

# ENVIRONMENTAL SUSTAINABILITY REPORT (ESR)

2023 - 2024



**UiTM Environmental Sustainability Reporting (UiTM ESR) 2023/24**

First Edition 2025

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## INTRODUCTION - UiTM Environmental Sustainability Report 2023

The Universiti Teknologi MARA Environmental Sustainability Report (ESR) 2023 is part of UiTM Green Centre's (UGC) deliverables from the ideation of UiTM Greenation Strategic Plan.

The theme for this year is 'Greening UiTM'. The UiTM ESR 2023 summarizes the overall progress in the university and campus sustainability initiatives throughout the year which aim to be associated with the UGC Core Area – UI GreenMetric and Low Carbon Cities 2030 Challenge (LCC2030C). This report presents information on sustainable initiatives undertaken by UiTM in its main as well as branch campuses throughout the country.

The UiTM community has developed value-driven sustainability perspectives as per the 17 Sustainable Development Goals and UiTM Strategic Planning 2025. UiTM has stayed the course on various initiatives to cope with the changes. This progress has presented the UiTM family with the opportunity to look for supportive collaborators and partners to learn from one another, develop creative plans, and tackle sustainability issues on the university campus, national, and international levels.





### Message: Vice-Chancellor

*Bismillahirrahmanirrahim.*

My sincere congratulations to UiTM Green Centre on the completion of the Environmental Sustainability Report (ESR) 2023. The reporting is imperative in showcasing UiTM's commitments in ensuring and promoting eco-friendly practices on campus.

Green initiatives at Universiti Teknologi MARA (UiTM) are progressively implemented in all UiTM campuses. With the goal of becoming a Smart Sustainable Green Campus, UiTM's initiatives are not only focused on planet and profit but also on individuals ranging from the staff, students, alumni, strategic partners, suppliers, and the community.

UiTM 2025 Strategic Plan geared towards becoming a Globally Renowned University warrants cooperation from all parties concerned in its unleashing full potential to shape the future. With heightened awareness on environmental issues, higher education is reformed by providing quality education which cultivates skilled and competent manpower whilst reducing inequalities and wastefulness. Such efforts will allow individuals from all walks of life to contribute towards the nation's progress and economic prosperity as outlined in the 17 Sustainable Development Goals (SDGs).

UiTM at the forefront of Green Initiatives validated the university's concerns and addressed the plan, strategies, and formula in educating the UiTM community on the importance of green sustainable efforts. Clearly, awareness and cooperation of all UiTM stakeholders are much needed in our green initiative and ensure its success for the benefit of our future generation. The Initiatives and activities performed now may appear to be small and simple acts, but the results obtained will speak for themselves.

Congratulations to all for the noble acts undertaken in greening UiTM. Together let us green UiTM!

**PROFESSOR DATUK Ts. DR SHAHRIN BIN SAHIB @ SHAHIBUDDIN, FASc**



### Remark: Deputy Vice-Chancellor (Development)

*Bismillahirrahmanirrahim.*

Sustainability and green initiatives have always been at the forefront of Universiti Teknologi MARA (UiTM) planning in the pursuit of delivering continuous value to its stakeholders. The Strategic Theme 8 (Smart Campus) under UiTM 2025 Strategic Plan upholds the sustainability agenda of the university headed by the Development Office. Initiatives on 'Smart Campus' are aimed at preserving UiTM visibility and sustainability eco-system for the benefit of the entire university community including staff, students, alumni, strategic partners, suppliers, and surrounding community.

A conducive environment is crucial for successful teaching and learning, working and research activities. As such, the Development Office has laid out six (6) main initiatives in line with the university's overall mission. The initiatives are empowering the existing facility management system, strengthening staff capacity, improving PFI management, earning and spending, campus visibility and sustainability and digitizing the campus.

'Greenation' is a theme set by the Department of Development as sustainability initiatives are an on-going process and require effort and resources. Part of the initiatives undertaken by the Department of Development include creating awareness on energy saving, water consumption, carbon footprint (carpool, paperless, etc.) and not forgetting developing and enhancing special needs facilities for those with special needs. All of these efforts aim at cost reduction and saving of approximately 15% for the university which can be channeled to other areas of community.

Let us keep up the momentum of alertness, awareness, and involvement in creating a green, conducive, and sustainable university.

**PROFESSOR Ts. Sr. DR. HJ. MD YUSOF BIN HAMID, PMP, AMP**



**Remark: Director UiTM Green Centre**

*Bismillahirrahmanirrahim.*

The establishment of UiTM Green Centre (UGC) or Pusat Hijau UiTM was approved by the MEU meeting in October 2020, under the portfolio of Deputy Vice Chancellor of Development, Universiti Teknologi MARA (UiTM). This initiative is in line with the UiTM 2025 Strategic Plan under the Strategic Theme 8 (Smart Campus) and to uphold the sustainability agenda of the university, community, and the world. UGC operationalization commenced fully in March 2021.

UGC promotes dynamic and diversity in its operations where the key members are appointed among the UiTM community; assisted by Expert Task Force (ETF) across faculties and with multidisciplinary experts who have a strong passion and interest to advocate the sustainable agenda of the university. UGC main function is on spreading awareness and transforming the University system towards Sustainable Green Campus by initiating and coordinating sustainability-related programs/activities. UGC also acts as the data hub, collecting information on any green initiatives/activities among the UiTM community. This year UGC emphasis on three main agenda – UI GreenMetric, Low Carbon Cities 2030 Challenge (LCC2030C) and Green Sustainability Campus Festival which ultimately focus on UiTM efforts on sustainability locally and globally.

The key success factor in greening the university is through optimum cooperation with the university's strategic partners both internally (within faculty, campus, students) and externally (local agencies, alumni, and local community). Both inner drive and smart cooperation will result in a systematic, comprehensive, and impactful program/activity towards greening the university. Such formulas aim towards a greener and healthier lifestyle for human well-being.

**ASSOCIATE PROFESSOR Ts. DR. KHAIRI KHALID**

**UiTM Environmental Sustainability Report**

A. Snapshot of UiTM



Universiti Teknologi MARA (UiTM) is the largest comprehensive university in Malaysia that provides innovative education with the latest infrastructure and technology that includes 34 campuses (1 main campus, 12 branch campuses and 21 satellite campuses) with 17 faculties, 7 academic centers and 2 study colleges in the whole country as presented in Figure 1 below.

UiTM offers more than 500 academic programs at Foundation, Pre-diploma, Diploma, Bachelor, Master, and PhD levels, as well as Professional Programs. UiTM always expands access to higher education and plays its role in nation building by highlighting potential, shaping the future.

With more than 900,000 alumni in the fields of science, technology, humanities, and entrepreneurship, UiTM offers opportunities in forming leaders at the national, industrial, and global levels in achieving the aspiration of becoming a world-leading university by the year 2025.



Figure 1: Location and operation of UiTM campus



Figure 2: The vision, mission, philosophy, and values underpinning UiTM

### UiTM Journey

History of becoming UiTM was a long memorable journey to the nation. UiTM aspires to be world class in all its endeavours and creates a direction that is in tandem with the latest developments in the world. As UiTM moves forward, it remains focused on academic excellence, innovation, socio-economic goals, worldwide accreditation, globalisation, and new technologies towards supporting the industry and national development.

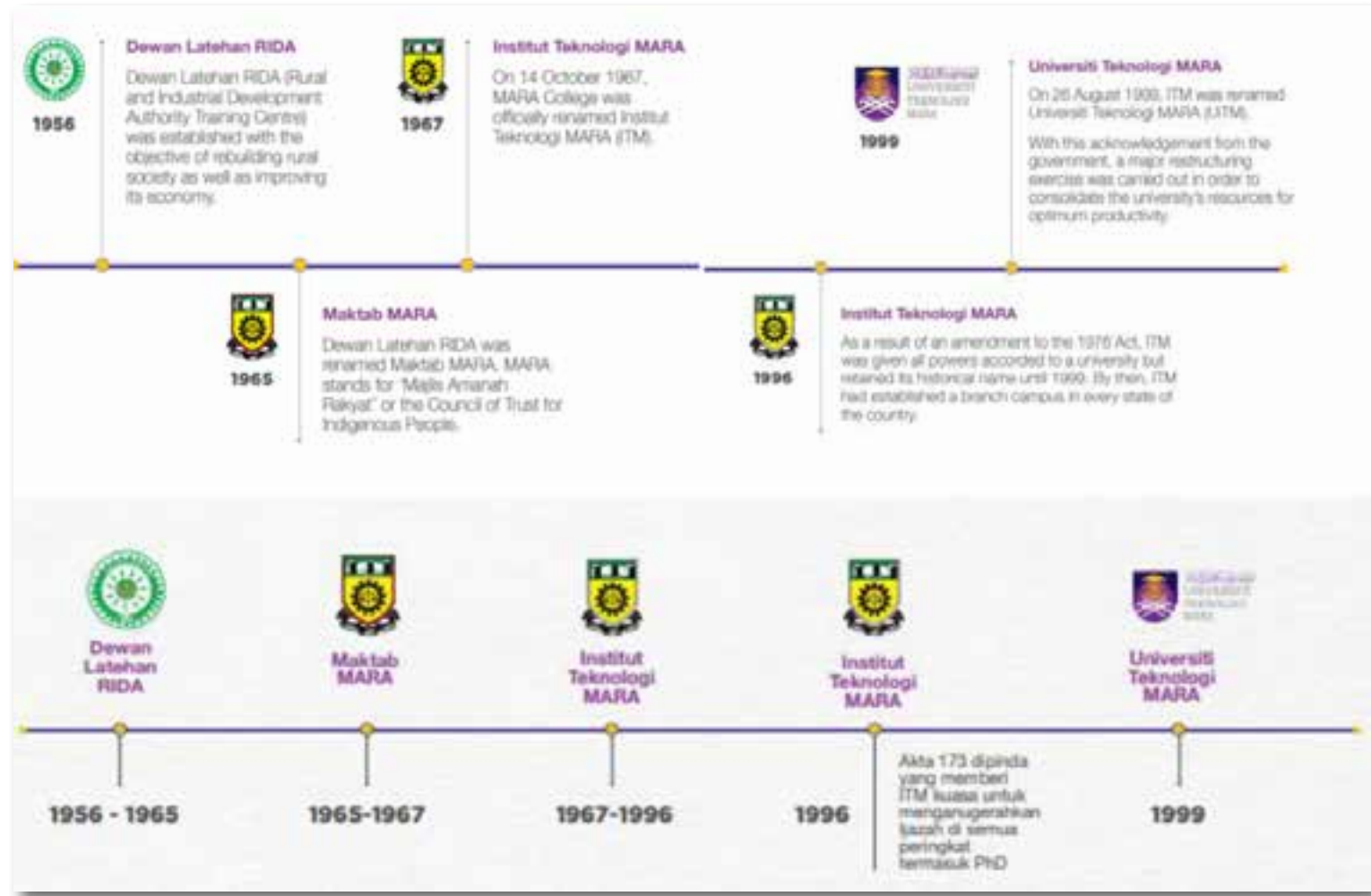
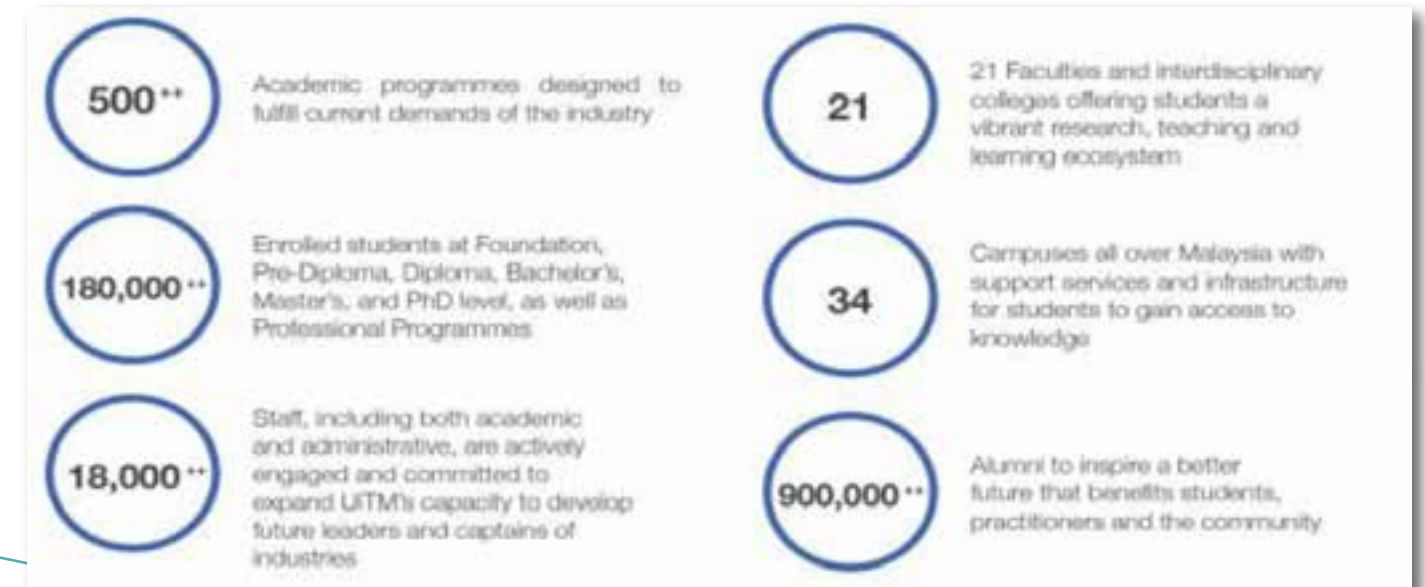


Figure 3: The evolution of UiTM

### UiTM Fast Fact



### UiTM Achievements

#### TIMES HIGHER EDUCATION (THE) WORLD UNIVERSITY RANKINGS

**UITM RANKS IN THE TOP 50 UNIVERSITIES WORLDWIDE THREE SDGs**

- 17 PARTNERSHIPS (SDG 17)** #25  
Jump of 17 places from its 42nd rank last year
- 5 GENDER EQUALITY (SDG 5)** #33  
Jump of 18 places from its 51st rank last year
- 16 PEACE, JUSTICE AND STRONG INSTITUTIONS (SDG 16)** #38  
Not been this year, 00% participated

Ranked 101-200 Worldwide  
We are proud to join the institutions that champion the global goals.

Times Higher Education Impact Rankings 2023

Menyerlahkan Potensi  
Membentuk Masa Depan

#### UI GREENMETRICS (UIGM) RANKINGS (WORLD)

<b>2020:</b> ranked 184 Year 2020: Ranked 9th in Malaysia	<b>2021:</b> ranked 150 Year 2021: Ranked 9th in Malaysia but climbed 34 from 2020	<b>2022:</b> ranked 128 Year 2022: Ranked 8th in Malaysia and climbed 22 from 2021	<b>2023:</b> ranked 111 Year 2023: Ranked 6th in Malaysia and climbed 17 from 2022	<b>2024:</b> ranked 102 Year 2024: Ranked 4th in Malaysia and climbed 4 from 2023
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Menyerlahkan Potensi  
Membentuk Masa Depan

#### LOW CARBON CITIES 2030 CHALLENGE (LCC2030C)

**Carbon Reduction**

Building/Zone	2019	2020	2021	2022	2023
UITM Shah Alam	~40	~45	~48	~50	~52
Comwell	~10	~15	~20	~25	~30
KPM	~25	~30	~35	~40	~45
FRPU	~15	~20	~25	~30	~35
FRSU	~35	~40	~45	~50	~55
PH	~10	~15	~20	~25	~30
APB	~45	~50	~55	~60	~65
Kampus PPA	~10	~15	~20	~25	~30

**Diamond Award**

Building/Zone	2019	2020	2021	2022	2023
UITM Shah Alam	~5	~6	~7	~8	~9
Comwell	~1	~2	~3	~4	~5
KPM	~2	~3	~4	~5	~6
KAD	~1	~2	~3	~4	~5
FRPU	~2	~3	~4	~5	~6
PH	~1	~2	~3	~4	~5
APB	~3	~4	~5	~6	~7
PPA	~1	~2	~3	~4	~5

BANDAR RENDAH KARBON 2024

Menyerlahkan Potensi  
Membentuk Masa Depan

#### SUSTAINABILITY RANKING PROGRAM

*Certificate of Achievement*

UNIVERSITI TEKNOLOGI MAKA SHAH ALAM

Energy Management Gold Standard (AEMAS)

*Certificate*

UITM SHAH ALAM

UI GreenMetric (UIGM) World University Rankings

*Pengiktirafan Diamond*

MAJLIS BANGUNAN SIAH ALAM

Low Carbon Cities 2030 Challenge (LCC2030C)

Menyerlahkan Potensi  
Membentuk Masa Depan

### UiTM 2025 Strategic Plan

As the biggest public university in the country, UiTM must ensure its relevancy. As such, UiTM has put forward a strategic plan in response to the vibrant and ever-changing world evolving national and global landscape. The strategic plan is based on three trusts namely Quality Education, Global Excellence and Value-driven Performance. Details of the strategic plan is shown in Figure 4 below.

