



UniMAP Green & Sustainable Campus



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The idea to make UniMAP (at that time KUKUM) a 'nature campus' was mooted in 2002 during the very first discussion of the construction of University's main campus in Pauh Putra. It was envisaged that a site, which is in harmony with nature, was to be built. Indeed, 'nature campus', encompassing all known sustainability notions, is a philosophy that forms the basis of UniMAP's development and operation, no matter the location – whether in Pauh Putra, Sungai Chuchuh, Kangar, Jejawi, Kulim, Kuala Lumpur, or at other localities. The Pauh Putra campus – which is UniMAP's biggest university grounds – is dubbed 'Nature Campus' in the hope that its sustainable green essentials are emulated not just by all UniMAP campus sites, but also by the community-at-large.

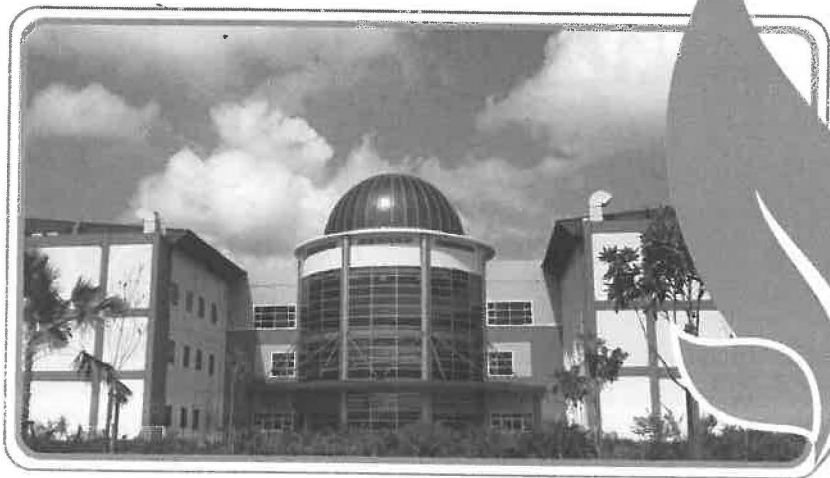
Today, some 12 years down the road, although much is yet to be completed, much has already been accomplished. I look forward to more green sustainable initiatives in the months- and years-to-come, that will propel UniMAP to the forefront of this very important endeavour.

- Datuk Professor Dr Kamarudin Hussin
Vice Chancellor, UniMAP
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In a time when the world is embroiled in various environmental calamities, it is only expected that universities assume leadership in the provision of guidance in matters relating to the calamities. UniMAP is no exception. Although the road to making the University a fully sustainable green campus has been riddled with time, cost, and expertise challenges, more than ten teams - all operating voluntarily - are hard at work looking into a range of environmentally-related concerns affecting the campus. Needless to say, the results thus far have been very encouraging. The general mindset of the campus population is slowly but surely changing for the better. All aspects are now looked at with critical 'green' eyes, and environmentally-centred solutions are the norm in the discussions that take place on campus grounds.

The road ahead might still be long and foreboding, but the 'green and sustainable' seeds have been duly planted, and the fruits will insyaa Allah be harvested in the near and far future.

-UniMAP Sustainable Campus Team
January, 2016



Introduction

UniMAP Sustainable Campus is a community of staff and students who have the collective aim of improving the effectiveness of energy usage, sustaining resources and increasing the quality of the environment by implementing projects and programs that contribute to a healthy and conducive lifestyle.

There are currently more than ten teams working on various aspects of the campus environment. Each team is managed by a leader, usually an academician, and is supported by team members who comprise of staff and students alike. Teams work independently of one another, and they report their progress to the Vice Chancellor's Sustainable Campus office approximately once a month. From time to time, they get together to work on bigger projects that involve their respective teams' specialties and interests.



