



UNIVERSITI MALAYSIA PAHANG  
**SUSTAINABILITY  
REPORT 2020/2021**

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## **I. Introduction**

As an institution of higher learning, Universiti Malaysia Pahang (UMP) is entrusted with an enormous responsibility to make our institution operate sustainably and to foster more programmes and initiatives towards making the university campuses “green” in our operation. As a teaching university, we embrace our responsibility in our lecture sessions to ensure that the trained engineers and technologists shall become a new breed of professionals with far-reaching conscience and responsibility as future members of their companies and members of the community. Additionally, they can always think and act to make the Earth a beautiful and comfortable home to live in. As a research university, UMP should be more active in conducting research related to resource-use efficiency and sustainability for the benefits of the global world and future survival and comfort of our future generations.

## 2. Governance

Our sustainability agenda is observed by the Centre for Corporate & Quality Affairs (Appendix I). In contrast, the leading think tank of the sustainability agenda in our campuses is the Center for Development and Property Management (PPPH), in collaboration with the Registrar Department, Centre of Information and Communication Technology, Alumni and Students Affairs Department, Security Division, and Occupational Safety Health & Management Office. *Mesyuarat Jawatankuasa Pengurusan Universiti (JKPU) 157, No. 15/2021* on 29 September 2021 has decided to establish Jawatankuasa Kelestarian Kampus, Chaired by Deputy Vice Chancellor (Research and Innovation). This committee is responsible for setting up the direction of universities sustainability efforts based on the 17 Sustainable Development Goals

For 2020/2021, UMP is focusing on developing PELAN KAMPUS LESTARI, UNIVERSITI MALAYSIA PAHANG. This sustainable campus plan is a shared idea where all the initiatives and action plans that will be carried out are made by consensus, collective opinion. This guideline is expected to be launce in early 2022.

To measure our internal development, UMP utilises a number of external benchmarks to evaluate our progress and performance based on six categories under UI GreenMetric World University Ranking, which include:

- Setting and Infrastructure (15%)
- Energy and Climate Change (21%)
- Waste Management (18%)
- Water Usage (10%)
- Transportation (18%)
- Education (18%)



### 3. Setting & Infrastructure

#### Campuses



Universiti Malaysia Pahang, Pekan Campus (Main Campus) - Pekan Campus, 50km away from Gambang Campus, is set to be the main campus of UMP after its full completion in 2015 tentatively. Upon its completion, the permanent campus will be able to accommodate a total number of 10,000 students and 2,000 staff. The location is in the vicinity of an ever-growing

industrial zone, especially the automotive industry, which acts as a catalyst for research collaboration and academic proliferation. Currently, three (3) faculties, namely the Faculty of Mechanical Engineering, Faculty of Manufacturing Engineering, and Faculty of Electrical & Electronics Engineering, have made their way to the campus which is surrounded by the sea breeze of the South China Sea.



Universiti Malaysia Pahang, Gambang Campus - The campus is currently operating in an industrial estate about 30 km from the city of Kuantan, and it is a two and a half hours' drive from Kuala Lumpur, via the East Coast Expressway. Strategically located in the East Coast Industrial Belt of Peninsular Malaysia, which hosts a number of multinational corporations (MNCs) in the chemical, petrochemical, manufacturing, automotive, and biotechnology industries, UMP students have been exposed extensively to the latest development in the fields of engineering and technology.

### ***Rimba Lestari***

In 2018/2019 The Forest Research Institute Malaysia (FRIM) distributed 1000 trees from 24 species to UMP for collaborative projects and sharing expertise in cultivation forests in UMP Pekan Campus. As the texture of the land at UMP Pekan comprises disturbed land (Dld), this cooperation brings expertise between UMP and FRIM to work together in the development of the Pekan UMP landscape and its environment to be more conducive. This Green Sustainable Campus Project was led by the Head of Biomass Technology Program from FRIM, Dr. Wan Asma Ibrahim.