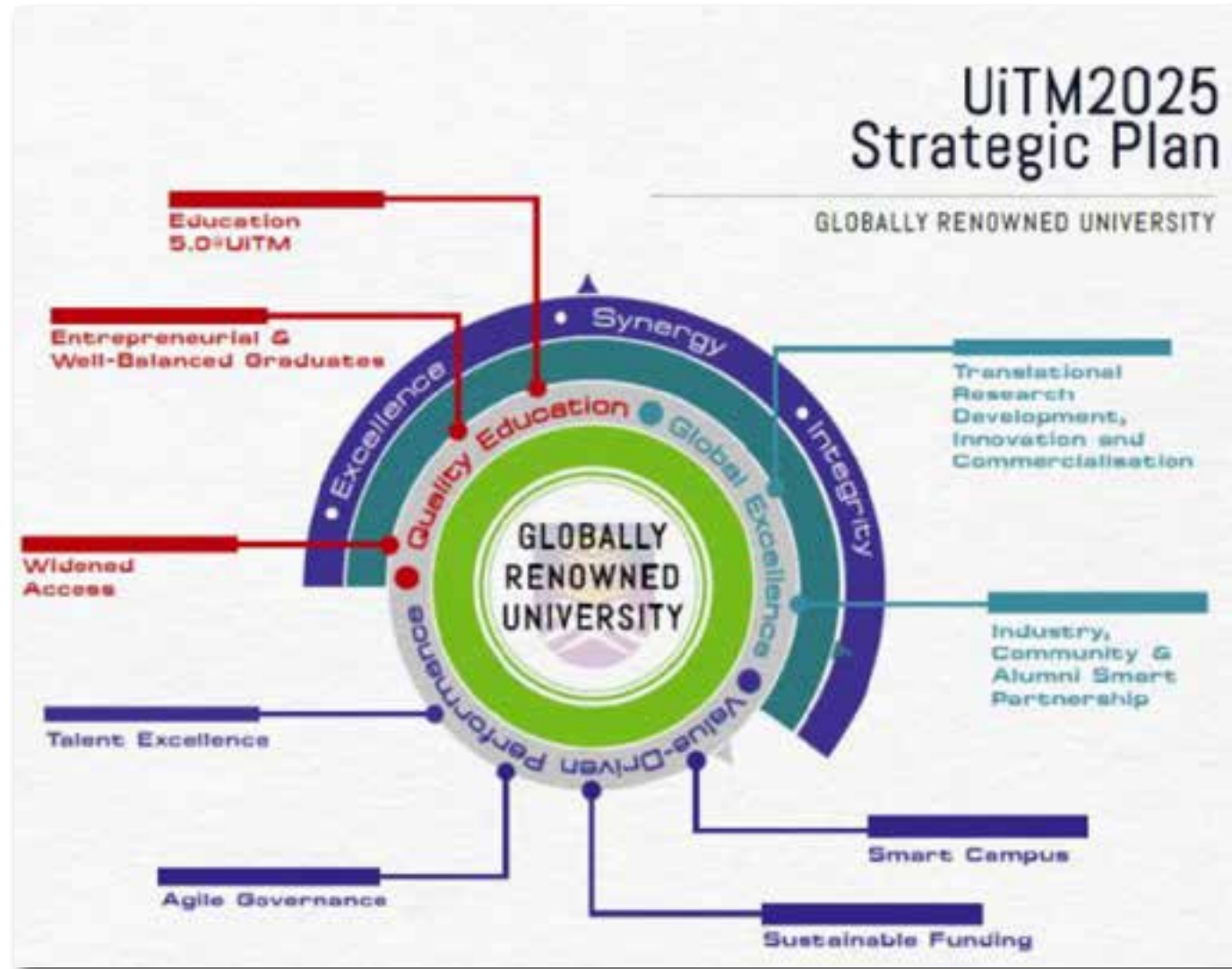


Figure 4: UiTM2025 Strategic Plan

### UiTM Towards Greening the Campus

Initiatives towards greening the campus has been in discussion since year 2015. The introduction of the Sustainable Development Goals (SDGs) by the United Nation has open many eyes to really focus on sustainability agenda for the benefit of our future generation. The roadmap is display in Figure 5 below.

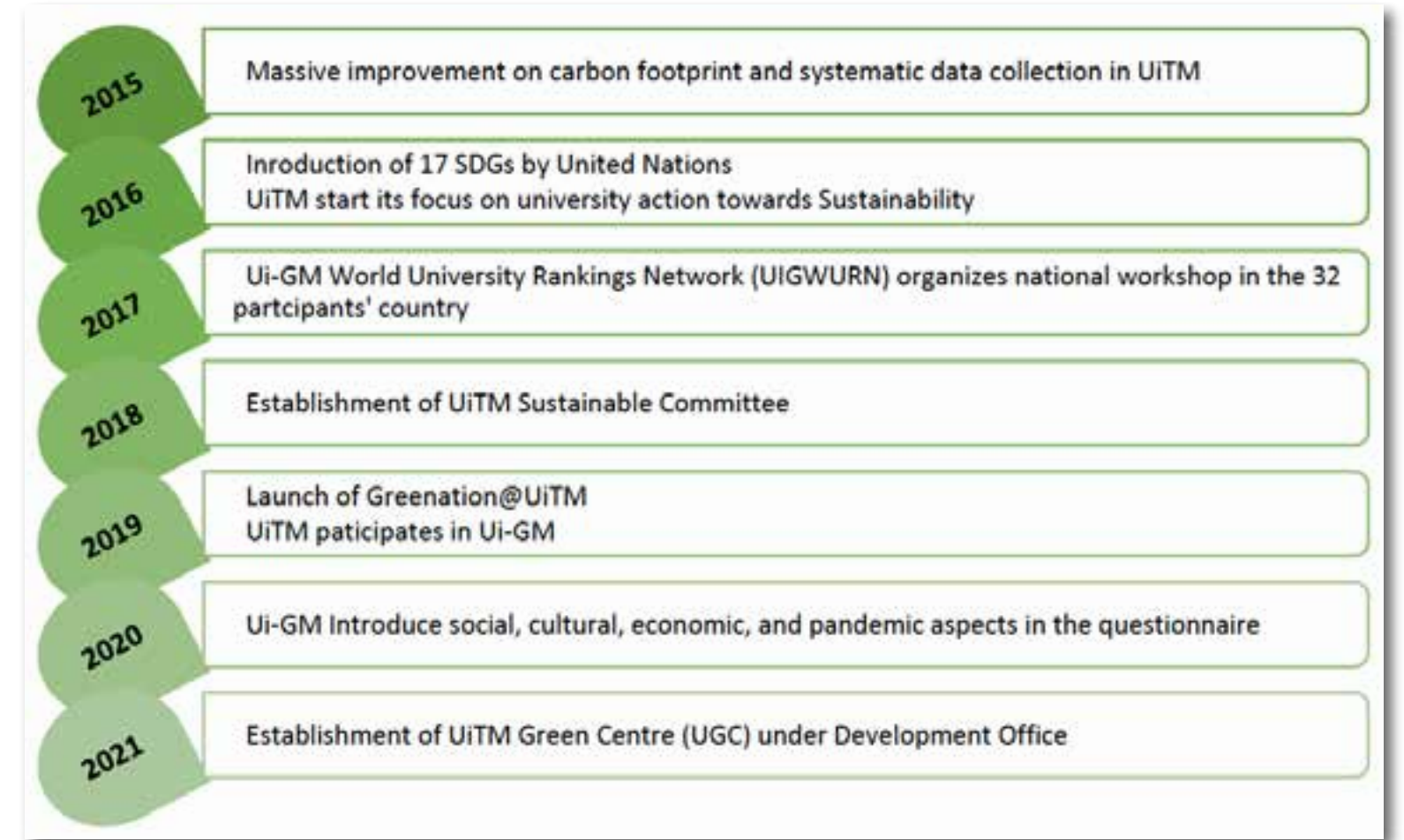


Figure 5: UiTM journey towards greening the campus

### B. Department of Development

The Department of Development is headed by Deputy Vice-Chancellor (Development) who reports directly to the Vice Chancellor.

#### Department of Development's Governance and Organization Chart

The Department of Development consists of six divisions as shown in Figure 6 below and the full organization chart is presented in Figure 7.



Figure 6: The six division under the Department of Development



Figure 7: The organization chart of the Department of Development

### Department of Development at a Glance

The vision, function and detail initiatives outline by the Department of Development are as Figure 8 and Figure 9 below:



Figure 9: Initiative outline by the Department of Development covering year 2020-2025

### C. UiTM Green Centre (UGC)

The initiation of UiTM Green Center (UGC) begins with the launch of Greenation@UiTM on 13 June 2019 which seek to get engagement and synergizing the effort of all stakeholders towards achieving world class sustainable best practices. In October 2020, UGC formation was approved by the university executive council and is parked under the Infrastructure & Infostructure Development Office. The official announcement of UGC was made in January 2022 which is in line with UiTM2025 Strategic Planning under Strategic Theme 8 (Smart Campus) to support the sustainability agenda at the university, community, and global level.

#### UGC Strategic Areas and Focus

UGC pledges to promote green initiatives to transform the university into a sustainable green campus through its nine (9) strategic areas and five (5) focus as outlined in Figure 10 below.



Figure 10: UGC Strategic Areas and Focus

**UGC Team**

UGC is led by a Director, Associate Professor Ts. Dr. Khairi Khalid, Sr. Dr. Wan Samsul Zamani Wan Hamdan and assisted by three (3) coordinators, three (3) fellows, an Executive Officer and Admin Associate as display in **Figure 11** and **Figure 12** below. UGC also has an Expert Task Force (ETF) to support their project-based programme with the help of Green Marvels which are amongst UiTM students.



Figure 11: UGC Team – Director, Deputy director, Coordinators and Administration



Figure 12: UGC Team – Fellows

### UGC Initiatives

UGC has implemented and planned many initiatives to be embarked in supporting UiTM in transforming as a sustainable green campus. These projects build upon the work UGC is doing on localizing the Sustainable Development Goals (SDGs) and making the SDGs real to the campus community. Listed in **Figure 13** below were some initiatives undertaken by UGC so far.

**Sustainable Green Campus & Roadmap**

- Capacity building for low carbon campus
- Sustainable waste management in campus
- Energy in buildings
- Passive and low carbon transportation
- Enhance water conservation and practice low-water landscape strategies in campus
- Green lifestyle awareness

Figure 13: UGC's five main initiatives

<b>Community engagement</b>	<b>Sustainable knowledge hub</b>	<b>Collaboration &amp; industrial linkages</b>	<b>Green talent &amp; competency</b>
Sahabat Sungai Program Pengurusan to clean Sungai Langat, Kg. Kuala Pangson	program UGC4Life #GreenStartsWithYou	Kloth Malaysia Sdn Bhd Aset Air Berhad (PAAB) Malaysian sustainability network (MySun)	People management policies and activities

### “GREENING UiTM”



**D. Low Carbon Cities 2030 Challenge (LCC2030C)**

The Low Carbon Cities 2030 Challenge (LCC2030C) main objective is towards reduction of carbon emissions in cities. The LCC2030C was organized by the Ministry of Environment and Water (KASA) with the theme of creating low carbon zones around Malaysia’s major cities. The programme, which has been mandated by the Malaysian Green Technology and Climate Change Center (MGTC), has become the second phase of the Low Carbon City Framework (LCCF) implementation for the period of year 2019 to 2030. In conjunction with the aspiration to implement green and low carbon city practices, UiTM have taken up the LCC2030C in transforming the university into low carbon campus which address carbon emissions on energy, waste, water, and greenery with strategic partnership with Majlis Bandaraya Shah Alam (MBSA). Carbon reduction in UiTM is managed by measuring energy, reducing residual and adding green area by planting trees to offset or mitigate carbon emission (also termed net zero emission).

**D.1 UiTM Participation**

A carbon management plan is underway to enable UiTM to be Malaysia’s best Low Carbon Public University Model by 2030, while also striving for carbon-neutrality. It is basically a shift toward maximizing efficiency in energy, water, and waste, generating electricity from renewable sources, reducing wastage and shift towards protecting existing greenery and planting more trees. With the rapid increase in urbanization, UiTM has the collective responsibility to ensure sustainability for all. Going low carbon now, as many cities have started, will set UiTM on a path towards a more sustainable and prosperous future which is in line with the SDGs agenda. A city-based approach is chosen for the whole campus in UiTM with special projects of performance-based approach for selected buildings. In 2021, the focus was on energy consumption which UiTM zones/buildings have successfully won Diamond Awards during the LCC2030C ceremony. This shows that UiTM has proved its low carbon commitment to reduce 45% emission by 2030 from the baseline year 2015.

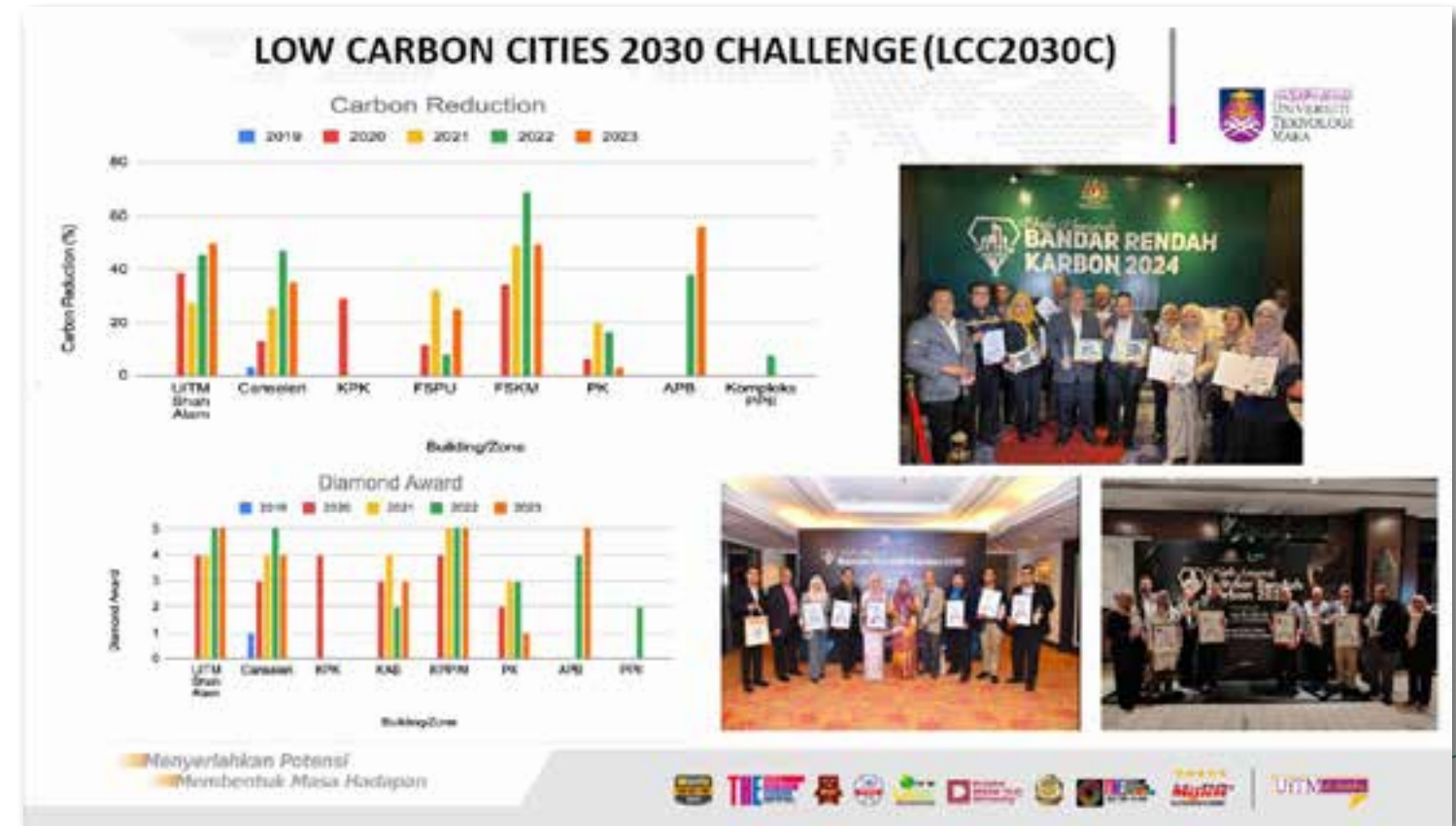


Figure 14: UiTM participation in LCC2030C

**D.2 UiTM Achievements 2022 - 2024**

The LCC2030C has changed the UiTM approach to reducing carbon emissions from daily energy consumption, while creating sustainable and better environmental quality, particularly in city areas. In this year’s challenge assessment period of 2021, UiTM was able to achieve carbon emissions on energy savings of 13,423.10 CO2 equivalent to a reduction of 32.85% from the baseline. The initiatives in transforming the University into a Low Carbon Green Campus are implemented through an energy reduce plan which UiTM has actively encouraged the use of renewable energy and energy efficient lighting fixtures for offices and public facilities and has led by example by installing solar PVs.