Energy Management

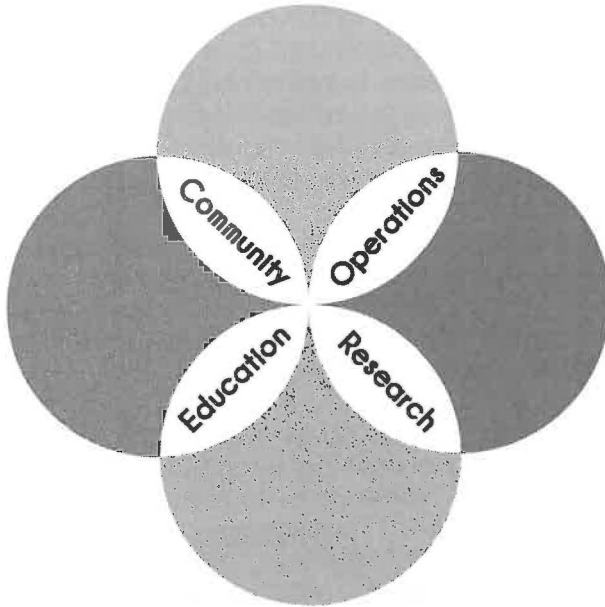
The Energy Management team has managed to save the University electricity bill by an average of RM 38,772 per month commencing May, 2013.

A staggered system of turning on air conditioning chillers in the Pauh Putra campus has directly contributed to a big chunk of the savings. There are three chiller plants in operation. The first chiller serves the University Library, the School of Mechatronic Engineering, the School of Manufacturing Engineering, and the School of Computer Engineering. It is activated at 7.00 am every day except on weekends. Chiller no. 2 (serving the Engineering Centre, the School of Microelectronic Engineering, the School of Electrical Systems Engineering) is activated at 7.15 am every day except on weekends, while chiller no. 3 (serving the Lecture Hall Complex) is activated at 7.10 am every day except on weekends. A staggered system such as this helps to reduce the 'peak demand', which in turn cuts down electricity bills

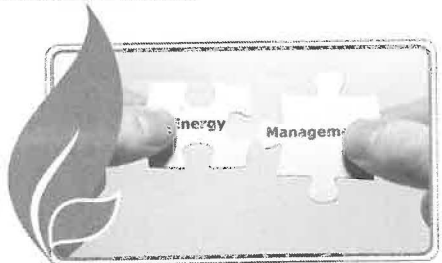
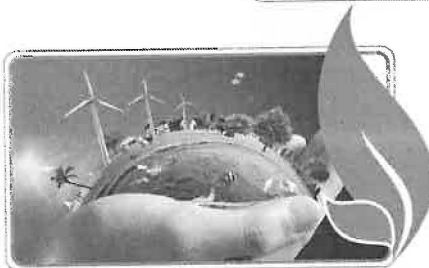
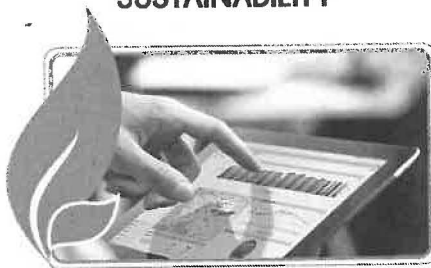
Data collected shows that the power consumption of Chiller 1, which used to be 27,751 kWh per week, has been reduced to an average of 19,128 kWh per week. This translates to a savings of approximately RM8622 per week. For chiller 2, the initial consumption of 2999 kWh per week is now about 2457 kWh per week, making a savings of roughly RM542 per week. As for chiller 3, 1897 kWh per week of consumption is now in the region of 1369 kWh per week, which makes for about RM1369 a week. This means the overall average savings is about RM9693 per week or RM 38,772 per month.

Apart from the chillers, the team has also looked into unplugging light bulbs without compromising the lux metre standard of the Malaysian Public Works Department. The team is also looking into other initiatives such as energy management accreditation and energy performance contracting.

CAMPUS



SUSTAINABILITY



Transportation

There are many transportation-related projects being planned, but the focus so far has been UniMAP's U-Sikal project. This is an ambitious 'point to multipoint' transportation system, whereby students ride on bicycles to get from one point to another. For starters, 140 bicycles have been purchased and placed in the Nature Campus, Pauh Putra, specifically at the Library, the main bus terminal, residential colleges, the main lecture hall complex, and the boulevard.

In line with the spirit of service above all else, students are given 15 minutes free use of the bikes. After 15 minutes, a minimal charge is imposed. So as to encourage a fast turn-around, the rate will be higher the longer the bike is with the user. The operation of the bike system utilizes RFID technology developed in-house, namely by the School of Mechatronic Engineering. The smart cards used form the basis for more ambitious green and smart technology projects to be developed and implemented in the near and far future.

Taking into account students' view (garnered through some focus group sessions), the campus landscape is slowly changed to accommodate bicycle pathways, zebra crossings, signages, ramps, etc.