In 2020 this project was rebranded as Rimba Lestari. Rimba Lestari is located between the buildings of the Faculty of Electrical and Electronic Engineering Technology (FTKKEE), the Faculty of Mechanical and Automotive Engineering Technology (FTKMA), and the Faculty of Manufacturing Engineering Technology and Mechatronics (FTKPM). Rimba Lestari can provide an opportunity for UMP residents to improve and cultivate campus sustainability practices jointly. Rimba Lestari, which spans 26.82 acres, allowed the participants to identify more than 800 forest trees and 1,800 acacia trees. Among the tropical trees found in Rimba Lestari are tongkat ali, light red (meranti tembaga), Indian almond (ketapang), Malacca teak (merbau), chengal, seashore mangosteen (beruas), jelutong, and others.

### **Irrigation Systems for *Rimba Lestari***

In 2021 UMP has come out with another initiative for Rimba Lestari. Since UMP is near the sea, good irrigation systems for any farm require constant monitoring, especially in higher surrounding temperatures where water is scarce due to low rainfall indices. Nowadays, Farmers usually control the water flow through the semi-conventional method using a water pump with a timer indicator. The timer setting frequently has been changed depending on surrounding temperature, soil moisture, time of the day, and health of the crops. This so-called semi-conventional method is also implemented by Universiti Malaysia Pahang (UMP) Afforestation program through its forest plantation called Rimba Lestari UMP under Pusat Pembangunan dan Pengurusan Harta (PPPH) management. The design of an IoT for smart irrigation is essential in this dry area, which faces very high ambient temperature where the average temperature was 30°C to 35°C according to AccuWeather.com. The proposed system utilizes a single board system on a chip controller, with built-in Wi-Fi connectivity and/or any telecommunication signal provider. The controller

reads the field soil moisture, humidity, and temperature sensors and outputs appropriate actuation command signals to operate irrigation pumps. The controller also monitors the pump water pressure/level, which is essential to prevent the pump motor from burning due to the low level in the water lake. The system comprises two units of water pumps. The first is by using the existing pump where water was pumped out of the lake and pipe into a proposed water tank. The second is by using an irrigation pump for planting water/fertilizer distribution. The NPK fertilizer used in this project will be diluted by batch in a tank based on a specific water portion as consulted by FRIM expertise. The use of water from the lake may as well be in line with UMP Green Campus's vision by reducing energy consumption through avoidance of wasteful consumption and being more prudent in the use of energy, particularly the use of treated water from Pengurusan Air Pahang Berhad (PAIP). This smart irrigation system may also provide workers with a better working environment by reducing the non-value-added and motion waste.

To develop an afforestation program, UMP has sought the expertise of Forest Research Institute Malaysia (FRIM) to assist in this project. This collaboration aims to enhance the landscape of the UMP campus and provide a more conducive environment for students. Nearly 1000 forest plants with 24 different species were planted in UMP Pekan Campus in 2018. The size of the land was 4.1 acres.

The extreme heat events impacted a wide variety of tree functions wherein high temperatures, almost 293 corps have died. The other factor contributing to the tree death was the ineffective irrigation system monitoring (Ridwah MR et al., 2019). A site visit was conducted on March 15, 2021, found no water pressure was detected from one of the pump houses near the Library. The

pump is well functioning, but there is a clogged along the piping line where the lake water is pumped out. The problem arose due to the inappropriate design of the piping system, and as a backup, another water supply from PAIP treated water is consumed to ensure the survival of the trees (see figure 3.0). The existing irrigation system is not smart enough to ensure the survival rate of the plants due to inconsistent climate change. We conclude three most consecutive problems arise in this study, and they are:

1. The existing irrigation system use timer to distribute the water to the plant. Some of the crops died due to insufficient water supply, especially during the dry season.
2. Inappropriate monitoring system on pump operation may lead to pump burst due to clogging when the lake water is too shallow when the area experience high ambient
3. The existing piping line from the point where the lake water is pumped out does not come with a floating and filtering system to ensure the smooth pump operates with no debris or forest mossy stuck inside the piping system.

### **Disability Friendly university**

Disability is not an obstacle to becoming a member of UMP. Most premises and facilities of the university are fully or partially adapted to the needs of disabled students:

1. Ramp or elevator for wheelchair access at all buildings, including hostel, Student Activity Centre, and faculty.
2. Students with disabilities live in dormitory rooms that are adapted to their needs, with a possibility for their companions to be accommodated together.
3. Lecture rooms have designated places for people in wheelchairs
4. Present equipment and infrastructure are continuously being improved.