Table 1 below indicates the performance of UiTM in LCC2030C in comparison from year 2022-2024, showing improvement on the performance and reduction of carbon emission towards realizing UiTM aims to created value through the sustainability perspectives as envisioned via the 17 SDGs and UiTM2025 Strategic Plan.

**Table 1: UiTM performance in LCC2030C Challenge from year 2022 to 2024**

Zone/Buildings	2022		2023		2024	
	Carbon Emission	% Reduction	Carbon Emission	% Reduction	Carbon Emission	% Reduction
UiTM Shah Alam, Seksyen 1						
Chancellery Building Syed Sirajuddin						
Engineering Complex						
Faculty of Computer and Mathematical Sciences (FSKM)						
Faculty of Architecture Planning and Surveying (FSPU)						
UiTM Health Centre						

This year UiTM continues to record its own history when four (4) of UiTM zones/buildings which is the Chancellery Building Syed Sirajuddin, Faculty of Computer and Mathematical Sciences (FSKM), Faculty of Architecture Planning and Surveying (FSPU) and UiTM Health Centre have successfully won Diamond Awards during the LCC2030C. This clearly shows the University’s full commitment to continue to strengthen the sustainability agenda to achieve the aspirations of the SDGs. UiTM transition to support this sustainability agenda can be seen through various green initiatives that have been implemented within the University to help reduce the rate of carbon emissions to the environment and further towards a Low Carbon Campus. Table 2 and Figure 15 below show the awards presented to UiTM.

Table 2: List of awards presented to UiTM

4 Diamond Award	Chancellery Building FSPU Building FSKM Building
3 Diamond Award	UiTM Health Centre



Strategic planning and action taken by UiTM towards achievement of goals has contributed to the achievement of the awards towards a reduction in carbon emissions for several buildings in UiTM. These include establishing green building designs through a Building Sector Energy Use & Carbon Reporting programme (BECO2R). Specifically, UiTM has designed its strategy through the change to energy efficient appliances, for example, using LED lighting and precision air-conditioner with inverter. Otherwise, renewable energy initiatives such as solar PV and smart building implementation, such as photocell sensors are aimed to be installed in the campus of UiTM within Malaysia to support the low carbon cities framework program as illustrated in **Figure 16**.



Figure 16: Initiatives taken at UiTM on saving energy consumption



Figure 17: Energy Management policy and system introduced at UiTM

### E. UiTM Green Sustainability Campus

A “green campus” is a place where environmentally friendly and sustainable activities are coupled with education to encourage green living practices on site. The status of green campus is obtained by significantly improving cross-campus community collaboration in one or more of the following areas: settings and infrastructure, energy and climate change, waste, water, transportation, and education. UiTM in year 2021, has also participated in Green Campus initiatives through establishment of Integrated Sustainable Campus Report (IS-CARE) System and “Festival Kelestarian Kampus Hijau” to support low carbon green city initiatives. The four (4) UiTM Green Sustainability mission is lay down in **Figure 18** below.

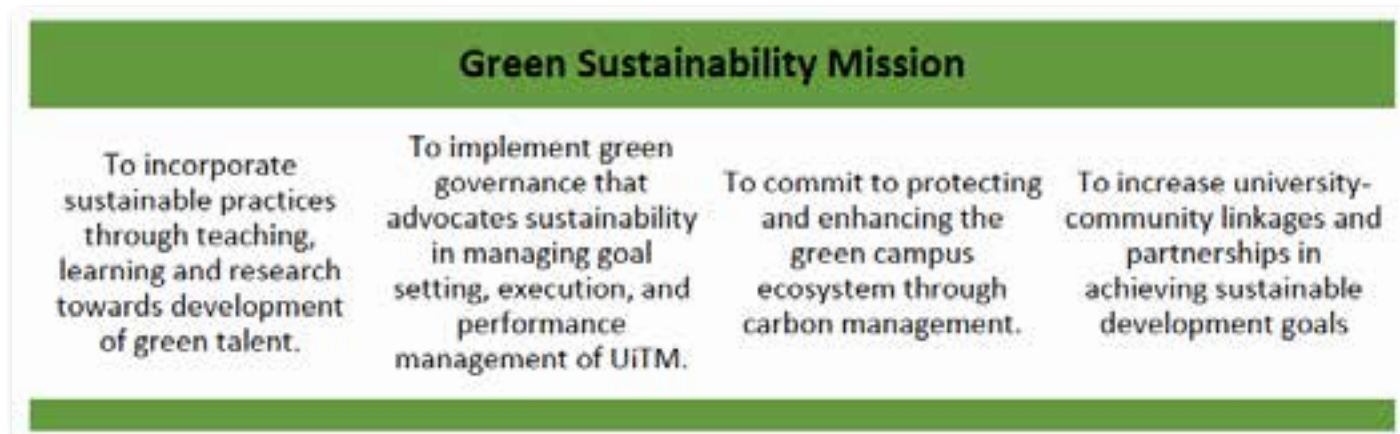


Figure 18: UiTM Green Sustainability mission for all campuses and PTJ

Such initiatives are in line with the SDG #6 Clean Water and Sanitisation, SDG #7 Affordable and Clean Energy, SDG #11 of Sustainable Cities and Communities, SDG #12 Responsible Consumption and Production, SDG #13 Climate change and SDG #16 Peace, Justice and Strong Institution in promoting and safeguarding the efficient usage of natural resources within the campus. These initiatives not only create awareness, but also involve participation from all UiTM communities to reach its mission. Consequently, it will come to the entire population sense that creating an environment, settlements and facilities that are inclusive, safe, resilient, and sustainable is everyone jobs and responsibilities.

#### E.1 ‘IS-CARE’ System

Integrated Sustainable Campus Report System or better known as “IS-CARE” system under UGC is a system developed to report on the activities and performance of UiTM Green Campus initiatives so that it can be measured for a sustainable impact in line with the SDGs and University’s aims toward low carbon cities in year 2030. Using the “IS-CARE” platform, the report will then communicate disclosures on an organization’s most significant impact, whether positive or negative, on activities toward a sustainable environment, society, and economy. It is critical for UiTM to recognize the impact of green efforts to measure the strategic plan prior to 2030 with the goals of supporting low carbon emission and the green agenda toward sustainability. The dashboard of the “is-care” system will illustrate visualization tools through descriptive analysis and provide a summary of the project performance carried out by the faculties and branches of UiTM in Malaysia. A comparison of their performance is necessary so that top management can strategize their plan to ensure that the performance and aspirations of campuses in UiTM are aligned with the headquarters (HQ), which in the case of UiTM is in Shah Alam, Malaysia.



Figure 19: Dashboard of the ‘IS-CARE’ System

#### E.2 Festival Kelestarian Kampus Hijau UiTM 2023 & 2024

The Festival Kelestarian Kampus Hijau UiTM 2023 and 2024, with the theme “Greener and Healthier Lifestyle,” (Figure 20) was held with the aim of educating UiTM residents about sustainable and healthy lifestyles which in turn will cultivate culture and awareness among the community in emphasizing their roles and contribution on the global SDGs. Several initiatives were launched during the event and are scheduled to support UiTM to become such a sustainable green campus.



Figure 20: Festival Kelestarian Kampus Hijau UiTM 2023 & 2024 theme “Greener & Healthier Lifestyle”

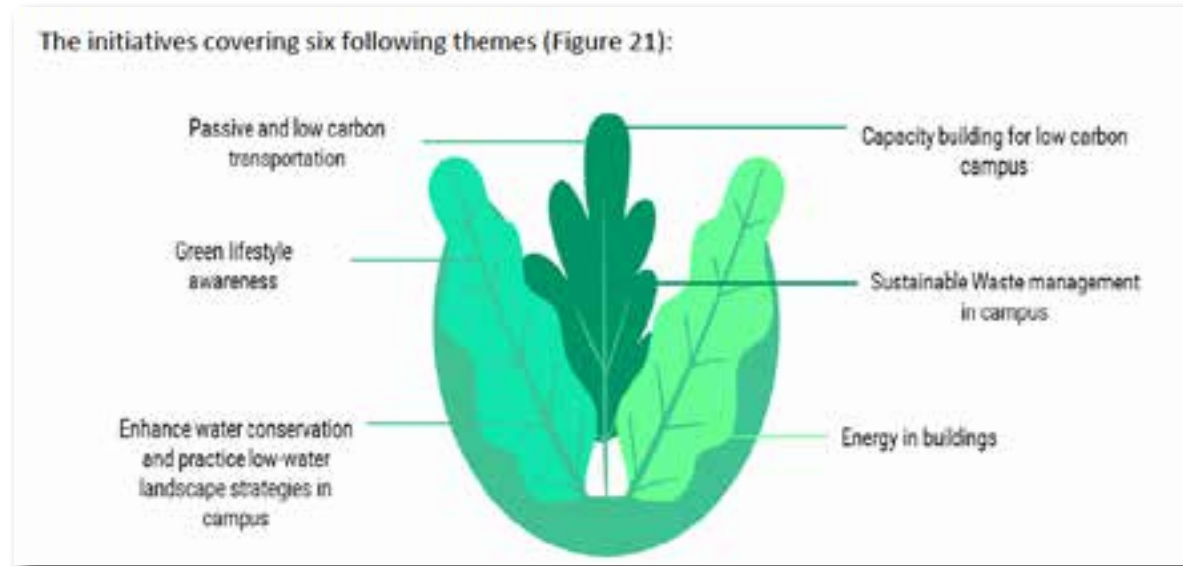


Figure 21: Initiatives coverage under the theme “Greener and Healthier Lifestyle”

The goal of the festival which took place from 25 November to 24 December 2023 and 1 October to 30 October 2024, was to raise awareness of UiTM’s soon meeting the rating requirements for the “UI GreenMetric World University Ranking” on its 34 campuses around the nation. During the festival, the best campus for green implementation is awarded based on the impact measurement of their year-round initiatives. This UI GreenMetric rating is crucial to strengthening UiTM’s international brand and becoming a Global Renowned University by 2025. This campus greening programme involves not only UiTM citizens, but also the community surrounding the campus. Many activities were being held, including webinars, campaigns, competitions, and exhibitions, among others.



Figure 22: Sustainable green campus festival

### F. UI GreenMetrics

UiTM Green Centre (UGC) has been established to transform UiTM into a sustainable green campus by focusing on six (6) key clusters of UI GreenMetric University Ranking i.e., Setting and Infrastructure (SI), Waste (WS), Water (WR), Energy and Climate Change (EC), Education and Research (ED) and Transportation (TR). The category of UI GreenMetric provides the basic guideline on UiTM’s commitment towards green and environmental sustainability as each cluster will outline its own specific aim to support the environmental sustainability agenda of UiTM.

UI GreenMetric is the measurement of UiTM’s efforts towards campus sustainability at the global level. The effort is currently focused on UiTM main campus in Shah Alam. To ensure the effort and idea being accepted, UGC has initiated Festival ‘Kelestarian Kampus Hijau’ in all branches and faculty with a pledge aspiration towards sustainability headed by UiTM Vice Chancellor. The UI GreenMetric Guideline every year will be announced based on the current setting affecting the higher education landscape as shown Figure 23 below.



Figure 23: UI GreenMetric guideline from year 2023-2024

UiTM’s vision is to be Malaysia’s best Low Carbon Public University Model by 2030 and pledges to have a 45% reduction in carbon intensity by 2030 from baseline year 2015. UiTM mission in this initiative is to incorporate sustainable practices through teaching, learning and research towards development of green talent. UiTM intends to implement green governance that advocates sustainability in managing goal setting, execution, and performance management of UiTM. UiTM is committed to protecting and enhancing the green campus ecosystem through carbon management. UiTM plans to increase university community linkages and partnerships in achieving the United Nations 17 SDGs.





Figure 24: Mapping of UI GreenMetric to SDGs

Source: UI GreenMetric Guideline, <https://greenmetric.ui.ac.id/publications/guidelines>

**F.1 Overall Achievements**

On 6 April 2021, UiTM embarked on its initial participation in the UI GreenMetric ranking that was introduced in 2010 which specifically measures the campus sustainability and effective environmental management. The UI GreenMetric World University Ranking is an initiative of Universitas Indonesia which was launched in 2010. As part of its strategy to raise its international standing, the University hosted an International Conference on World University Rankings on 16 April 2009. The aim of this ranking was to provide the result of an online survey pertaining to the current conditions and policies related to the Green Campus and Sustainability among the universities all over the world. It is envisaged that by drawing the attention of university leaders and stakeholders, more attention will be given to combating global climate change, energy and water conservation, waste recycling, and green transportation.

UiTM was ranked the 6th Most Sustainable University among 43 others Malaysian higher learning institutions (HILs) and 111th among 1183 participating universities all over the world, in 2023. Ranked the 6th Most Sustainable University among 60 others Malaysian higher learning institutions (HILs) and 107th among 1477 participating universities all over the world, in 2024. The overall achievement of UiTM in UI GreenMetric is something to be proud of as tabulated in **Table 3** and **Figure 25** below.

**Table 3: UiTM overall achievement from year 2022 to 2024**

Category	Allocated marks	Year 2022	Year 2023	Year 2024
Setting & Infrastructure (SI)	1500	950	900	900
Energy & Climate Change (EC)	2100	1285	1500	1575
Waste (WS)	1800	1725	1800	1800
Water (WR)	1000	900	950	950
Transportation (TR)	1800	1325	1325	1425
Education & Research (ED)	1800	1800	1800	1800
<b>Total Score</b>	<b>10,000</b>	<b>7985</b>	<b>8275</b>	<b>8450</b>
<b>Rank in Malaysia</b>		<b>6</b>	<b>6</b>	<b>6</b>
<b>Rank in World</b>		<b>128</b>	<b>111</b>	<b>107</b>



Figure 25: World & Cluster Ranking History 2021-2024

To support the collection of evidence, UGC has collaborated with Infostructure Department under the Development Office to set up a SWWEET system in mid-2019. SWWEET system (Figure 26) used as data entry by the six clusters to regularly update evidence on activities and project that support the university’s greeneration initiatives. The run test of SWEET system was successful in August 2019 and is currently being used for UI GreenMetric rating purposes.



