100.0%) and two respondents (100.0%) from undergraduate students.

Based on Figure 5, a total of nine respondents (69.2%) from the non-academic staffs stated that they obtained the current issues from university publication, followed by four respondents (30.8%) from academic staff and no answer from group of students. Meanwhile, announcements on website are also more easily done where a total of eight respondents (80%) from non-academic staffs stated that they are aware of all the latest developments or current issues from website, followed by four respondents (80.0%) from post-graduate students, two respondents (20%) from academic staff and one respondent (20.0%) from undergraduate students. For social media such as Facebook, Twitter and others, majority of the students are aware about the information through social media whereby seven respondents (70.0%) stated that they obtain the information from social media, followed by six respondents (54.5%) from non-academic staffs, five respondents (45.5%) from academic staffs and only three respondents (30%) from undergraduate students. In addition, only three respondents (100%) from postgraduate students, three respondents (75%) from non-academic staffs and one respondent (25%) from academic staffs obtained information on current issues from the notice board. Ten respondents do not give their answer.

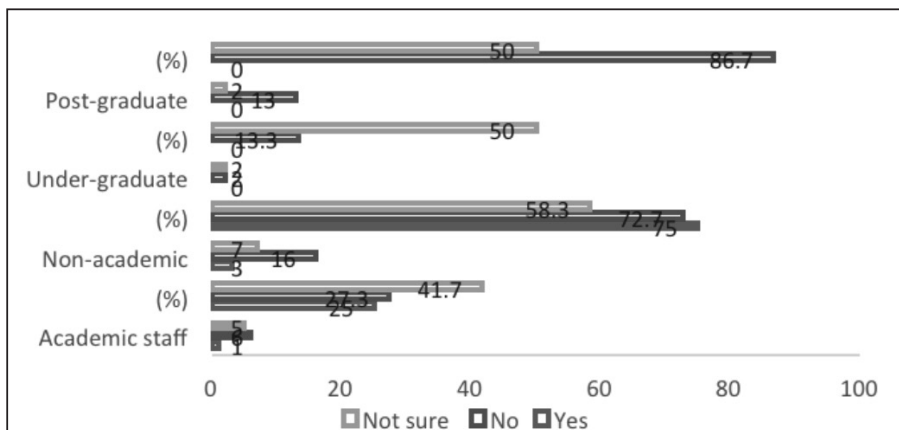


Figure 3: Do you know about Talloires Declaration?

Based on Figure 6, almost all respondents or practicing the concept of sustainability stated that they are interested in participating in college campus, which as many as 26

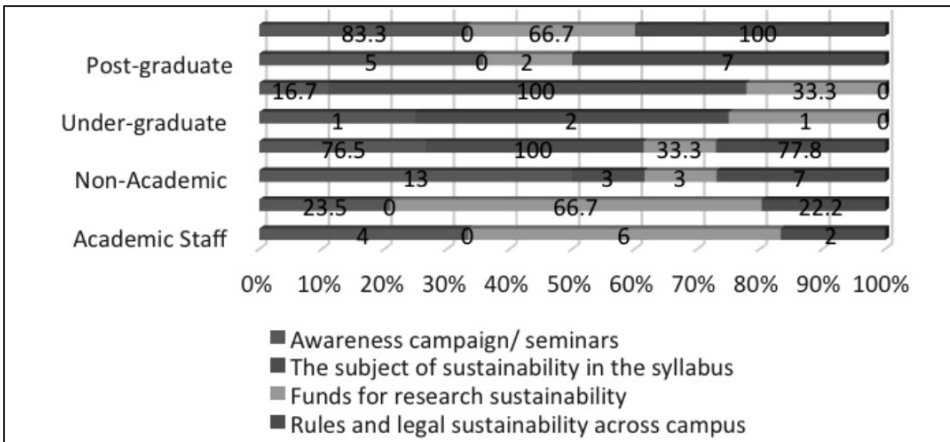


Figure 4: Initiatives taken by UMS to support the sustainable campus in the campus community?