5. UMP provides a disability access map of UMP buildings.



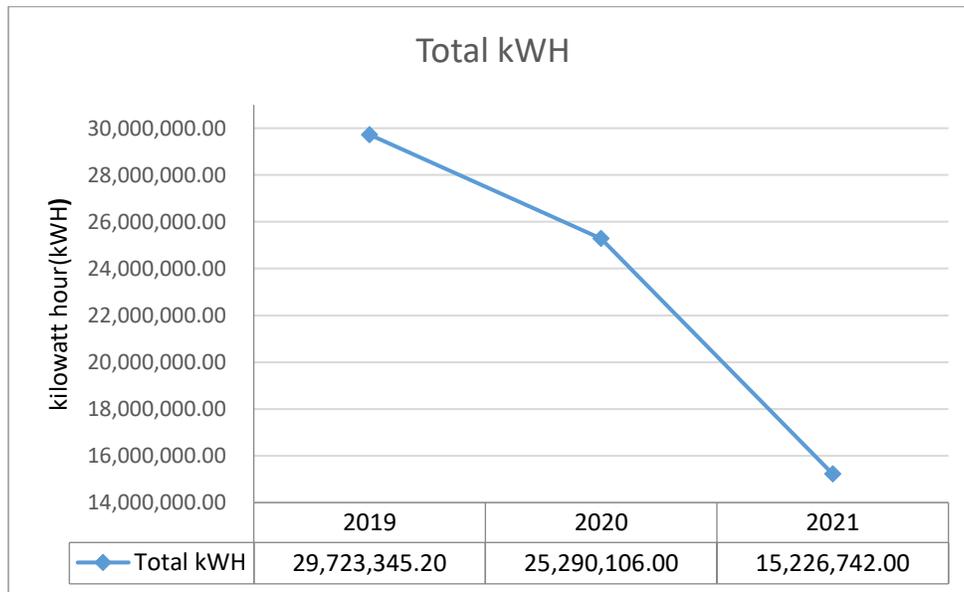
## Conservation

To date, UMP has 13 projects which are:

No	Project	Total Area
1	<i>Rimba Lestari</i>	4.1 acre
2	Forest Canopy	5.3 acre
3	Deer	205.2 acre
4	Goose	31.2 acre
5	Fruit Orchard	2.3 acre
6	Extinct Fruit Orchard	6.9 acre
7	Arboretum Bioaromatic	8.1 acre

8	Tasik A (Wetland)	31.9 acre
9	Tasik B	39.2 acre
10	Laman Cendekia	1 acre
11	Pokok Kepala Mataq	0.5 acre
12	Sungkupan (Mulching)	4.1 acre
13	Napier	0.2 acre

#### 4. Energy & Climate Change



The total electricity usage of the University Pahang Campus in the last 12 months (Oktober 2020 – September 2021) is **15,226,742kWh**.

In 2019/2020, UMP consumed 25,290,160 kWh of electrical energy for the whole year. On average, electrical energy consumption in 2019/2020 was 2,107,513 kWh monthly. Meanwhile, in 2020/2021 (until August), UMP consumed 15,226,742 kWh of electrical energy, with average

electrical energy consumption is 1,268,895 kWh monthly. The electricity usage this year decreased 39.79% compared to the last year (2020), mainly because of the MCO (Movement Control Order – Covid-19).

## **5. Waste**

UMP is practicing Public Sector Conducive Ecosystem, a guideline provided by Management Modernisation Unit and Malaysia Management Planning. Public Sector Conducive Ecosystem, commonly known as EKSA is focusing on five main objectives:

- i. Expanding the implementation of Government agencies to create a conducive environment;
- ii. Enhancing corporate image;
- iii. Strengthening creativity and innovation activities in line with the demands of stakeholders;
- iv. Encouraging activities towards creating a green environment through cultivation of Green Practices; and
- v. Ensuring that the auditing elements meet the needs of the various Government agencies. They are provided with recycling bins, and each month they need to measure the amount of wastes and submit a report to the UMP's Public Sector Conducive Ecosystem Committee.