Figure 26: SWWEET system usage as UI GreenMetric database

## F.2 Cluster Descriptions

The six (6) clusters are guided by its carter as described in **Figure 27** below:



Figure 27: Description of the six cluster

## G. UiTM Campus Sustainability Strategic Action Plan (UiTM CSSAP) 2024–2030

The UiTM Campus Sustainability Strategic Action Plan (CSSAP) 2024–2030 is a forward-looking guideline designed to embed sustainability into the core of UiTM’s campus operations and development. It aligns closely with the United Nations Sustainable Development Goals (SDGs) and Malaysia’s Environmental Sustainability Roadmap, serving as a blueprint for integrating environmental, economic, and social sustainability principles across UiTM’s campuses. By addressing key areas of campus life, the CSSAP aims to foster a greener, more eco-conscious academic environment.

A central goal of the UiTM CSSAP is to transform UiTM into a model sustainable campus by 2030, with significant strides in reducing carbon emissions, improving energy efficiency, and minimizing waste. The document emphasizes the importance of collaboration with external organizations, such as government bodies, industry partners, and local communities, to enhance the effectiveness and scalability of its sustainability efforts. Moreover, the plan seeks to instill environmental awareness and responsibility among students, faculty, and staff, ensuring sustainability becomes a shared value throughout the university.

The plan is structured around six strategic clusters, each focusing on a critical aspect of sustainability: Smart and Green Infrastructure, Sustainable Energy for Green Campus, Sustainable Waste Management, Water Conservation, Sustainable Transportation, and Advocating Education for Sustainable Lifestyle. Within these clusters, 24 specific Strategic Action Plans (SAPs) have been outlined to tackle pressing environmental challenges. These initiatives include actions such as increasing the use of renewable energy, improving waste management systems, enhancing water recycling efforts, and encouraging active participation in sustainability leadership and research.

Through its comprehensive approach, UiTM CSSAP not only aligns with global and national sustainability agendas but also underscores UiTM’s commitment to leadership in environmental stewardship. By implementing the outlined strategies, UiTM aims to achieve a lasting positive impact, benefiting its campus community, contributing to national progress, and inspiring broader societal change.



Figure 28: UiTM CSSAP 2024-2030 Execution Plan in 2024



A key milestone in this initiative was the official formulation of the CSSAP framework, followed by the launch of its execution plan in December 2024. These phases signify UiTM's long-term commitment to sustainable development, ensuring that initiatives are grounded in expert input, measurable indicators, and practical implementation strategies.

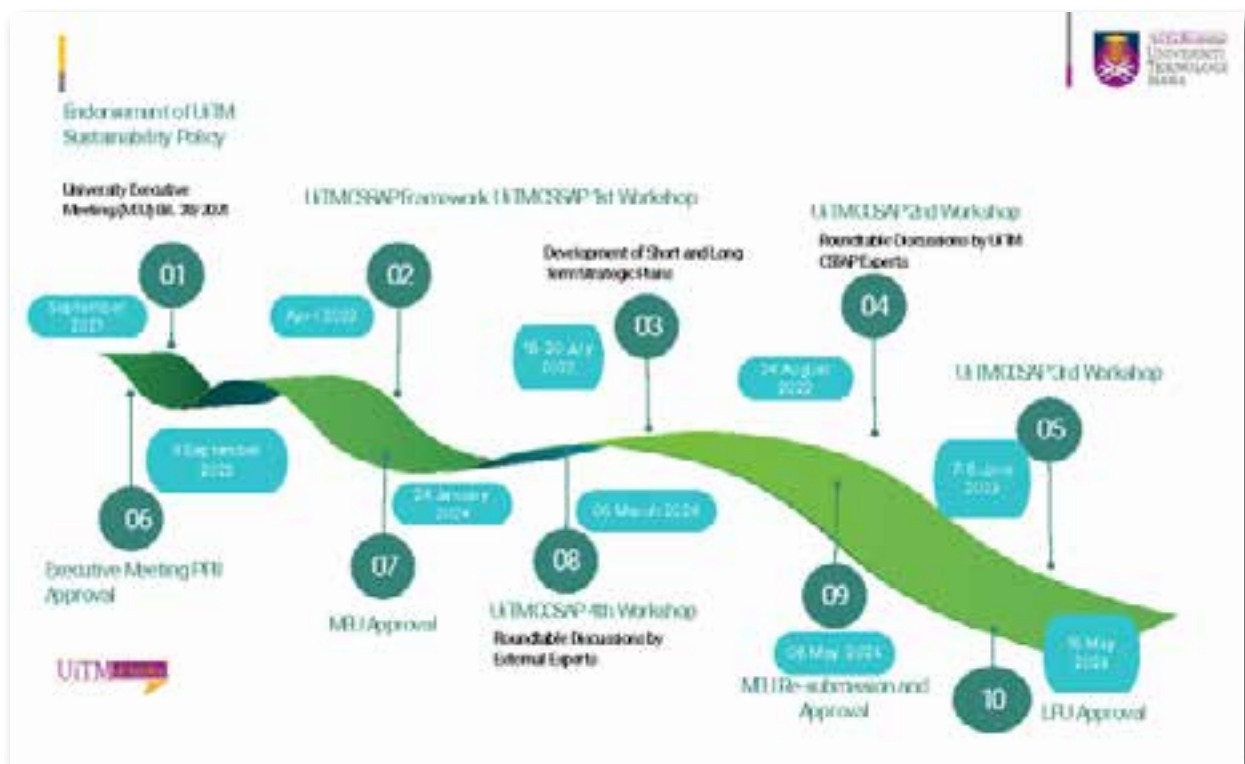


Figure 2: CSSAP Milestone



Figure 3: CSSAP 2024-2030 Strategic Focus Clusters

UiTM CSSAP 2024 - 2030

### Objectives of UiTM CSSAP 2024–2030

Establishing a strategic plan and direction for sustainability at UiTM is crucial to ensure the effective implementation and monitoring of campus-wide initiatives. This framework also provides a consistent reference for coordinating and standardising activities, ensuring alignment with the university’s overarching objectives and strategic goals.

The CSSAP is designed around four simplified yet strategic objectives:

- 1** To act as a reference for the implementation and development of sustainability elements within the campus through clusters (Settings & Infrastructure, Energy & Climate Change, Waste, Water, Transportation and Education & Research) which is in line with GRU 2025 (Strategic Thrust 3 and Strategic Theme 8) and policies from Development Department;
- 2** To serve as a guiding point for the incorporation and advancement of sustainability components that align with The 2030 Agenda for Sustainable Development, Kelestarian Alam Sekitar di Malaysia (2020-2030), Malaysia’s RoadMap towards Zero Single-Use Plastic (2018-2030), Low Carbon Mobility Blueprint-Decarbonizing Land Transportation (2021-2030), Green Technology Master Plan Malaysia (2017-2030) and Pelan Kesejahteraan Pendidikan Tinggi (Sejahtera IPT);
- 3** To promote a sustainable campus lifestyle as a key component of the strategic plan, integrating environmental and social sustainability principles into all its aspects;
- 4** To advocate for an organizational shift in mindset to integrate sustainability into governance and operations of the campus.

#### Aligning UiTM CSSAP 2024 - 2030 with Malaysia’s Environmental Sustainability Roadmap (2020 – 2030).

The UiTM CSSAP 2024–2030 is firmly aligned with national sustainability policies, including:

- Environmental Sustainability Roadmap (2020–2030)
- Roadmap Towards Zero Single-Use Plastic (2018–2030)
- Low Carbon Mobility Blueprint (2021–2030)
- Green Technology Master Plan Malaysia (2017–2030)
- Pelan Kesejahteraan Pendidikan Tinggi (Sejahtera IPT)

Each of the six CSSAP clusters supports key national targets. For instance, the Waste cluster aligns with the Zero Single-Use Plastic initiative; Transport aligns with the Low Carbon Mobility Blueprint; and Education & Research reinforces Sejahtera IPT. These alignments ensure UiTM’s sustainability journey directly contributes to Malaysia’s long-term vision of environmental resilience.



Figure 4: CSSAP 2024-2030 Framework

### Strategic Focus Clusters and Action Plans

The UiTM Campus Sustainability Strategic Action Plan (CSSAP) 2024-2030 outlines strategic focus clusters with specific action plans to achieve environmental sustainability. Below are the strategic action plans for each cluster:

#### Cluster 1: Smart and Green Infrastructure

This cluster promotes green and resilient campus landscapes through initiatives such as mapping and maintaining green spaces, establishing arboretums, managing tree planting and replacement programs, and introducing rooftop gardens and vertical vegetation. Open spaces are also mapped and monitored to preserve ecological value.

#### Cluster 2: Sustainable Energy for Green Campus

The energy cluster focuses on energy efficiency and renewable sources. It aims to achieve AEMAS accreditation across campuses, implement smart building systems, and install solar PVs. UiTM also participates in programs such as GreenPASS and the Low Carbon Cities Challenge (LCC2030C) to reduce carbon footprints.



Figure 5: Cluster 1 Smart and Green Infrastructure

Figure 6: Cluster 2 Sustainable Energy for Green Campus

**Cluster 3: Sustainable Waste Management**

This cluster encourages a 3R lifestyle (Reduce, Reuse, Recycle). Strategic actions include inorganic waste segregation, recycling initiatives, reducing paper and plastic use, composting organic waste, and managing hazardous materials with qualified personnel. Initiatives like BYO (Bring Your Own) and campus edible gardens contribute to waste reduction.



Figure 7: Cluster 3 Sustainable Waste Management

**Cluster 4: Water Conservation for Great Campus Life**

Water conservation focuses on rainwater harvesting, improving plumbing systems, and water recycling. Ablution water reuse for landscape and flushing, pollution control, and efficient metering all contribute to reducing water waste and ensuring sustainable usage across campuses.



Figure 8: Cluster 4 Water Conservation for Great Campus Life

**Cluster 5: Sustainable Transportation**

To minimize carbon emissions, this cluster introduces vehicle-free zones, encourages cycling and walking, and provides zero-emission shuttle services. UiTM also plans to integrate electric vehicles and develop strategic transportation policies with stakeholder collaboration.



Figure 9: Cluster 5 Sustainable Transportation

**Cluster 6: Advocate Education for Sustainable Lifestyle**

The education cluster aims to cultivate green leadership, increase sustainability awareness, and empower sustainable research. It includes integration of sustainability modules into student orientation programs and academic syllabi, promoting lifelong green habits.



Figure 10: Cluster 6 Advocate Education for Sustainable Lifestyle

**Conclusion**

The UiTM CSSAP 2024–2030 lays out a bold, strategic path toward achieving a sustainable, resilient, and globally recognized university environment. With its comprehensive framework built on expert knowledge and national alignment, it empowers the university community to lead environmental change on campus and beyond. By executing this plan, UiTM not only enhances its sustainability performance and institutional reputation but also cultivates a culture of eco-consciousness that will shape future generations of responsible leaders.

## CLUSTER 1.0: Setting and Infrastructure

### 1.1 Introduction

The Setting and Infrastructure (SI) cluster of the UGC is dedicated to reinforcing UiTM's commitment to environmental sustainability by ensuring that the campus is designed to support a greener future. In practical terms, this cluster gathers and provides essential data on UiTM's green initiatives, using 11 specific indicators to determine whether UiTM Shah Alam truly qualifies as a "Green Campus."

To boost UiTM's green credentials, the SI cluster has implemented proactive measures focused on increasing vegetation and enhancing environmental protection across the campus. Central to these efforts is the Go-Green Landscape strategy. This key initiative sets an ambitious goal: to raise the proportion of planted vegetation on the UiTM Shah Alam campus to over 40 percent by 2025—up from the 2022 level of 20-30 percent. To achieve this, the strategy includes a range of targeted projects such as preserving and expanding existing green spaces, replanting trees where needed, and incorporating innovative techniques for smart and efficient tree planting. These actions are designed not only to improve the visual and ecological appeal of the campus but also to contribute significantly to UiTM's overall environmental sustainability agenda.

### 1.2 Cluster Objectives

The Setting and Infrastructure (SI) cluster is a key part of UiTM Shah Alam's strategy to create a greener, more sustainable campus. In essence, the SI cluster is tasked with driving the university's commitment to environmental sustainability by ensuring that the campus's physical environment aligns with its green policies.

Its core functions include:

- **Securing and protecting green areas:** The cluster works to ensure that the campus has dedicated green zones that meet or exceed UiTM's sustainability policy requirements.
  - **Raising environmental awareness:** It promotes the importance of maintaining a healthy green ecosystem throughout the campus, helping staff and students understand the benefits of a well-managed natural environment.
  - **Encouraging internal initiatives:** At the faculty and department levels, the SI cluster supports localized landscape projects and innovative ideas to further improve campus greenery.
  - **Strengthening community engagement:** By facilitating tree and vegetation planting activities, the cluster builds a stronger connection between the university and the surrounding community, fostering a collective commitment to sustainability.
- To ensure these functions translate into tangible improvements, the SI cluster has also defined specific focus areas. These include:
- **Legal protection of green spaces:** Using an official gazette to protect woodland areas on campus ensures that these natural resources are legally safeguarded against development.
  - **Expansion of green space:** There is an ongoing effort to increase the overall area of green space and planted vegetation, thereby enhancing the campus's natural environment.
  - **Financial commitment:** The cluster advocates for an increased budget dedicated to sustainability initiatives, ensuring that there are sufficient resources to support green projects.
  - **Water absorption and open space preservation:** In addition to planting new vegetation, the SI cluster is focused on retaining water absorption zones and preserving existing open spaces, which are critical for mitigating urban heat and managing stormwater.

The achievements of SI cluster aim were measured using the specific indicators set by UI-GM for SI. For the year 2023, a total of 11 indicators as outlined in the **Table 1.1** have been used by UiTM Shah Alam to provide information relating to the setting and infrastructure in its goal of being recognised as a Green Campus.

**Table 1.1: The 11 Indicators for SI Cluster**

<b>SI 1</b>	<b>The ratio of open space area to the total area</b>
<b>SI 2</b>	<b>Total area on campus covered in forest vegetation</b>
<b>SI 3</b>	<b>Total area on campus covered in planted vegetation</b>
<b>SI 4</b>	<b>Total area on campus for water absorption excluding forest and planted vegetation</b>
<b>SI 5</b>	<b>The total open space area divided by the total campus population</b>
<b>SI 6</b>	<b>Percentage of university budget for sustainability efforts</b>
<b>SI 7</b>	<b>Percentage of operation and maintenance activities performed on buildings during a one-year period</b>
<b>SI 8</b>	<b>Campus facilities for disabled, special needs, and/or maternity care</b>
<b>SI 9</b>	<b>Security and safety facilities</b>
<b>SI 10</b>	<b>Health infrastructure facilities for students, academics, and administrative staff's well-being</b>
<b>SI 11</b>	<b>Conservation: plants (flora), animals (fauna), and wildlife, including genetic resources for food and agriculture secured in either medium- or long-term conservation facilities</b>

### 1.3 Setting and Infrastructure of UiTM Shah Alam Campus

#### 1.3.1 Campus Setting

Universiti Teknologi MARA (UiTM) is a leading public university primarily located in Shah Alam, Malaysia, a nation known for its tropical wet climate. It was originally established in 1956 as the RIDA Training Centre (Dewan Latihan RIDA) with an initial intake of around 50 students, aimed at uplifting rural Malays. Since then, UiTM has expanded significantly and is now the largest higher learning institution in the country, not only in terms of its vast physical infrastructure but also through its extensive staff and student body.

UiTM currently operates a main campus along with 33 branch campuses spread throughout Malaysia. With a combined workforce of 18,347 academic and non-academic staff, the university offers more than 522 programs that cater to students from foundation courses all the way up to postgraduate studies. Today, it serves approximately 172,659 students, including both Bumiputera and international students across full-time and part-time study modes, with all instruction conducted in English.