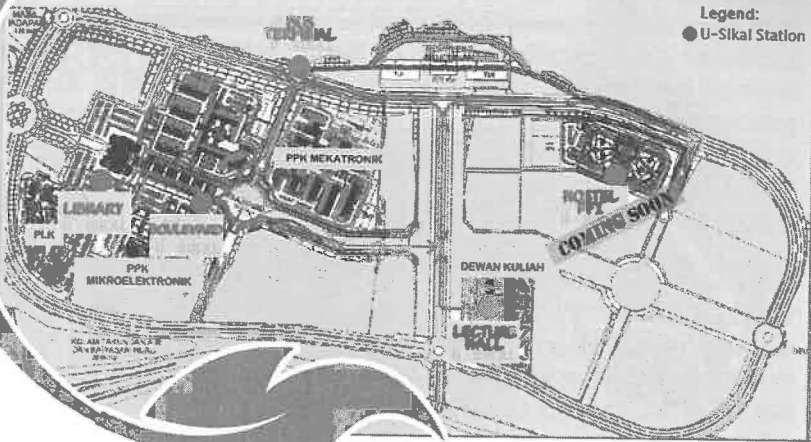
Contrary to the usual practice that sees bicycle renting carried out almost entirely by the university administration or municipal, the U-Sikal project is managed by the University's commercial arm - UniMAP Holding. This arrangement has saved UniMAP a sum of money in operational cost as well as asset management. In the long run, it is envisioned that the RFID system developed for this project will actually become a base for cashless transactions within the University campus.







THE STATIONS



Legend:
● U-Sikal Station

RATES



| | 1 st 10 min | 2 nd 10 min | 3 rd 10 min | 4 th 10 min | Next extra | Max usage | Penalty for return of U-Sikal after 8 hrs | Penalty for NON-return of U-Sikal |
|------------|------------------------|------------------------|------------------------|------------------------|------------|----------------------|---|-----------------------------------|
| 0 - 20 min | 21 min - 30 min | 31 min - 40 min | 41 min - 50 min | 51 min - 60 min | 30 min | 8 hrs per activation | RM50.00 per day (24 hrs) | RM400.00 |
| Free | RM0.20 | RM0.50 | RM0.90 | RM1.50 | RM0.50 | RM8.50 | | |



MANAGED BY



Dagang Kampus

Dagang Kampus attempts to give a solution or to make it easier for students or staff to sell their second hand goods/items or belongings that they do not need or do not want to use anymore. It indirectly promotes a sustainable lifestyle, as it encourages UniMAP denizens to minimize the amount of idle goods and items by selling them to the second users. As it is, there are too many goods and items that have outlived their usefulness by their owners. After being left idle for a while, they are usually thrown away. This is such a waste, as many items are usually still useful to others just by a minimum amount of fixing.

This is where Dagang Kampus comes in handy. It is a platform hosted by a group of UniMAP students who call themselves 'Green Crew'. The activities and programs organised are carried out in the vicinity of students' residence, lecture halls, cafeterias and student centres. Among the programs are car boot sales, bundle sales, food sales, and several others.

Apart from lessening the waste of items that are still usable, Dagang Kampus is also a good platform to encourage volunteerism and entrepreneurship amongst students. Reduce, reuse, repurpose and recycle are the 'in' words, and Dagang Kampus plays a big role in creating, strengthening, and sustaining this mindset.