The recycling program is managed by UMP Holdings, with the help of other departments providing facilities and systems to accommodate the recycling process. Recycle bin is provided in

the building and also outside of the building. The collection of recyclable waste is monitored and recorded monthly.

ORGANIC WASTE TREATMENT	MONTH	OPEN DUMPING	PARTIAL (1%-25% TREATED)	PARTIAL (>25%-50% TREATED)	PARTIAL (>50%-75% TREATED)	EXTENSIVE (> 75% TREATED)	MT
Domestic waste	september	✓					35.14
	Oktober	✓					34.16
	november	✓					46.08
	Disember	✓					44.95
	january	✓					75.31
	february	✓					42.61
	march	✓					15.47
	april	✓					
	may	✓					
	june	✓					
	july	✓					
	august	✓					75.74
september	✓					96.05	
Discarded vegetables	september				✓		
	Oktober				✓		
	november				✓		0.039
	Disember				✓		0.024
	january				✓		0.051
	february				✓		
	march				✓		
	april				✓		
	may				✓		
	june				✓		
	july				✓		
	august				✓		
september				✓		0.039	
Branches ,dryed leaf & fronds	september	✓					
	Oktober	✓					
	november	✓					
	Disember	✓					
	january	✓					
	february	✓					
	march	✓					
	april	✓					
	may	✓					
	june	✓					
	july	✓					
	august	✓					
september	✓						

IN ORGANIC WASTE TREATMENT	MONTH	OPEN DUMPING	PARTIAL (1%-25% TREATED)	PARTIAL (25%-50% TREATED)	PARTIAL (50%-75% TREATED)	EXTENSIVE ( 75% TREATED)	MT
Discarded paper	september				✓		
	Oktober				✓		0.075
	november				✓		
	Disember				✓		0.094
	january				✓		0.058
	february				✓		0.055
	march				✓		
	april				✓		
	may				✓		
	june				✓		
	july				✓		
	august				✓		0.05
september				✓		0.2	
Bottle	september				✓		
	Oktober				✓		
	november				✓		
	Disember				✓		0.038
	january				✓		1
	february				✓		0.032
	march				✓		
	april				✓		
	may				✓		
	june				✓		
	july				✓		
	august				✓		0.03
september				✓			
Plastics	september				✓		
	Oktober				✓		
	november				✓		
	Disember				✓		0.038
	january				✓		0.1
	february				✓		0.032
	march				✓		
	april				✓		
	may				✓		
	june				✓		
	july				✓		
	august				✓		0.03
september				✓		0.006	
Metal	september				✓		
	Oktober				✓		
	november				✓		
	Disember				✓		
	january				✓		0.37
	february				✓		0.106
	march				✓		
	april				✓		
	may				✓		
	june				✓		
	july				✓		
	august				✓		0.1
september				✓		0.02	

Compost & Recycle Centre, UMP Gambang, and Pekan manage a collection of recyclable material and composting at UMP. Compost & Recycle Centre in UMP Pekan is equipped with rainwater harvesting and powered by solar energy. Both centre manage organic & inorganic waste in UMP.



Waste segregation activities

# Kompos Sisa Makanan

Bantu kami dalam memelihara alam sekitar kita



## Sediakan

Sediakan makanan seperti biasa



## Asingkan

Asingkan sisa makanan yang dihasilkan dari proses penyediaan makanan daripada sisa lain (karton, plastik). Contoh sisa makanan : kulit telur, kulit buah, bahagian ayam atau daging, sayur-sayuran.



## Buang

Buang sisa makanan yang telah diasingkan ke dalam plastik bersingan dari sisa lain. Letakkan plastik sisa tersebut ke dalam tong sisa makanan yang disediakan.



## Kutip

Staf bertugas akan mengutip sisa makanan tersebut untuk proses pengkomposan.



UMP is committed to educating our citizens on the recycling program. Poster and other promotional material are distributed through social media and the official website to create awareness regarding sustainable waste management. Briefing and discussion have been conducted with relevant parties to ensure that they are aware of the initiative. Cafeteria agreed to at least segregate their waste accordingly to ensure the success of food waste composting.