Figure 1.1: Main Entrance of UiTM Shah Alam



Figure 1.2: Location of Shah Alam in the state of Selangor

### 1.3.2 Campus Area and Buildings Space

UiTM Shah Alam, as the oldest and main campus of the university, is nestled among lush greenery and a peaceful environment. This natural setting provides a significant advantage in its goal of being recognized as a Green Campus. The campus spans across Lots 51, 52, and 53, covering a total area of 1,587,305.023 square meters.

The buildings on UiTM Shah Alam campus primarily serve academic purposes, providing learning spaces for students along with accommodation facilities. Additionally, they house administrative offices, healthcare services, community halls, and sports centers. These structures occupy a total ground floor area of 170,331.07 square meters, with the overall building area amounting to approximately 729,683.72 square meters.

The SI 1 indicator, which measures the ratio of open space area to the total campus area, stands at a high 89 percent. This reflects the university's strong commitment to sustainable open space management and environmental conservation. The high ratio also reinforces UiTM's ongoing efforts to enhance its initiatives to establish UiTM Shah Alam as a Green Campus.

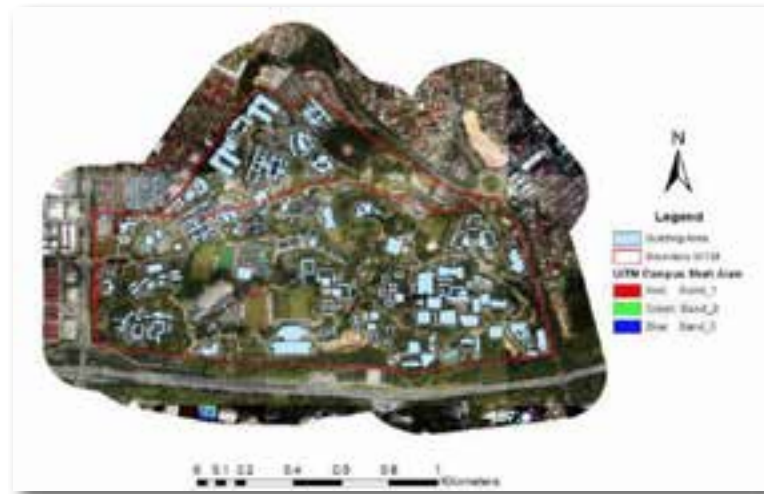


Figure 1.3: Total Built-Up Ground Floor Area at UiTM Shah Alam



Figure 1.4: Forest Areas at UiTM Shah Alam

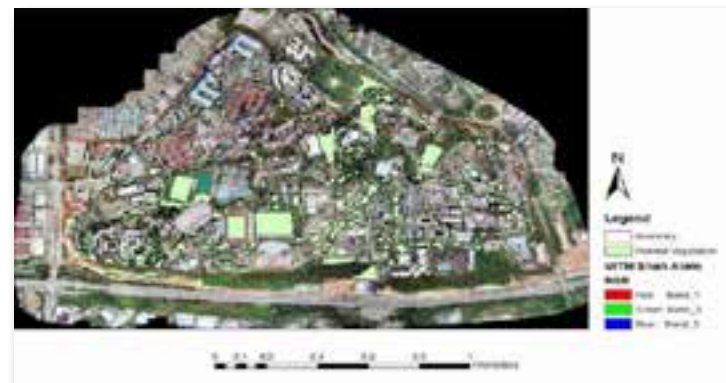


Figure 1.5 a: Planted Vegetation Areas at UiTM Shah Alam

Furthermore, the UiTM Shah Alam campus features extensive planted vegetation, including lawns, gardens, green roofs, and internal planting. The total planted vegetation covers 374,712.865 square meters, with 5,134.006 square meters dedicated to internal planting. In 2023, planted vegetation accounted for 23.61 percent of the total campus area, highlighting opportunities for further expansion, particularly through internal planting within campus buildings and facilities. Enhancing these green spaces will contribute to the university's efforts to foster a more sustainable environment while supporting both ecological balance and environmental well-being.

UiTM Shah Alam has a total water absorption area of 934,539.777 square meters, accounting for 59 percent of the total campus area. This significant proportion highlights the campus's commitment to maintaining a sustainable environment. Alongside forested and planted vegetation areas, the extensive water absorption zones play a crucial role in preserving green spaces, managing stormwater, and supporting overall environmental sustainability on campus.

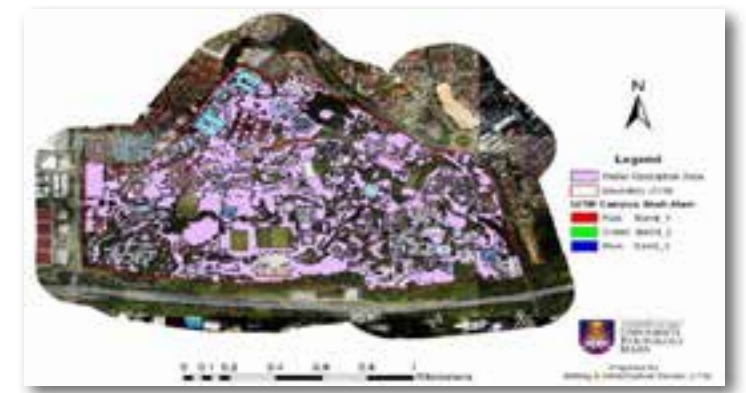


Figure 1.5 b: Water Absorption Areas at UiTM Shah Alam



Figure 1.6 (a,b,c,d): Samples of Internal Planting in UiTM Shah Alam

### 1.3.4 Campus Open Space Area to Population

The total number of regular students including online-only registered students attending both the undergraduate and post-graduate programmes offered in UiTM Shah Alam campus in the academic year 2023 was 47213 students. The total number of online-only students enrolled in 2023 was 9,419.

The campus's open space was calculated by subtracting the total ground floor area of the buildings (274,173.977 m<sup>2</sup>) from the overall campus area (1,587,305.023 m<sup>2</sup>). When this remaining area was divided by the total campus population of 47,213 students, it resulted in an average of approximately 28 m<sup>2</sup> of open space available per person.

### 1.3.6 Campus Operation and Maintenance of Buildings

The operation and maintenance activities on UiTM Shah Alam campus cover a total area of 332,759.71 square meters. This includes administrative offices, student accommodations, and general amenities buildings such as community halls, the central mosque, and the health center. These facilities play a vital role in supporting the daily functions of the university while ensuring a well-maintained and efficient campus environment.

Table 1.2: Main Buildings and Their Total Area

Buildings	Area (m <sup>2</sup> )	%
Administrative offices	108,342.12	32.5%
Students' accommodation	196,065.21	58.9%
General amenities	28,352.38	8.6%
<b>TOTAL</b>	<b>332,759.71</b>	<b>100%</b>

### 1.3.7 Campus Facilities and Infrastructure

#### A. People with Special Needs

As an entity that operates under the regulatory act called Akta Universiti Teknologi MARA 1976, the university is well governed by establishments of a wide range of administrative units that take care of the university's holistic ecosystem, including the well-being of its staff. The disabled, those with special needs and expectant mothers who are part of the university ecosystem - are well attended to.

The university has well-established, accessible facilities to cater to the disabled, for those with special needs and for maternity care. This special group is supported and empowered through the establishment of centers such as Unit Perkhidmatan OKU UiTM, to cope with the "Dasar Inklusif Orang Kurang Upaya Kementerian Pendidikan Malaysia 2019". This one-stop center that administers to matters related to the special group as well as for staff and students with special needs such as Disability Liaison Officer program, outreach, courses and workshops and financial supports such as zakat distributions.

The university also provides adequate facilities and equipment to further assist the special needs community which includes designated parking areas and toilets, wheelchairs and ramps for wheelchair access. All administrative units, faculties and centres within the university participate in this effort to help the those who require special needs.

Additional Link:  
<https://upo.uitm.edu.my/>

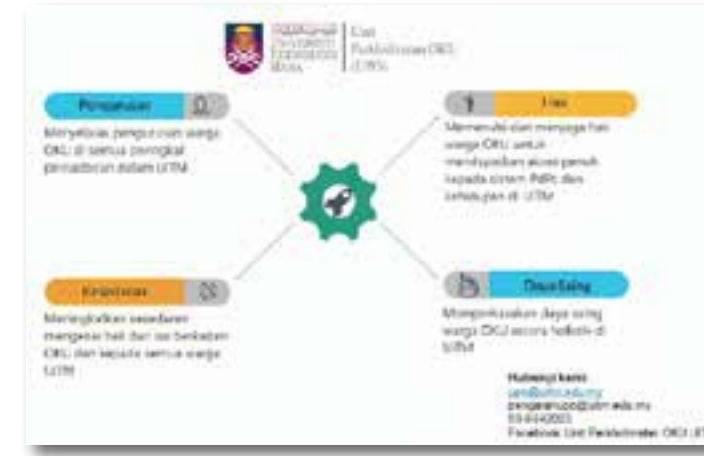


Figure 1.7: The four objectives of UPO UiTM published on UiTM corporate website

The UPO UiTM functions as a one-stop center that manages all matters related to people with disabilities, as well as staff and students with special needs. It administers various programs and services, including the Disability Liaison Officer program, outreach activities, courses, workshops, and financial support such as zakat distributions. By implementing empowerment and self-improvement programs, UPO effectively disseminates crucial information that contributes to the efficient management of disabled individuals within the university. Its services have also been extended to other UiTM campuses throughout Malaysia. As of April 2023, a total of 342 students, 81 academic and administrative staff, and 364 staff with disabled dependents have benefited from the services offered by UPO UiTM.



Figure 1.8: Infographic on the dissemination of information on special needs at UiTM

The services and initiatives provided by UPO UiTM clearly align with SDG 11, which emphasizes creating inclusive and sustainable communities. These efforts ensure that every UiTM resident has full access to the facilities and buildings on the Shah Alam campus. For example, the university has installed necessary infrastructure for individuals with disabilities and those with special needs, including dedicated parking areas, specially designated toilets, wheelchairs, and ramps for easier access. Moreover, every administrative unit, faculty, and center has ensured that sufficient parking spaces are reserved for disabled and special needs staff and students, further reinforcing the commitment to inclusivity and accessibility on campus.

University staff and students with disabilities or special needs are provided with essential mobility aids such as wheelchairs and ramps. These facilities significantly enhance their ability to move around, especially in confined areas and within various campus buildings, clearly demonstrates the university's commitment to inclusivity and support for this group. In addition, recognizing that access to restrooms is a basic human necessity, the university has installed specially designed, user-friendly toilets throughout its premises.



Figure 1.10: Designated toilet for disabled and special needs at Dewan Agong Tuanku Canselor, UiTM Shah Alam



Figure 1.9 (a,b,c): Facilities prepared for the OKU around the UiTM Campus

**B. Security and Safety**

The university places the highest priority on safeguarding its students, staff, and the surrounding community. To this end, the UiTM Auxiliary Police Officer are placed on duty at all times, ensuring the safety and security of the entire campus. Their mission is to maintain a peaceful and safe environment where both people and property are protected through reliable, dedicated, and disciplined service.

To achieve these goals, the Auxiliary Police Office has set clear objectives. They strive to maintain a calm and secure campus environment, protecting university assets with integrity and professionalism. They also work to create an atmosphere that allows students to excel academically while developing a strong character, which helps in enhancing the reputation of UiTM. In addition, the department is dedicated to training and employing personnel who are capable, ethical, efficient, and committed to upholding campus regulations.

The range of services offered by the Auxiliary Police Office includes providing security for the university community and its property, enforcing campus laws in a proactive and thoughtful manner and implementing consistent security measures. They also focus on maintaining smooth traffic flow throughout the campus. Officers routinely patrol all buildings, grounds, and parking areas, with student accommodation receiving continuous, round-the-clock monitoring to ensure safety at all times.



Figure 1.11 (a,b): UiTM Auxiliary Police Office



Figure 1.12 (a,b): Closed-Circuit Television (CCTV)

Aspects of security are also being extended to personal safety, fire protection, and building security on campus. Closed-Circuit Television (CCTV) systems, Fire Hose Reel and Fire Extinguisher, Emergency Break Glass Panel, Fire Hydrant and Security Gate Barrier are strategically installed within the university's compound for an immediate response towards unfavorable incidents. All premises are equipped with comprehensive security and safety equipment designed to provide rapid assistance during emergencies.

The university has strategically installed various safety and security equipment across the campus to ensure a prompt and effective response to emergencies. This includes Closed-Circuit Television (CCTV) systems, fire hose reels, fire extinguishers, emergency break glass panels, fire hydrants, and security gate barriers. These installations are part of the university's comprehensive safety strategy to maintain a secure environment for all campus occupants.

In addition to these measures, the university enhances its security infrastructure through technological collaborations. Notably, Universiti Teknologi MARA (UiTM) has partnered with Huawei Technologies, Malaysia, to develop Smart Campus solutions and a Smart Data Centre. This collaboration aims to enhance campus security and efficiency through advanced ICT infrastructure. Furthermore, the university also has cutting-edge security systems, such as the Radio Frequency Identification (RFID) for Security System (i-RSS) in the Chancellery office. This system aims to improve security management by streamlining visitor identification and access control processes.

These initiatives reflect the university’s commitment to leveraging technology to strengthen campus safety and security.

Location	Quantity	Location	Quantity
Bangunan Canseleri	21	Parkir Motosikal FKM	3
Pintu 1	5	Parkir Motosikal Pusat Data (PERINDU)	2
Pintu 2	5	Pencawang 33kV	9
Pintu 3	2	Bangunan Bendahari Perolehan	10
Pintu 4	0	Pusat Islam	19
ARI	4	Pusat Sukan	2
DATC	24	Stadium	6
Pej.Bendahari Bahagian Gaji (FAIZ)	7	Sistem Parkiran Berpalang	22
Fakulti Kejuruteraan Awam	18	Bahagian Peperiksaan	10
Fakulti Kejuruteraan Elektronik	29	Bangunan Sarjana (IPSIS)	17
Fakulti Seni Lukis & Senreka	13	Pejabat Infostruktur	13
Fakulti Undang-Undang	20	Kolej Melati	11
Galeri	10	PPH	11
MTDC	8	FKK	2
Bangunan Pusat Inovasi	4	Depoh Senjata (PALAPES)	1
Makmal Tisu Kultur – FSG	4	Akademi Pengajian Bahasa (APB)	2
Bangunan Akademik III (MASCUM)	7	STEL	1
Foyer Menara SAAS	6	ANNEX Budisiswa	8
Bangunan Parkir Bertingkat	10	Depoh Bas	1
Parkir Motosikal FKM	3	Unit Kenderaan	6
Parkir Motosikal Pusat Data (PERINDU)	2	Lain-Lain (PTZ)	6
		<b>TOTAL</b>	<b>367</b>

Table 1.3: List of CCTVs and their Locations in UiTM Shah Alam Campus

The university has implemented comprehensive fire safety measures to protect its community. Fire hose reels and extinguishers are strategically placed in all buildings, with regular inspections and maintenance ensuring they remain operational and ready for use. Emergency break glass panels, also known as manual call points, are installed near office emergency exits and along designated escape routes. These devices allow individuals to manually trigger the fire alarm system, enabling prompt evacuation and notifying authorities in case of emergencies.

Regular maintenance of fire safety equipment is crucial for effective emergency response. The university’s Facilities Management Department plays a vital role in ensuring all safety systems are well-maintained and fully functional, thereby supporting the safety and well-being of the university community.



Figure 1.13 (a,b,c,d,e,f): Fire Hose Reel, Fire Extinguisher and Emergency Break Glass Panel



Figure 1.14: Fire hydrant

Fire hydrants are essential water supply points that firefighters rely on during emergencies. As part of its comprehensive fire protection strategy, the university has strategically installed multiple fire hydrants throughout its expansive campus, ensuring quick and efficient access to water in the event of a fire emergency.