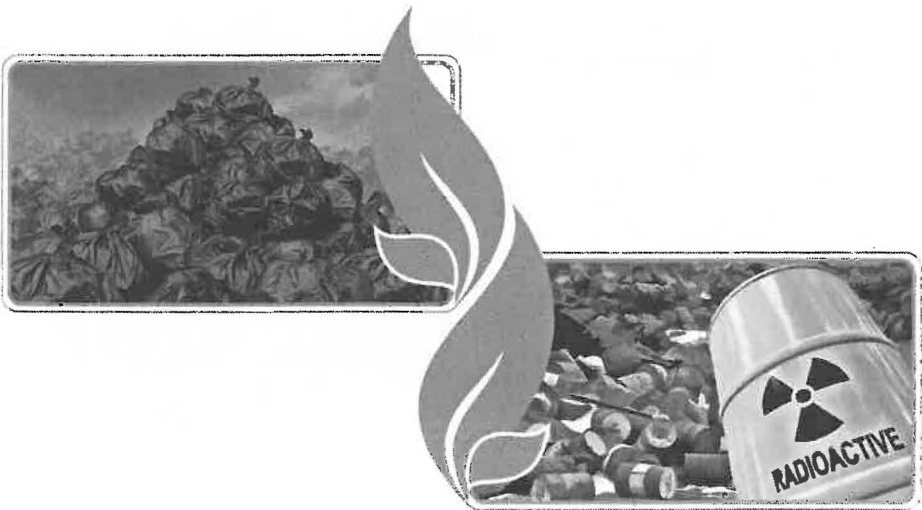




Waste

The Waste team's main objective is to implement effective and sustainable measures in waste management. Among the activities carried out are 'Recycle for Charity' program, 'Earth Day' program, 'Charity Sale' program, 'e-Waste' program, and several others. This team is adamant at involving students as well as the community-at-large in all of its programs. For example, its 'Recycle for Charity' programs involve the participation of primary and secondary schools throughout the state of Perlis. In its 'Charity Sale', clothes donated are either sold or donated to welfare associations. For the 'e-Waste' program,

Thanks to the numerous efforts extended, recycling is now institutionalised in UniMAP. Staff and students throw used paper, cardboard and plastic/glass bottles in designated bins provided throughout the campus. Hence, recycle bins have to a large extent replaced traditional trash cans in many university buildings. The level of general waste generated by many departments has now dropped. This initiative helps meet the overall carbon targets and to keep waste disposal costs down.



Land & Water

One of the first initiatives by this team is to plant trees throughout the main campus. A total of 500 saplings have been donated by the Forest Research Institute of Malaysia (FRIM), and many more (at least 1000 saplings) are on the way, thanks to Lanskap Malaysia. The varieties of saplings include Merawan Siput Jantan, Meranti Temak, Nyatoh Sidang, Royal Palm, Bunga Tanjung, and numerous others.

Since the beginning, the team combs through the entire campus to identify spots where greenaries must be boosted. Lately, the stunning lake in Pauh Putra has been in focus. The ecosystem here provides plenty research opportunities. Water quality, drainage patterns, and biodiversity studies are some of the aspects that have very high exploration potential. In addition, the grounds around the lake are make for good and relaxing recreational ambience. Plans are underway to build pontoons and decoys, and to generally beautify the area so as to enhance the flora and fauna of the vicinity.



Rainwater Harvesting

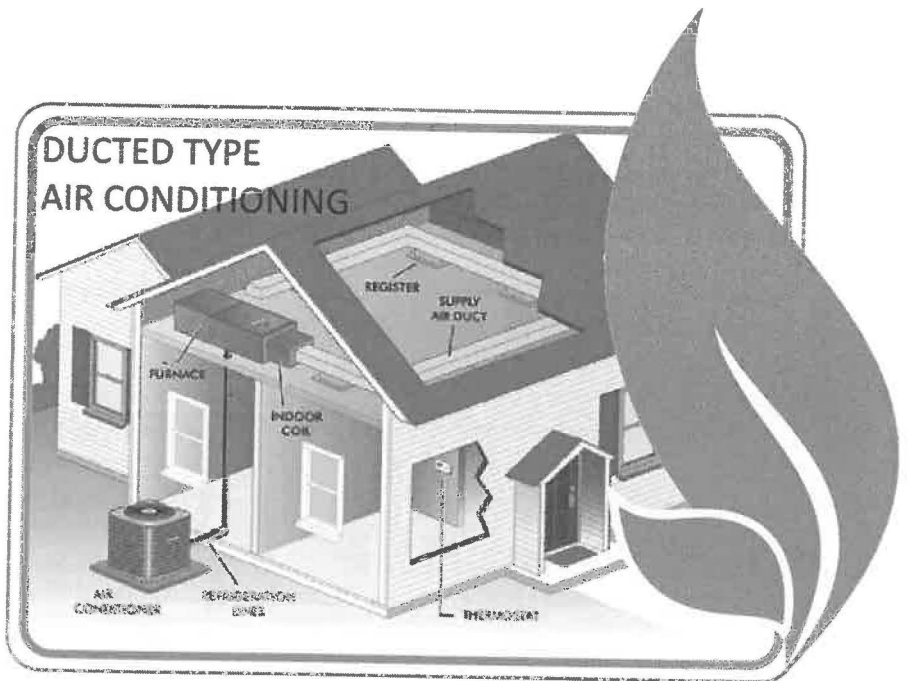
Rainwater harvesting refers to the collection, storage, and usage of rainwater from rooftops, land surfaces and other catchment areas. In UniMAP, this basic idea is taken a step further to take advantage of the expertise available in the University. It is envisioned that a comprehensive rainwater harvesting system, be developed, featuring solar-powered irrigation and security structures. The system will be monitored via web-based applications.