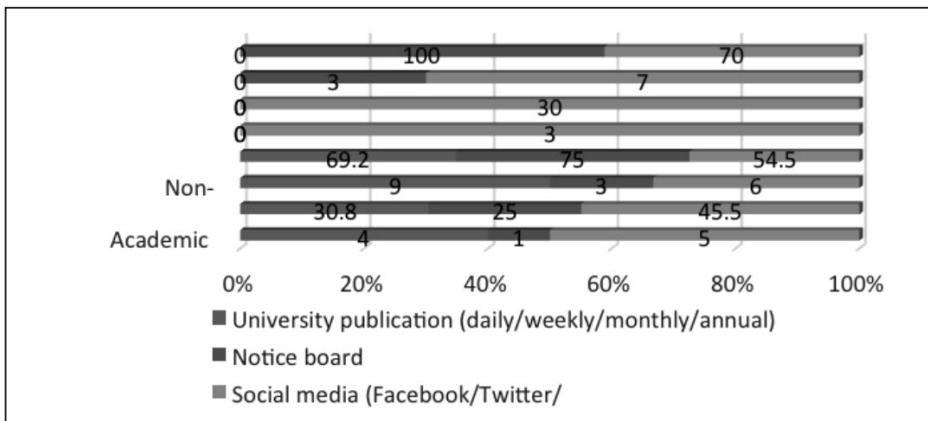


Figure 5: How do you keep an eye on current issues such as a campus sustainability related information?

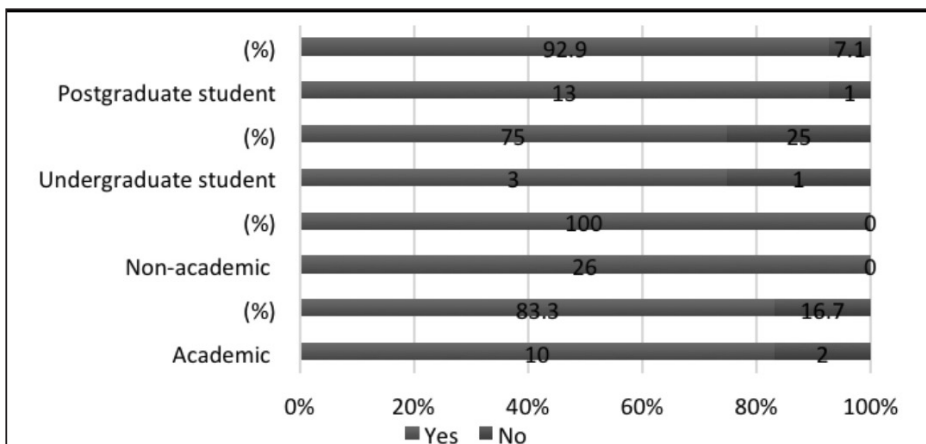


Figure 6: Are you interested to join/practice the concept of a sustainable campus?

respondents (100%) from the non-academic said yes, followed by 13 postgraduate respondents (92.9%), ten respondents (83.3%) from academic staffs and three respondents (75%) from undergraduate students. Although they are less aware of the Talloires Declaration, their willingness to participate or practice the concept of sustainability is commendable due to their awareness on the importance of the implementation for the well-being of the current and future generations, especially in community colleges.

Sustainable Practices on Campus in Economic Section

Energy Management

The sustainability practice in the management of energy among the respondents could be seen through the use of electricity (refer Figure 7). A total of eight respondents (28.6%) from non-academic staffs and one respondent (11.1%) from postgraduate are paying less than RM20 a month. For the academic staffs, the amount paid is at RM51 to RM100 and RM101 and above, involves a total of four respondents (30.8%). Meanwhile, six respondents (66.7%) from postgraduate students pay the bills at a rate of RM20-RM50 per month and only two respondents (66.7%) from undergraduate students who paid the bill at the rate of RM51-RM100 per month. This is because there are a number of students who are still living with

their families and some are living outside UMS campus. It is evident that the use of electricity among the respondents are at moderate level.