Waste Management at UMP is monitored through E-Community under sub menu Green Campus Management. It was developed to monitor and update the current status of waste management from each department in UMP. This system helps UMP gather data related to sustainable waste management, where the amount of recycled, composted, and disposed of waste is monitored through this system.

## Water

This year UMP has come out with another project for a water recycling project. This project is a continuation of the *Rimba Lestari* project. This project focuses on solving the problem of the irrigation system at the *Rimba Lestari* site.



*Irrigation system for Rimba Lestari*

## **6. Transportation**

The University's Green Campus Campaign runs throughout the year. All students and staff are encouraged to use zero-emission vehicles. In some faculties, they are using electric bicycles to commute from one place to another inside the campus. UMP provides free shuttles for students to commute from UMP@City and DHUAM to UMP Pekan Campus.

<b>BUS SCHEDULE FROM UMP @ CITY TO UMP PEKAN FOR 2020/2021 SESSION</b>				
<b>DAY</b>	<b>TIME</b>	<b>FROM</b>	<b>DESTINATION</b>	<b>TOTAL STUDENTS</b>
<b>Monday - Thursday</b>	7:15	UMP@CITY	UMP	50
	9:15			30
	13:00			25
	14:00	UMP	UMP@CITY	50
	16:30			30
	18:30			25
<b>Friday</b>	7:15	UMP@CITY	UMP	22
	9:15			30
	14:30			26
	10:30	UMP	UMP@CITY	22
	15:30			30
	17:30			26
<b>Saturday</b>	8:00	UMP@CITY	UMP	15
	17:00	UMP	UMP@CITY	15
<b>BUS SCHEDULE FROM DHUAM TO UMP PEKAN CAMPUS FOR 2020/2021 SESSION</b>				
<b>DAY</b>	<b>TIME</b>	<b>FROM</b>	<b>DESTINATION</b>	<b>TOTAL STUDENTS</b>
<b>Monday - Thursday</b>	7:15	DHUAM	UMP	50
	9:15			50
	13:00			25
	14:00	UMP	DHUAM	45
	16:30			50
	18:30			30
<b>Friday</b>	7:15	DHUAM	UMP	40
	9:15			20
	14:30			25
	10:30	UMP	DHUAM	45
	15:30			20
	17:30			20
<b>Saturday</b>	8:00	DHUAM	UMP	15
	17:00	UMP	DHUAM	15

Bus Schedule from UMP@CITY and DHUAM to UMP Pekan Campus for 2020/2021 session

Besides that, our students in both campuses can enjoy public bus services (with minimal payment) to commute from campus to Kuantan town.



Public transport facility at both campuses

## 7. Education



UMP received 500 forest saplings for the Alam@UMP programme, a collaboration between the Centre of Industry and Community Network (ICoN) and Medal Lions Creative (MLC), a local company in the state.

This program is focused on increasing environmental awareness through the involvement of universities and industries and intensifying the joint venture activities in carrying out Alam@UMP programme with external parties.

Future collaboration was also discussed at the meeting, including the planning of Edutourism UMP programme, Ecotourism at Pantai Rekreasi Air Leleh, Kuala Pahang, which will benefit the area around UMP, and planting and sapling care programme that can generate income for students and the university.

Medal Lions Creative (MLC) team is also seeking to increase the number of saplings to 5,000 to beautify the two UMP campuses in Pekan and Gambang for the success of the Alam@UMP programme.

The handing over of the saplings was also a continuation of the collaboration programme between UMP and MLC since 2016. This collaboration will be a new starting point in supporting community activities in line with the university's theme 'Technology for Society'.

## Appendix I

Professor Dr. Chong Kwok Feng	Director, Centre for Corporate & Quality Affairs
Associate Profesor Dr. Herma Dina Setiabudi	Deputy Director, Centre for Corporate & Quality Affairs, Branding Division
Mrs. Hazlina Faizal	Secretariat/Senior Executive, Branding Division
Mr. Muhammad Aniff Bin Mohamad Saleh	Administrative Assistant, Branding Division