Against a backdrop of depleting fresh water levels, it is hoped that this project becomes the perfect model for the same system to be used all over the campus grounds.



The Climate team aspires to work towards having a clean and conducive climate in the campus, using the Green Building Index (GBI) as the basis of its plans. To start with, the air quality in the Syed Faizuddin Library (UniMAP's main library) is monitored using sensor devices developed in-house. In the course of time, the monitoring process will be extended to all university buildings.

Achieving a good overall climate in the campus is a monumental task, one that goes beyond the job scope of the Climate team. But the indoor quality measurement job the team is carrying out is the first of many more steps it will be taking in the months to come.



Procurement

Green procurement is part of the government's desire to instill a green mindset amongst civil servants. As such, the 'Introduction to Green Procurement' document was issued by the Ministry of Energy, Green Technology and Water. UniMAP's Green Procurement team uses it as the main reference in the development of its very own green procurement guide.

Green Purchasing means purchasing goods and services that do not carry much environmental impact on human health and the environment. Of course, the items' quality should not be compromised at all. However, there might be some cost implications, and this is the prime issue that warrants much deliberation at the moment. It is expected that initially, the result of the green purchase may seem marginal. But if looked at in the long term, this good practice will provide worthwhile returns to the University.

Given the fact that UniMAP has a huge purchasing power and it buys many items in great quantities, if implemented well, green purchasing will contribute significantly to the University's sustainability quest.



Cannibalisation

UniMAP's cannibalisation project is where old and malfunctioned items are collected and repurposed so that they can be used again. Being a university, UniMAP buys, uses, and disposes a huge number of items almost on a daily basis. A person with a creative pair of eyes should be able to see new uses to old items with just a few tweaks here and there. This is the aim of the Cannibalisation team - to encourage creative thinking and action amongst students and staff alike when it comes to the University's discarded objects.

In order to do this, the team uses the "i-project" channel. 'i-project' (with 'i' denoting 'innovation') is an existing scheme whereby students work in teams during their first year of study, so as to come up with innovative solutions to common campus problems. Carried out as part of students' co-curriculum programs, the "i-project" involves competitions and repair workshops that appeal to UniMAP's very own special interest group who enjoys reevaluating, reusing, reinventing, and and reproducing 'cannibalised items'.

Cannibalisation is also carried amongst members of staff who have similar interests. Competitions are organised from time to time, opening up doors to unexpected creations that come from what would otherwise reside in the dumping grounds of the University.



For as long as people need to eat, food (and food waste) can be found everywhere there is people. That is why the Food team initiates the 'Green Nation Project'. The project aims to collect food waste from cafeterias and turn it into compost fertilisers. To add, unused fruits and vegetables are gathered to be converted into effective microorganisms (EM), thanks to the transformative processes the materials go through.

In the quest to green (literally speaking!) the campus, compost fertilisers are direly needed. It is an alternative fertiliser that is chemical free, and it tremendously improves land fertility through the action of micro-organisms that increase the nutrient content in the soil. As for EM, it is the substitute of chemical-based cleaning products that are currently used widely. It helps clean and maintain drains and toilets, and it also makes helpful insect repellents.

Both the compost fertilisers and EM projects have remarkable commercial possibilities. At the moment, there are still some issues that need to be looked into, but this should not take too long to overcome, given the fact that the potential the projects carry far outweigh the challenges they come with.



Building Operation & Maintenance

Although the Pauh Putra campus is relatively young in age (it started operation in 2010), its heavy daily use by some 10,000 campus denizens causes some parts of it to 'break under pressure'. Broken tables, tilted chairs, cracked mirrors, dysfunctional door knobs.... these result in unnecessary discomfort to users.

When the Building team carried out an examination to identify what the discomfort factors are, and how they come about, it is found that sometimes, all it takes is a little tender loving care when operating campus amenities, and an attitude of urgency when complains are voiced. Hence, a campaign was organised so as to raise campus denizens' awareness and appreciation of the matter appropriately.

Against this scenario, the Building team looks at a multitude of ways to optimise building operation and maintenance. Issues such as complaint channels and prevention of vandalism warrant it to work closely with the campus authority to ensure that the physical infrastructure of the University is at its best at all times.