Water Management

Water is the main element in the survival of human beings. A better and systematic water management allows the campus community to manage their lives in a comfortable condition. Figure 8 shows the practices carried out by the respondents in their daily lives in terms of water management. A total of eight respondents (61.5%) from academic staff stated that the management of water in UMS campus is in good condition, followed by 15 respondents (53.5%) from non-academic staffs, three respondents (37.5%) from undergraduate students and four respondents (25%) from postgraduate students. Meanwhile, there are a number of respondents who responded by stating that UMS does not have a good water management, namely four respondents (25%) from postgraduate students, two respondents (15.4%) from academic staffs and two respondents (7.1%) from non-academic staffs. The strategic location of UMS, alongside the coast of the South China Sea, contributes to the efficiency of water management at the university.

Waste Management

Waste management is also one of the key elements in the campus sustainability and

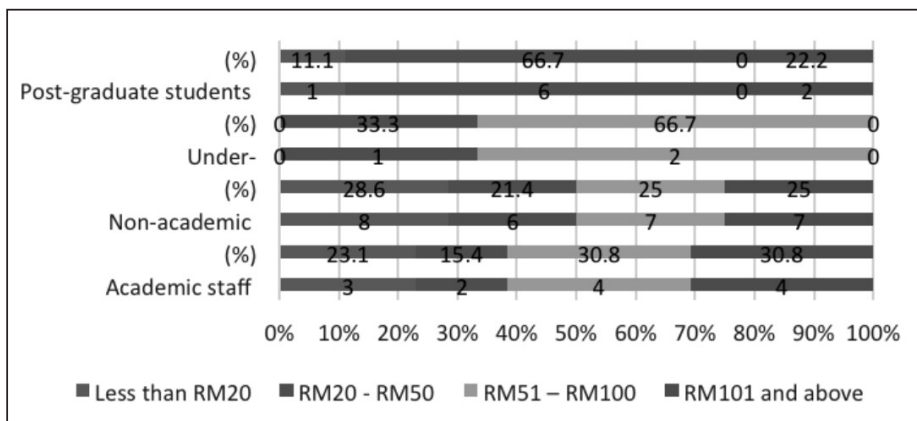


Figure 7: How much do you pay for your electrical bill (monthly)?

e-waste is part of that. The meaning of e-waste is management of all types of electrical and electronic devices such as television, computer, phones, printer and others. Figure 9 shows the level of understanding of the respondents against “e-waste”. A total of 18 respondents (64.3%) from non-academic staff stated “Yes” whereby they knew the meaning of “e-waste”, followed by the academic staffs (53.8%), postgraduate students (75%) and undergraduate students (37.5%). The number of respondents who replied “No” is six respondents (21.4%) from the non-academic staff, followed by two respondents (15.4%) from academic staffs, two respondents (12.5%) from postgraduate and one respondent (12.5%) from undergraduate students. In addition, most of the respondents who are aware of the function of “e-waste” will

recycle electrical goods in their efforts to support a sustainable campus. They also stated that they will donate and prefer to repair and reuse some of the things which are in good condition.

Sustainable Practices on Campus in Design Section

Infrastructure and Facilities

Based on Figure 10, most of the respondents who are from students agreed that UMS provides good infrastructure and facilities for them, this involves both groups of the students, undergraduate (eight respondents) and postgraduates (16 respondents). For the non-academic staff, 28 respondents (100%) also agree with that statement while 12 respondents (92.3%) from academic staff answer “Yes” and

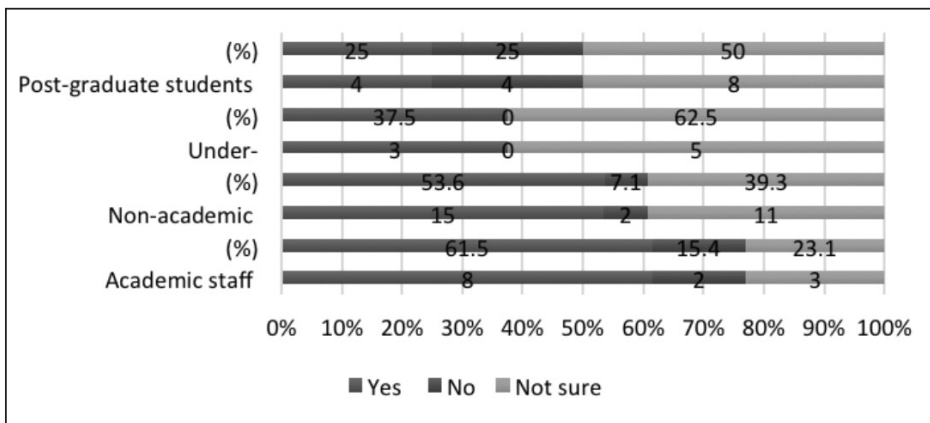


Figure 8: How about the water management in your campus?