Security gate barriers are a crucial element in protecting the UiTM campus from unauthorized entry. All staff members are issued permanent access cards, allowing them to enter the premises and offices, while visitors and contractors are granted temporary access cards upon proper verification. Moreover, entry to administrative, academic, and accommodation buildings is strictly controlled through locked doors and card-access systems. Other campus facilities, such as the library and health center, operate according to a predetermined locking and unlocking schedule, ensuring that security is maintained at all times.

In the university, the safety and security measures are also implemented through an Emergency Action Plan and designated Emergency Assembly Areas. To ensure its effectiveness, regular workshops and training sessions are conducted to keep all staff and students informed and prepared for potential threats to the campus security.



Figure 1.15(a,b): Security Gate Barrier

**C. Health Care**

UiTM is dedicated to ensuring the well-being of its students, academics, and staff by providing a comprehensive health infrastructure on campus. The UiTM Health Centre, established in 1974 and located at Lot 1, Jalan Bijak 1/22, Seksyen 1, UiTM Shah Alam, offers essential primary medical services to the entire university community. Each UiTM branch campus is also equipped with its own health care centre to meet local needs.

which pledges to provide friendly, prompt, and responsible services, maintain a clean, safe, and conducive environment, and continuously upgrade its offerings to meet the evolving needs of the university community.

The health center is managed by Medical Officers, Dental Officers, and various support staff. **Table 8** below presents the distribution of personnel involved in running this health center.

UiTM Health Center is strategically located near one of the campus main entrances and is easily accessible via several internal campus buses, enabling easy and quick access for students. Equipped with a laboratory, x-ray facilities and qualified personnel, this center is well prepared to provide appropriate medical treatment to UiTM staff and students.

The university is highly committed to the well-being of its staff and students. Students and staff who require further treatment, will be referred to the UiTM Hospital, UiTM Private Specialist Centre or the Shah Alam Hospital. The UiTM Health Centre and hospital are also accessible to the general public.

The mission of the Health Centre is to deliver high-quality, professional healthcare that enables staff and students to focus on their academic, teaching, and research responsibilities. This mission is supported by the centre's client charter,



Figure 1.16: Health Center in UiTM Shah Alam Campus

Services provided at UiTM Health Centre can be classified into five (5) main units, namely the Medical Unit, Public Health Unit, Oral Health Unit, Medical Diagnostic & Development Unit and Pharmacy Unit. These main units are supported by two (2) additional units, namely the Administration Unit and the ICT Unit. The services offered are shown in **Table 9**.

**Table 1.4: Distribution of Health Centre Personnel**

Personnel	Number
Medical	38
Dental	15
Support	34
<b>Total</b>	<b>87</b>

To ensure the delivery of optimal healthcare services to the university community, the UiTM Health Centre operates with full capacity of medical personnel on specified working days. The details of medical personnel at the UiTM Health Centre during the operating hours from 8.00am to 10.00pm (Mondays to Fridays). Both Medical and Dental clinics operate all year round, 5 days a week including a semester break with variation in operating hours. In addition, 24-hour ambulance services, which remain operational beyond regular clinic hours to support emergency medical needs across the campus throughout the semester.

**Table 1.5: Health Services offered by UiTM Health Centre**

Health Services	Other health-related services
<ol style="list-style-type: none"> <li>1. Medical Treatment</li> <li>2. Accident &amp; Emergency</li> <li>3. Minor Surgery &amp; Other Procedures</li> <li>4. Day Care</li> <li>5. Medical Check-Up</li> <li>6. Health Screening</li> <li>7. Vaccination</li> <li>8. Guarantee Letter [for hospital admission]</li> <li>9. Diabetic Clinic</li> <li>10. Hypertension Clinic</li> <li>11. Asthma Clinic</li> <li>12. Get Slim Clinic</li> <li>13. Stop Smoking</li> </ol>	<p><b>Laboratory</b></p> <ul style="list-style-type: none"> <li>▪ Sample Collection: blood, urine, body fluid swab</li> <li>▪ Sample Test: hematology, biochemistry, immunology, microscopic urine</li> <li>▪ Urine Drugs Screening</li> <li>▪ Sample delivery to hospital</li> <li>▪ Machine and laboratory equipment calibration</li> <li>▪ Sample processing from state campus</li> <li>▪ Instrument placement and reagent rental</li> </ul> <p><b>X-ray</b></p> <ul style="list-style-type: none"> <li>▪ For diagnosis – Chest, Skull, Abdominal / KUB (kidney, ureter, bladder), Extremities, Pelvis</li> <li>▪ For medical check up</li> </ul>



Emergency room (a)

Wardroom (b)



Medical laboratory (c)

X-ray room (d)

Figure 1.17 a,b,c,d: Infrastructure and Facilities Available at UiTM Health Centre

All health facilities in **Figure 1.17 (a),(b),(c)** and **(d)** are available at the UiTM Health Centre providing quality and professional health services to all students and staff.

In addition to physical health care services provided by UiTM Health Center, the university has also pioneered the implementation of mobile health services, becoming the first public university in Malaysia to introduce mobile clinic facilities on campus. This service named as the UiTM Emergency Mobile Rescue (UEMR), the university's mobile clinic operates from a specially fitted bus equipped with emergency facilities built upon the Emergency and Ambulance Service Guidelines set by the Primary Health Facilities. The UEMR functions as a mobile clinic, providing initial medical treatment and patient transfer services in emergency situations. Furthermore, the bus is fully accessible to individuals with disability, thus ensuring inclusivity in the provision of health services to the entire campus community.

The UiTM Health Center also took proactive action in promoting the well-being of staff through a variety of virtual and face-to-face programmes. These initiatives include webinars, health exhibitions, and awareness campaigns. As illustrated in **Figure 1.18**, the topics covered are primarily related to public health issues, with a strong emphasis on mental health awareness and support. These activities reflect the centre's commitment to cultivating a healthy, informed, and resilient university community.

Apart from the health services provided by the university, UiTM also offers comprehensive sports and recreational infrastructure to support and promote a healthy lifestyle among students, academic staff, and non-academic personnel. The availability of recreational rooms, swimming pool and sports complex play a significant role in encouraging the university community to stay active, physically fit, and mentally well.



Figure 1.18: Mobile Clinic—UiTM Emergency Mobile Rescue



Figure 1.19 a, b, c: UiTM Health Center Activities Promoting Well-being of Staff and Students



Figure 1.20 a, b: Facilities available at UiTM Shah Alam Campus

1.3.7 Campus Facilities and Infrastructure

Table 1.6: Conservation Activities and Their Status in UiTM

Program Implemented	Program in-preparation
Tag Trees, Stay Green	Master Plan for Central Forest Spine (CFS) Ecological Linkages
SDG Triangle@UiTM	Greening My Campus @ UiTM
UiTM-Perhilitan Taman Negara Research Projects	Development of Spatial Database for Individual Planted Tree using Geospatial Technology in UiTM, Shah Alam
Rainwater Harvesting System for Watering Plants in UiTM	Botanical Garden
International Camp of Food Rescue	
Garden Waste Generation as Soil Conditioner in UiTM Shah Alam	
Low Carbon City Framework	
Tree for Future	
Hiking Trails Exploration	
UGC Fun Plogging	
My Green Space Challenge	

### 1.4 Moving Forward

The campus setting and infrastructure of any Higher Learning Institutions (HLIs) play crucial roles towards supporting education expansion and nurturing high-quality graduates. As laid down by the United Nations (UN) via its 17 SDGs, the university campus is seen as presenting an ideal venue in implementing and promoting sustainability initiatives.

Clearly, the campus setting and infrastructure on the UiTM main campus reflect its strong foundation as a conducive hub. Various infrastructures are thoughtfully designed to provide comfort and support for students, thereby enhancing their overall academic experience. The activities and projects being conducted are not only targeted toward the students but also involve the community surrounding UiTM campuses. The greening effect also enhances learning by offering opportunities for practical, interdisciplinary, and problem-solving-based education.

The current UiTM Setting and Infrastructure (SI) must be systematically maintained and, where necessary, upgraded to incorporate global best practices. This will ensure continued improvements in the well-being of all stakeholders, accelerate human capital development, and support green growth envisaged in SDG 11, SDG 12, SDG 15 and SDG 17.

SDG Areas:



**CLUSTER 2.0**  
Energy and Climate Change

## CLUSTER 2.0: Energy and Climate Change

### 2.1 Introduction

Climate change is primarily caused by how humans conduct and manage their business activities. This will directly affect energy consumption and, in turn, organizational direct and indirect carbon emissions. UiTM is committed to providing solutions for climate change issues and developing effective policies to meet the energy standards for protecting nature and energy resources.

### 2.2 Cluster Objectives

Sustainability initiatives at UiTM have highlighted the importance of the Energy and Climate Change (EC) cluster towards targeting the “Low Carbon Campus.” It is expected to improve energy efficiency and optimise campus renewable energy for carbon emission reduction in its Shah Alam main campus and the other 12 state and 21 satellite campuses all over Malaysia. The EC cluster’s aim, objective and functions are illustrated in **Figure 2.1** below.

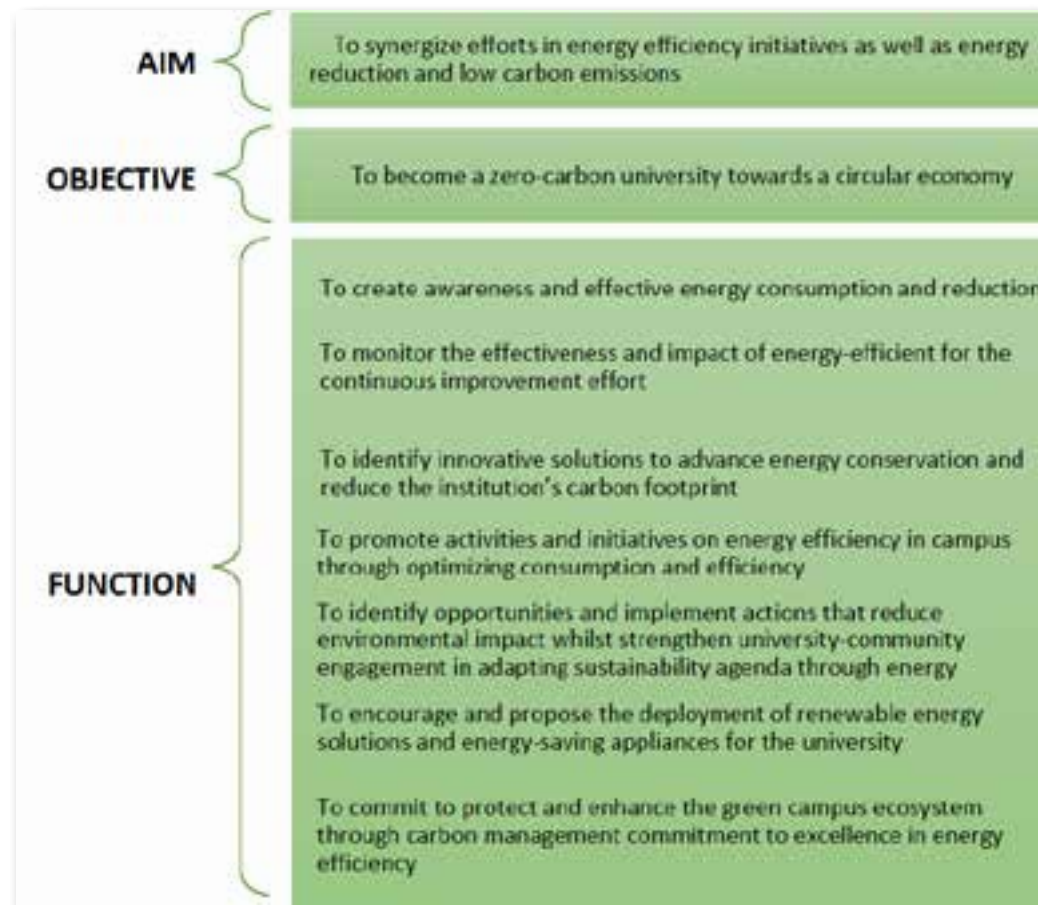


Figure 2.1: EC Cluster aim, objective, and functions

There were ten (10) performance indicators for the EC cluster, as shown in **Figure 55** below. It is equally important to include the social, cultural, and economic aspects of sustainability in the indicators to ensure UiTM and EC clusters continue towards achieving their goal.

The areas of concern of EC are energy-efficient appliances, the implementation of smart buildings, total electricity usage, energy conservation programs, elements of green buildings, climate change adaptation and mitigation programs, greenhouse gas emission reduction policy, and carbon footprint. With these indicators, UiTM has and will increase its efforts in energy efficiency, focusing on building management and caring more about nature and energy resources.

## 2.3 Cluster Strategies

In supporting the university’s initiative towards sustainability, the EC cluster has committed to both short-term and long-term planning. Table 2.1 shows the strategies that need to be continuously monitored to achieve the sustainability goal of the cluster specifically and UiTM’s vision generally to be Malaysia’s best Low Carbon Public University Model by 2030.

Table 2.1: The five main strategies of the EC cluster

Strategies	Action	Target year	Status
<b>S1: Switch to energy-efficient appliances</b>	a) Replace fluorescent bulbs with LED for all buildings and streets	2025	On-going
	b) Replace the split unit air conditioners with inverters		
	c) Replace the existing chiller with variable speed drive (SVD) system		
<b>S2: Usage of energy policy</b>	To ensure UiTM and its campuses adopt the guidelines of energy policy	2025	On-going
<b>S3: Installing renewable energy</b>	To install more renewable energy sources – solar photovoltaic (PV)	2025	On-going
<b>S4: Building management – smart and green</b>	1. To install sensors such as photocell sensors	2025	On-going
	2. To educate Warga UiTM on smart and green building implementation policy		
<b>S5: Energy management system</b>	To increase the number of certified energy manager	2025	On-going

### 2.4 Cluster Projects and Achievements

#### 2.4.1 Energy Efficient Appliances Usage

UiTM intends to realise further energy savings by paying close attention to energy management. Through a variety of programs, every department within the organisation can evaluate its own energy usage and realise its own potential for energy savings. Energy-saving computers in offices and labs, LED screens and AV systems in classrooms, LED lighting, the deployment of sustainable technology, and the installation of more efficient engineering systems, such as new energy-efficient chillers for the cooling system and energy-saving appliances, like split-unit air conditioners with inverters.

More Smart Classrooms are also constructed to accommodate teaching and learning techniques based on Digital Learning Tools and Technologies. With the aim to fulfil UiTM's Agenda 2025 (Smart Campus & Education 5.0 @ UiTM), Smart Classrooms offers greater security, increased access to students, more interactivity, and better learning. Smart Classrooms will provide an expansion of unique and creative learning through the provision of learning spaces and adaptive immersive technology.

For buildings with a central cooling system, chillers and AHUs consume between 50% and 60% of the total building energy consumption. Old chillers were replaced with newer, more efficient chillers in stages. Details of energy-efficient appliances are as in **Table 2.2** below.

**Table 2.2: List of energy efficient appliances and their ratios**

Appliances	Number	Efficient Units	Ratio of efficient appliances %
Desktop Computer Units	7,799	7,799	100%
Notebook	1,357	1,357	100%
Split AC Unit	7,752	1,675 (inverter)	22%
Large AC Chillers	17	12 (New)	71%
Lightbulbs	91,770	30,762 (LED est.)	34%
Screen display (LED)	600 (est.)	600	100%
<b>Average percentage</b>			<b>71%</b>

Based on this data, the overall ratio of efficient appliances in UiTM is more than 75%. This percentage indicates the significant efficiency level in energy-saving initiatives. The images below (**Figure 2.3, 2.4, 2.5 and 2.6**) exemplify the energy-efficient appliances in UiTM.