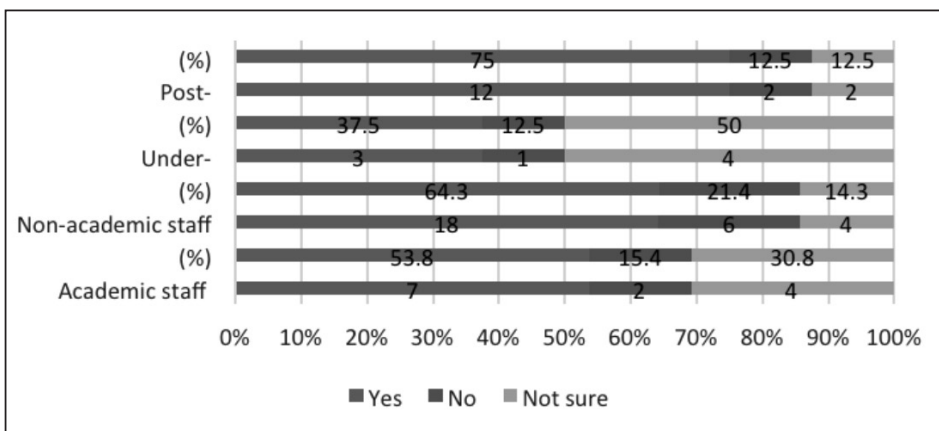


Figure 9: Do you know “e-waste”?

only one respondent (7.7%) answered “No”. This is a prove that Eco-Campus Management has been providing good facilities such as jogging and cycling track, jungle trekking, gymnasium, stadium and others.

Transportation

The use of public transport is one of the practices of sustainability that can be carried out by the campus community. However, based on Figure 11 most of the respondents from academic (100%) and non-academic (71.4%) prefer to use their own transport rather than using public transport (28.6%). When asked about that, they stated that it is easier for them to make travel arrangements if they use their own transport, it is comfortable, and they do not have to queue while waiting for the bus. They do not need

to exchange buss and pay different bus fare charges according to location. Time can be saved because there is no need to wait for the bus which sometimes take longer. The factor of residing outside the campus also led the campus community to use their own transports.

Safety and Security

Sustainable campus should have safety features that are good (refer Figure 12). Most of the respondents stated that UMS campus is safe and make them feel confident while they are at the campus. It is proven when a total of 24 respondents (85.7%) from non-academic staffs said “Yes”, followed by 10 respondents (76.9%) from academic staffs, eight respondents (50%) from postgraduate students and three respondents (37.5%) from undergraduate

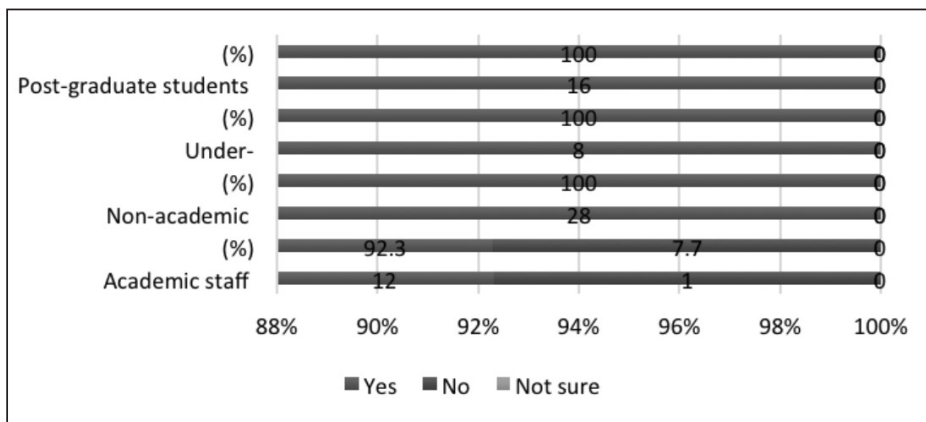


Figure 10: Infrastructure and facilities

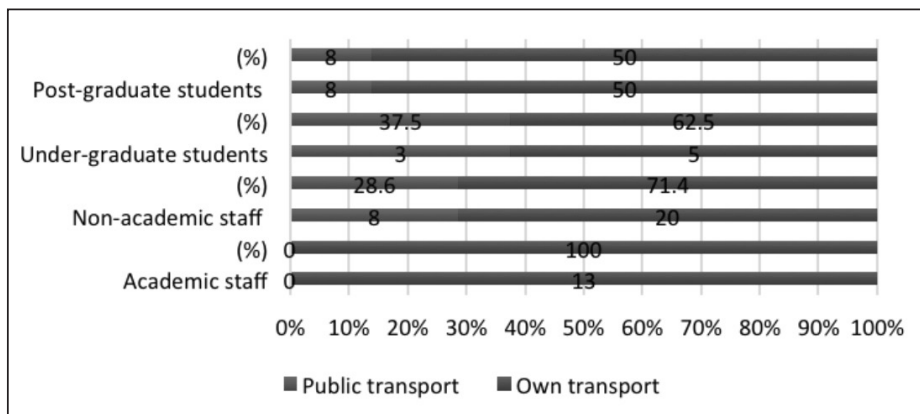


Figure 11: Transport used within the campus

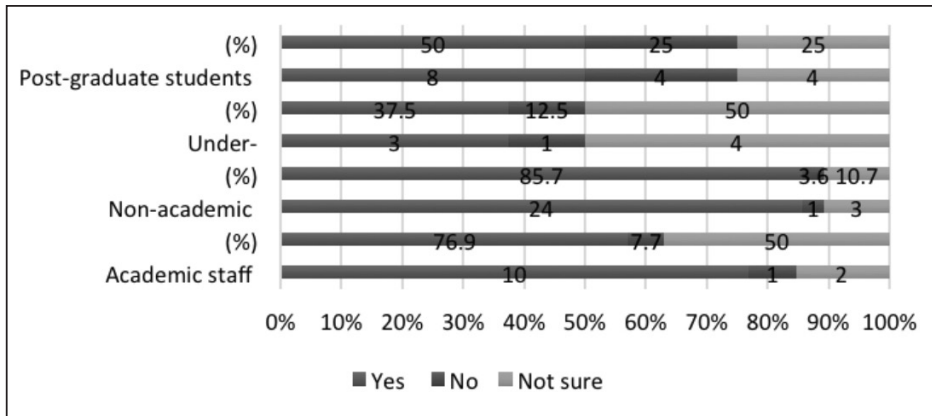


Figure 12: Safety and security

students. However, there are still several respondents who feel that UMS is not safe, four respondents (25%) from postgraduate students, followed by one respondent from each category, which is 12.5% (undergraduate student), 3.6% (non-academic staffs) and 7.7% (academic staffs). Dark areas and no street lighting, as well as the absence of security guards, served in some areas are the respondents' reasons to state that UMS is unsafe. The increasing lamps on the street, especially cost-effective LED lights can be applied, as well as the presence of security guards thus can create a sense of confidence and safety among UMS campus community.

Conclusion

As explained through the conceptual framework, knowledge and awareness of the importance of sustainability efforts create a conducive environment for the society. It is evident that UMS community has a high level of knowledge and awareness of sustainable campus, although there are still some basic things about the less-known sustainability efforts, affecting their sustainability practices. Lack of activities involving citizens of the campus, namely the students and staff can create a large communication gap if not it is appropriately addressed. Improvements should be intensified from time to time, in addition cooperation between the university and the stakeholders needs to be improved. University

has a great and unique potential to become a catalyst and community pioneer towards sustainability, but the role of the university itself needs to be enhanced in addressing internal and external factors capable of becoming obstacles in generating sustainable communities.

Acknowledgements

This research is supported by the research grant (project code AP-2014-022) led by Professor Dr. Er Ah Choy, the National University of Malaysia (UKM), Bangi, Selangor Darul Ehsan.