Figure 2.4: Two new chillers have been installed with the same capacity



Figure 2.5: Replacement of four RT water-cooled chillers is the major project for energy saving at the Engineering Complex



Figure 2.6: Computer Laboratories in Engineering Faculty



Figure 2.7: Smart Classroom (SC)

Smart Classrooms (SC) (Figure 2.7 and 2.8) are one of the latest teaching and learning (T&L) facilities adopted in the university. In UiTM, the SCs are to be equipped with energy-efficient features. Common features in SC are ;

- W
- 1. Touch Screen PC
- 2. Interactive TV Systems
- 3. 5-Star Energy Efficient LED Screen
- 4. Mirror Op Presenter
- 5. Audio Visual (AV)
- 6. Smart Glass Board
- 7. Smart Glass Table



Figure 2.8: Replacement of integrated high-energy efficient communication devices for staff

2.4.2 Smart Building Implementation

UiTM main campus in Shah Alam, Selangor, has a Gross Building Area (GBA) that includes smart building features like firefighting apparatuses and monitoring systems, centralised security cameras, energy-saving devices and energy monitoring systems, smart meters, data loggers and data recording for energy monitoring systems installed at different buildings. Including the important and critical buildings listed in **Table 2.3** below, this smart building element occupies a minimum of 294,095 square meters.

Table 2.3: List of important buildings in UiTM Shah Alam

Main Building Name	Gross Floor Area
Canseleri Tuanku Syed Sirajuddin	8,047.72
Kompleks Al-Khawarizmi	22,997.00
Kompleks Ibnu Khaldun	20,091.25
Kompleks Kejuruteraan Tunku Abdul Halim Mu'adzam Shah	122,593.13
Pusat Kesihatan	4,003.78
Kompleks Tahir Majid	27,291.04
Kompleks Pusat Islam	7,455.67
Dewan Seri Budiman	7,407.09
Menara Sultan Abdul Aziz Shah	26,450.28
Perpustakaan Tun Abdul Razak 1	12,007.47
Kompleks Pembangunan Infrastruktur dan Infostruktur	5,067.95
Dewan Agong Tuanku Canselor	18,495.97
Malaysian Technology Development Corporation	12,187.00
<b>TOTAL</b>	<b>294,095.35</b>
<b>TOTAL</b>	<b>294,095</b>
Ratio (2.2 / 1.7) x 100%	41.4 %

1. Firefighting Facilities and Monitoring Systems at various Buildings



Figure 2.9: Firefighting Facilities and Monitoring Systems

2. Centralized Security Monitoring Cameras and CCTV at various locations outside and inside the buildings

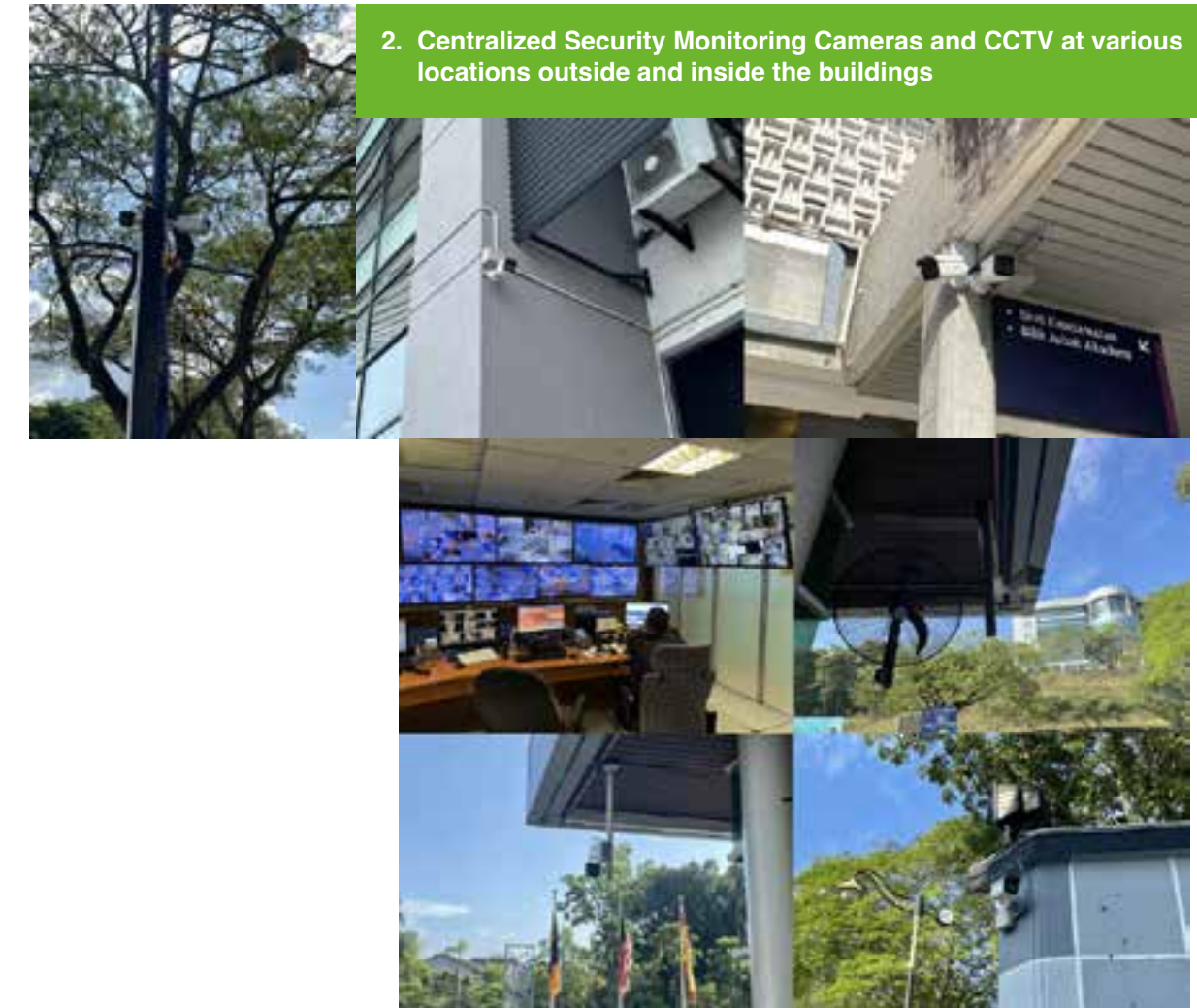


Figure 2.11: Centralized Security Monitoring Cameras and CCTV at the main entrance of UiTM

3. Energy Saving Devices & Energy Monitoring Systems



Figure 2.12: Control Room



Figure 2.13: Building Automation System (BAS) - Chiller Monitoring Systems (Canseleri)

4. Smart Meters, Data Loggers and Data Recording for Energy Monitoring Systems.



Figure 2.14: Smart Meters Data Loggers and Data Recording

2.4.3 Number of Renewable Energy Sources on Campus

As of this date, UiTM has established one (1) project of renewable energy on its campus. This project is known as the Solar PV system (GERC) located in Kolej Teratai and is operated under Pusat Penyelidikan Tenaga Hijau.



Figure 2.15: 19 kWp Solar PV System (GERC) - Kolej Teratai

2.4.4 Total Electricity Usage by Campus Population (kWh Per Person)

The electricity usage in UiTM is 1139.79 kWh/person. This usage level is considerably low compared to national/international rates of approximately 909 kWh/person per month, which equates to around 10,909 kWh per year. The table below shows the electricity usage for 2023, where it provides the basis for energy usage by kWh/person.

Table 2.4: 2023 Electricity Consumption for Shah Alam Campus Section

YEAR	2023 ELECTRICITY CONSUMPTION		
	MONTHS	kWh	RM
FACILITY DEPARTMENT SHAH ALAM CAMPUS SECTION 1	JANUARY	4,496,622	1,895,328.07
	FEBRUARY	3,808,357	1,638,024.06
	MARCH	4,197,600	1,814,949.07
	APRIL	3,738,285	1,718,065.50
	MAY	5,268,510	2,220,058.25
	JUNE	4,698,024	2,009,168.67
	JULY	4,790,989	2,025,204.60
	AUGUST	4,152,747	2,325,574.70
	SEPTEMBER	3,684,970	2,070,760.90
	OCTOBER	5,019,599	2,804,735.00
	NOVEMBER	4,715,861	2,636,997.95
	DECEMBER	4,318,956	2,428,499.95
	<b>TOTAL</b>	<b>52,890,520</b>	<b>25,587,366.72</b>

Table 2.5: UiTM's 2023 electricity usage per population

CAMPUS	POPULATION 2023			
	Regular Student (full time & part time) (1.12)	Academic Staff (1.14)	Administrative Staff (1.14)	Total
SHAH ALAM	41,286	4,720		46,405
<b>Energy Consumption per Population kWh/Year</b>	Annual Energy Consumption/population = 52,890,520/46,405 = 1,139.76 kWh/person		Full population	

**2.4.4 Ratio of Renewable Energy Production Divided by Total Energy Usage Per Year**

The renewable energy source on UiTM Shah Alam campus is solar energy. The installation of solar panels on UiTM Shah Alam campus is a grid-connected photovoltaic system located at Makmal Lapangan Fakulti Sains Gunaan, students' hostels and parking rooftops. The table below shows the summary of solar and total energy usage for the year 2023.

**Table 2.6: Solar in UiTM Shah Alam**

Campus	Renewable energy capacity (kWp)	Renewable energy per year (kWh)
Rooftop	19	27,360.00
Makmal Lapangan FSG	1.8	2,160

**Table 2.7: Solar From Green Energy Tariff (GET)**

Campus	Renewable Energy Source	Renewable energy per year (kWh)
Shah Alam	Solar PV Mounted	6,199,677
	Hydroelectric	24,798,710
<b>Total</b>		<b>30,998,387</b>

**Table 2.8: The ratio of renewable energy production divided by total energy usage per year**

Total Renewable Energy per year (kWh)	Electricity Bill per year (kWh)	Ratio of renewable energy production divided by total energy usage per year (%)
31,027,907	52,890,520	58.66

**2.4.5 Elements of Green Building Implementation**

5 UiTM buildings in the main campus located in Shah Alam have been awarded diamond recipients of the Low Carbon Emission Challenge 2030. The 5 buildings are as follows:

- i) Chancellery Tuanku Syed Sirajuddin Building
- ii) Complex Engineering Building
- iii) Faculty of Architecture, Planning & Surveying Building
- iv) Faculty of Computer, Mathematics and Sciences Building
- v) UiTM Health Centre



Figure 2.16: Example of Green Building Implementation - Overview Green Technologies implemented at Kolej Teratai solar panel roof



Figure 2.17: Certificate of International REX Standard by TNBX Sdn Bhd.

In order to comply with MS1525: Energy Efficiency and Use of Renewable Energy for Non-Residential Buildings, UiTM updated Dokumen Kontrak Pembangunan dan Fasiliti to replace conventional lighting with LED for energy-saving measures, installed solar-powered roofs on certain student amenities in their accommodations, trained qualified staff in energy management, and established a policy for UiTM. Report on Sustainability,



Figure 2.18: Energy Management Gold Standard (EMGS) 1-star certification

<https://www.uitm.edu.my/index.php/en/latest-news/524-uitm-shah-alam-menerima-pensijilan-energy-management-gold-standard-emgs-1-bintang>

Universiti Teknologi MARA has obtained AEMAS certification in Energy Management Gold Standard with 1 star.

**2.4.6 Greenhouse Gas Emission Reduction Program**

UiTM is committed to implementing the low-carbon cities framework program, focusing on four (4) Greenhouse Gas (GHG) reduction elements: energy, waste, water, and greenery and water bodies. The UiTM's carbon commitment is to reduce 45% of emissions by 2030 from the baseline year 2015. A city-based approach is chosen for the whole campus, with special projects of a performance-based approach for selected buildings. Various initiatives are outlined for achieving the Sustainable Development Goals (SDG) through sustainable campus practices, green governance, and ecosystem; and university-community linkages and partnerships for the goals. A carbon management plan is underway to enable UiTM to be Malaysia's best low-carbon public university model by 2030, while also striving for carbon neutrality. **Table 19** below describes the UiTM's GHG elements target.

**Table 2.9: Area-Target for Greenhouse Gas Emission Reduction Program**

Area	Elements	Target
Emission Reduction	Energy	30% reduction in building energy use by 2030 from baseline year 2015
		7.5% increase in renewable energy by 2030 from baseline year 2015
		ASEAN Energy Management Scheme (AEMAS) certification
Waste	Water	30% reduction in municipal solid waste to landfill by 2030 from baseline year 2015
		30% reduction in water usage by 2030 from baseline year 2015
Carbon Sequestration	Greenery Forest and Water Bodies	7.5% increase in rainwater harvesting by 2030 from baseline year 2015
		3% increase in green space by 2030 from baseline 2015
		Preserve existing forested and water bodies areas

Universiti Teknologi MARA (UiTM) made an impressive innovation when it introduced the UiTM Shah Alam Solar-Powered Bus Stop Project for the benefit of over 1,000 UiTM students. A total of eight selected UiTM Shah Alam main campus bus stops were upgraded through the project, equipped with solar energy supplies for lighting (lamps) and USB charging facilities capable of operating 24 hours.



Figure 2.19

**2.4.7 Solar Research Institute (SRI)**

Universiti Teknologi MARA aligns with the strategic aim of the Malaysian government to mitigate its carbon emissions. One of the measures implemented by UiTM is the adoption of a subscription to electricity sourced from renewable energy, which is characterised by its environmentally sustainable and eco-friendly nature. The resources utilised by TBB are derived from solar power facilities operated by Tenaga Nasional Berhad (TNB).

**2.4.7 Total Carbon Footprint by Total Campus Population (metric tons per person)**

The carbon footprint produced from electricity and transportation (shuttle, car, motorcycle) by metric tonne per person in UiTM premises varies in values at 0.760 (electricity), 37.27 (shuttle), 1943.011 (car) and 302.129 (motorcycle). The details of the total carbon footprint are shown in **Table 15** to **Table 19** below.

**Table 2.10: Electricity carbon footprint production**

	Unit or index		CO2	
	2022	2023	2022	2023
Electricity Usage per year (kWh) (EC 2.7)	48019321	52387480		
Emission Index for Peninsular Malaysia kg/kWh (MGTC 2017)	0.667	0.667		
Carbon Emission from Electricity Usage (kg)			32028887.107	34942449.160
Carbon Emission from Electricity Usage (Ton)			32028.887	34942.449
Carbon Emission per population (Ton/person)			0.690	0.760

**Table 2.11: Transport (Shuttle) carbon footprint production**

	Unit or index		CO2	
	2022	2023	2022	2023
Transportation per year (shuttle) TR5.6				
Number of Trip				
Total distance per day for every route	2439.9	2439.9		
Number of Service days	242	242		
Average distance in campus				
Emission Index	0.01	0.01		
Carbon Emission (Ton) 37.27			59,046	59,046

**Table 2.12: Transport Car) carbon footprint production**

	Unit or index		CO2	
	2022	2023	2022	2023
Transportation per year (Car) TR5.2				
Number of Car (TR5.2)	4431	4431		
Number of Service days	242	242		
Average distance in campus	4.53	4.53		
Emission Index	0.02	0.02		
Carbon Emission (Ton)			1943.011	1943.011

**Table 2.13: Transport (Motorcycle) carbon footprint production**

	Unit or index		CO2	
	2022	2023	2022	2023
Transportation per year (Motorcycle) TR5.3				
Number of Motorcycle (TR5.3)	1378	1378		
Number of Service days	242	242		
Average distance in campus	4.53	4.53		
Emission Index	0.01	0.01		
Carbon Emission (Ton)			302.129	302.129

**Table 2.14: UiTM's total carbon footprint production**

	CO2	
	2022	2023
Total Emission per year		
Total Emission from electricity usage + Transportation (Ton)	34333.073	37246.635
Carbon Emission per population (Ton/person)	0.740	0.810

**2.4.8 Number of Innovative Program(s) in Energy and Climate Change**

For the year 2023, there were a few programs considered as innovative programs by UiTM established on energy and climate change. The themes of those programs are centralised to awareness, role, and responsibility among UiTM's ecosystem on energy and climate change.