References

Alshuwaikhat, H. M., & Abu Bakar, I. (2008). An Integrated Approach to Achieving Campus Sustainability: Assessment of the Current Campus Environmental Management Practices. *Journal of Cleaner Production*, 16: 1777–1785.

Birdsall, S. (2013). Measuring Student Teacher’s Understandings and Self-awareness of Sustainability. *Journal Environmental Education Research*, 20: 814–835.

Blumer, T. (2010). *Innovations in Sustainable Food Packing*. California Polytechnic State University San Luis Obispo.

Dyball, M. (2010). Sustainability in an Australian University: Staff Perceptions. *Proceeding of the Sixth Asia Pacific Interdisciplinary Research in Accounting*

- (APIRA) Conference. University of Sydney, 12-13 July.
- EcoCampus Management Centre. (2016). *Introduction to EcoCampus Management Centre*. Retrieved from <http://www.ums.edu.my/ecocampusv2>
- Er, A. C., & Rewathi, K. (2017). Promoting Campus Sustainability: A Conceptual Framework for the Assessment of Campus Sustainability. *e-Bangi-Journal of Social Sciences and Humanities*, 11(2): 036–049.
- Hooi, K., Hassan, F., & Che Mat, M. (2012). An Exploratory Study of Readiness and Development of Green University Framework in Malaysia. *Procedia-Social and Behavioral Sciences*, 50(1): 525–536.
- Mohamad Fazli, S., & Yong, T. Y. (2006). Tahap Keprihatinan Alam Sekitar dan Amalan Kepenggunaan Hijau Pengguna di Petaling Jaya, Selangor. *Pertanika Journal Social Science & Humanities*, 14(2): 95-109. ISSN: 0128–7702.
- Nor Kalsum. (2016). Pengetahuan, Sikap dan Tingkah Laku Pelajar UPSI Terhadap Prinsip-prinsip Kampus Lestari. *Jurnal Perspektif*, 8(1): 29–41.
- Norazah, M. S., Norbayah, M. S., Iftekhar, A. C., & Irma Wani, O. (2015). Campus Sustainability: Does Student Engagement with Eco-campus Environmental Activities and Green Initiatives Really Matter? 2nd Regional Conference Sustainability: Capacity Building in Enhancing Campus Sustainability. Universiti Malaysia Sabah, Kota Kinabalu, April 7-8, 2015, Malaysia: UMS.
- Norfadillah, D., & Halimatun Saadiah, H. (2011). Tahap Kelestarian Pelajar Universiti Kebangsaan Malaysia ke arah Kampus Lestari. *Jurnal Personalia Pelajar*, 17: 83–95.
- Norfadillah, D., Halimatun Saadiah H., Noraziah, A., & Sarah Aziz, A. G. A. (2012). UKM's Staff Perspective on Sustainability and Its Contribution towards a Sustainable University. *Procedia-Social and Behavioral Sciences*, 59: 376–381.
- Rosazman, H., & Velan, K. (2015). Exploring Strategies for Sustainable 'EcoCampus': The Experience of University Malaysia Sabah. *Geografia-Malaysian Journal of Society and Space*, 11(3): 84–96.
- Tilbury, D. Ryan, A., Corcoran, P. B., Abe, O., & Nomura, K. (2010). Sustainability in Higher Education in the Asia-Pacific: Developments, Challenges and Prospects. *International Journal of Sustainability in Higher Education*, 11(2): 106–119.
- Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable University: What Can Be the Matter? *Journal of Cleaner Production*, 14: 810–9.
- Zurina, A. S., & Er, A. C. (2016). Penggunaan Bekas Makanan Mesra Alam di Malaysia: Kajian Awal Pengetahuan dan Kesanggupan Pelajar Universiti Kebangsaan Malaysia. *Geografia-Malaysian Journal of Society and Space*, 12(10): 113–126.
- Zurina, M., & Norjan, Y. (2003). Kesedaran Alam Sekitar: Tinjauan Awal di Kalangan Pelajar Universiti Kebangsaan Malaysia. Prosiding Seminar Kebangsaan Pengurusan Persekitaran 2003, Universiti Kebangsaan Malaysia, July 8–9, 2003, Malaysia: UKM.