**A. Tree Planting in Conjunction with UiTM's 25th Anniversary Celebration**

In celebration of UiTM's 25th Anniversary, a Tree Planting Program was held at UiTM Kuala Pilah, organised by UiTM Negeri Sembilan Campus Management, UiTM Green Centre (UGC) Negeri Sembilan, and the Pulau Banding Foundation (PBF). The event aimed to promote environmental preservation and sustainability awareness.

Officiated by YB Dato' Adnan Bin Abu Hasan, the program featured a symbolic tree-planting ceremony, emphasising UiTM's commitment to a greener future. The initiative encouraged participation from the university and local community, highlighting the importance of conservation and sustainable development.



Figure 2.20: Tree Planting in Conjunction with UiTM 25th Anniversary Celebration

### B. Solar Powered Lights Project

The Masjid Asy-Syuja'ah committee in Merlimau Utara installed 24 solar-powered lights through the “Knowledge and Solar Energy Transfer at Mosque” program, organised by UiTM Perak’s Faculty of Architecture on January 6, 2024. This University-Social Responsibility (USR) initiative aimed to reduce electricity costs and promote sustainable energy.

Supported by UiTM students, staff, and the mosque congregation, solar lights (10-200 watts) were installed within half a day in key areas such as parking lots, pathways, and a nearby school entrance. Led by Encik Norhafiz Haron and P.M. Dr. Sr. Nur Azfahani Ahmad, the program aligns with UN SDG 7, advocating affordable and sustainable energy access.

The initiative showcased solar energy’s benefits while offering students hands-on experience in green technology. Inspired by this success, the mosque committee envisions transitioning entirely to solar power.



Figure 2.21: Program Pemindahan Ilmu dan Teknologi Tenaga Solar

### C. Waqf and Adopt-a-Tree Program by the Faculty of Accountancy

As part of the Green Campus Sustainability Festival 2024, UiTM launched the Waste to Wealth: Green Project, promoting the transformation of waste into valuable, income-generating resources. Led by the UiTM Green Centre (UGC) and the Department of Development, the initiative ran throughout October 2024 under the theme “Sustainable and Healthy Lifestyle”, involving campuses nationwide.

The program aimed to raise awareness about sustainable waste management, foster innovation, and encourage entrepreneurship. It educated participants on reusing waste creatively and provided skills to convert waste into economically viable products, supporting UiTM’s broader sustainability goals.



Figure 2.22: Waqf and Adopt-a-Tree Program by the Faculty of Accountancy

#### D. UiTM Researchers Revolutionize Solar PV Plant Maintenance With AI

UiTM researchers, led by Assoc. Prof. Ir. Dr. Nofri Yenita Dahlan from the Solar Research Institute, have secured a RM 449,959.40 PETRONAS Research Grant for a project aimed at transforming maintenance practices in large-scale solar photovoltaic (PV) plants through AI-based predictive and prescriptive maintenance. The project focuses on using advanced algorithms to detect and classify string faults, optimising efficiency, minimising downtime, and maximising energy generation. By proactively identifying and resolving potential issues, this innovative approach enhances fault detection accuracy and empowers operators to unlock the full potential of solar energy. UiTM's commitment to this AI-driven maintenance strategy represents a significant advancement in the management of renewable energy resources, positioning them to reshape the industry towards a more sustainable future.



Figure 2.23: UiTM Researchers Revolutionize Solar PV Plant Maintenance With AI

#### A. Turquoise Hydrogen—Fuel for The Future

Hydrogen, recognised as a clean fuel for the future, is classified into various types based on its source and production methods, including turquoise hydrogen, which is produced through methane pyrolysis. Researchers from the School of Chemical Engineering at Universiti Teknologi MARA, in collaboration with PETRONAS Research Sdn Bhd, are exploring this method to produce hydrogen and solid carbon from methane. Funded by PRSB, the 18-month project aims to convert methane into hydrogen and saleable solid carbon using a hybrid molten metal-salt media in a single-step process. This technology, which emits negligible CO<sub>2</sub> and has a lower energy demand compared to water electrolysis and steam reforming, is being developed at a pilot scale (TRL 4) and will undergo a techno-economic evaluation. The project aims to contribute to the goal of achieving 200 Mt of hydrogen by 2050 for net-zero CO<sub>2</sub> emissions, leveraging Malaysia's methane and natural gas resources.



Figure 2.24: Turquoise Hydrogen—Fuel for The Future

#### A. One Million Trees Planting Program in Penang in conjunction with Earth Day 2024

The Penang State Government, in collaboration with various departments/agencies, associations, private companies, and community centres, including UiTM CPP, is responding to the request of the Governor of Penang to implement a simultaneous one million tree planting program across Penang on April 22, 2024. This program has been carried out because of the cooperation between UiTM Penang and CEPACS Penang. The event was also attended by the president of CUEPACS, YBhg. Dato' Dr. Haji Adnan Mat, along with the management of UiTM Penang. The number and types of trees to be planted have been identified, and a total of 105 trees have been planted at the Permatang Pauh Campus for this program.



Figure 2.25: One Million Trees Planting Program in Penang in conjunction with Earth Day 2024

### 2.5 Moving Forward

The current usage of fossil fuels harms the atmosphere, thereby vigorously increasing climate change and polluting our earth, lessening energy demands, energy wastage and contributing to global warming. To offset the negative impact, sustainable energy such as wind and solar energy that creates zero carbon emissions will need to take the lead.

Clearly, it is within the university's control to manage energy usage on campus. In achieving its mission, the university encourages its staff to become Certified Energy Managers (CEM). A Certified Energy Manager is responsible for optimising the energy performance of a unit, facility, building, or business area. The CEM will be the systems integrator for electrical, mechanical, process and building infrastructure, analysing the optimum solutions to reduce energy consumption in a cost-effective manner.

A proper strategy on EC involves three major technological changes: energy savings on the demand side, efficiency improvements in energy production, and replacement of fossil fuels by various sources of renewable energy, which can be topics for future research.

SDG Areas:



**CLUSTER 3.0**  
Waste Management

### CLUSTER 3.0: Waste Management

#### 3.1 Introduction

UiTM is the largest public university in Malaysia with 34 branches across 13 states which is designed to be a smart and green campus in line with the university’s strategic plan. More than a thousand acres of land and millions worth of equipment and facilities are placed in these branches for the purpose of waste management within the campuses.

Currently, waste management is the responsibility of the Facility Unit, Infrastructure, and Infrastructure Development Office (PPII). All the activities related to generation, collection and disposal will be recorded and monitored by PPII. UiTM is committed to conserving resources and raising waste management awareness among faculty members. Therefore, UiTM has set up a Waste Expert Task Force Team. This team is comprised of experts from different branches and units. The focus of the team is to suggest sustainable approaches towards becoming a smart and green campus. Methods of waste generation, collection and treatment have been introduced based on scientific data collection on campus.

Many of the sustainability initiatives changed because of the university’s decision to restrict access to only necessary activities whenever possible. Some changes were positive from an environmental perspective, this included decreasing waste diversion rates. More importantly, the scale of the positive impacts has improved, albeit slightly, due to the major reduction of activity on campus.

#### 3.2 Cluster Objectives

By 2025, the university aims to become a zero-waste campus. Therefore, the objective of having sustainable waste management in UiTM campus is to avoid the final disposal to the landfill. To fulfill this objective, UiTM campuses have introduced ongoing initiatives to promote sustainable waste management. In this regard, the university’s activities and efforts support the Sustainable Development Goals (SDGs)

UiTM is committed to the practice of managing and conserving resources for the best of the following matters:

- To promote awareness of the importance of waste management.
- To nurture and educate the UiTM campus community in managing waste responsibly.
- To assess the waste generated on the campus and provide best practice through the waste hierarchy of avoidance, minimization, and recycling.
- To collaborate with government and non-governmental agencies in empowering the agenda of waste management.
- To strengthen university-community engagement in adapting the sustainability agenda through efficient waste management practices.

**Table 3.1: Performance indicators for waste management Day 2024**

No	Waste (W5)	Point	Achievement
WR1	Recycling program for university waste	300	
WR2	Program to reduce the use of paper and plastic on campus	300	
WR3	Organic waste treatment	300	
WR4	Inorganic waste treatment	300	
WR5	Toxic waste treatment	300	
W56	Sewage disposal	300	
	<b>Total</b>	<b>1800</b>	

The performance indicators for the waste management cluster are divided into six (6) indicators as shown in **Table 3.1**.

### 3.3 Cluster Projects and Achievements

#### 3.3.1 Recycling Programs in UiTM

In the academic sphere, to ensure the successful delivery of SDG, knowledge transfer programs and activities have been actively carried out to raise awareness among the faculty members and students of UiTM. During the year, several programs were held in conjunction with the need to ensure society has the knowledge and awareness in keeping the university clean.

The Eco Free Market, organized by the UiTM Volunteer Brigade in collaboration with MBSA and Eco Free Market (EFM), aimed to reduce waste and assist those in need. Participants could exchange at least two 500ml recyclable mineral water bottles for coupons to redeem essential items. The event, officiated by Associate Professor Dr. Md Azman Yahaya, Director of the UiTM Co-curriculum Center, attracted 15 contributors and approximately 200 visitors. It lasted around 4 hours and was also attended by Mr. Ku Hadzrill Jeeffry .

Furthermore, these programs have improved understanding of recycling practices, contributing to a more conducive environment for study and living. Among the successful programs carried out by the university are Program: Eco Free Market – Raikan Raya by Brigade Sukarelawan UiTM in Collaboration with Majlis Bandaraya Shah Alam (MBSA).



Figure 3.1: Program: Eco Free Market

On 14 December 2022, UiTM Green Centre (UGC) partnered with Kloth Malaysia Sdn. Bhd. to launch a fabric recycling initiative at Block A, Tahir Majid Complex, College of Built Environment. The program adopts a circular economy model to divert textile and plastic waste from landfills and promote sustainable waste management on campus.

Unwanted fabrics such as clothes, undergarments, fabric shoes, belts, toys, blankets, and other textile items can be dropped off in medium-sized bins with a capacity of 250 kilograms. These bins are emptied every two months or when full, and the collection team is notified via phone. Lifeline Clothing Malaysia is responsible for collecting the bins using a designated truck, and the items are sent to Kloth Malaysia’s recycling facility for further processing.

Kloth Cares disclosed that a total of 2,092.1 kilograms of textiles and fabrics were collected in 2023.



Figure 3.2: Program: FABRIC-BINS @ COLLEGE OF BUILT ENVIRONMENT



Figure 3.3: Webinar Single-Use Plastic (SUP) Free Community @ UiTM

### 3.3.2 Waste Management Activities

In line with this effort, a webinar on Single-Use Plastic (SUP) Free Community @ UiTM titled “Say NO to Single-Use Plastic” was conducted on 30 November 2023. The objectives of the webinar were to create awareness of the dangers of microplastics and to inform the audience about the efforts made by the community and UiTM to reduce plastic usage in the state of Selangor. The speakers included Assoc. Prof. Dr. Laura Christ Dass and Puan Mazura Anuar from the UiTM Green Centre (UGC), as well as Encik Idham Hamidi Mat Jamal from MBSA. The webinar was attended by UiTM staff and students, MBSA staff, and members of the community, aiming to encourage greater awareness and reduction of plastic usage.

UiTM Green Centre (UGC), in collaboration with the Unit Ruang Niaga, continues its efforts to promote sustainability through the Single-Use Plastic Free Community @ UiTM initiative. One of the key programs, Bring Your Own Container (BYOC), aims to reduce single-use plastic consumption across campus. This initiative supports UiTM’s goal of becoming an Environmentally Sustainable Campus while fostering eco- friendly habits within the campus community.

The BYOC program, held at Kolej Alam Bina (KAB) on 4 December 2024, focused on the following objectives:

- Raising continuous awareness about the use of single-use plastic at KAB, UiTM.
- Reducing single-use plastic waste generated at KAB cafes.
- Cultivating a culture of single-use plastic-free practices at KAB cafes.



Figure 3.4: Single Use Plastic (SUP) Free Community @ UiTM

UiTM hosted the ‘Kita, Kampus dan Alam’ Grand Gotong-Royong Program, which was conducted on 29th September 2023 across 34 campuses nationwide, engaging 35,685 participants, including students, staff, and the public. The event earned a spot in the Malaysia Book of Records (MBR). Organized by InQKA, it followed the successful ‘KUDAH’ initiative in June and included activities such as cleaning, organizing, and disposing of old documents, promoting cleanliness and a cheerful work environment.



Figure 3.5: Gotong Royong Program – ‘Kita, Kampus & Alam’

### 3.3.3 Organic Waste Treatment

Organic waste generated on the campus of UiTM Shah Alam and is classified as “brown waste,” consisting mainly of dry leaves and twigs. The facility Unit under the Office of Development manages waste in UiTM. All these organic waste is composted via aerobic composting. UiTM Shah Alam has designated a compost site for the management of organic refuse. In fact, every cafeteria and food court at the campus provides a special bin for food waste. Installation of specific food waste containers at all cafeterias and food courts is an effort to motivate campus residents to segregate food waste to prevent the contamination of recyclable waste with food waste. The compost produced by this system is utilised to fertilise and condition the soil and vegetation on campus. One of the indirect effects is a decrease in the cost of procuring chemical fertilisers to fertilise plants on campus.



Figure 3.6: Organic Waste Treatment Centre at UiTM, Shah Alam

To tackle high food waste during Ramadan, UiTM launched the “My Save Food” program, implemented by the UiTM Volunteer Brigade in collaboration with SWCorp and the Malaysian GEMA Youth Organisation (Figure 86). This strategic initiative targets Shah Alam’s Ramadan bazaar, aiming to preserve surplus, safe- to-eat food and drinks left unsold by traders.



Figure 3.7: “My Save Food” was organized by UiTM in collaboration with SWCorp and GEMA in the month of Ramadan

Table 3.2: Statistics of food leftover generation from Ramadan bazaars in 2023 compared to 2022

Bil	PBT	2022		2023	
		Bilangan Petak Perniagaan	Berat Sampah Bazar Ramadan Sehari 2022	Bilangan Petak Perniagaan	Anggaran Berat Sampah di Bazar Ramadan (Tan/Sehari 2023)
1	MBSA	1086	10.64	1270	8.89
2	MPKL	552	1.47	157	1.10
3	MPSP	511	1.24	740	5.18
4	MPK	1231	1.43	2562	17.93
5	MPKJ	1677	30	2300	16.1
6	MBSJ	1275	2	1570	10.99
7	MPS	1291	4	1925	13.48
<b>Jumlah</b>		<b>7623</b>	<b>50.78</b>	<b>10524</b>	<b>73.67</b>

Environmental Sustainability Green Waste program was held in June 2023 to give theoretical and practical exposure to the community about solid waste management (Figure 87). This program was organised by the students of the College of Engineering (KPK) UiTM Shah Alam campus in collaboration with the Klang Municipal Council, SWCorp and SPE UiTM SC. The program offered several practical workshops to create scented candles, soaps and lava lamps. Most significantly, participants in this program were educated about the reuse of used cooking oil and proper disposal methods.



Figure 3.8: Environmental Sustainability Green Waste

**3.3.4 Inorganic Waste Treatment**

The UiTM Facility Unit, under the Infrastructure and Infostructure Development Office, oversees domestic and bulky waste collection on campus. In 2023, 1,665 tons of domestic waste and 1,023 tons of bulky waste were collected, totaling 2,688 tons of inorganic waste. Additionally, UiTM, in partnership with Kloth Cares Malaysia Sdn. Bhd., launched an initiative to collect waste textiles, resulting in 5.57 tons of textiles collected in 2023.

**Table 3.3: Total Inorganic Waste Produced by Category (in tons)**

Type of inorganic	Total Produced (ton)
Domestic waste (paper, plastic, can)	1665
Bulky waste	1023
Textile	5.57

Figure 3.4: Collection of Domestic Waste, Bulky Waste and Textile Waste in 2023



UiTM has implemented various sustainability programs across its campuses to promote recycling and the effective use of waste materials, particularly used cooking oil and food waste. These initiatives, including the KitCash Program, workshops at UiTM Mukah, and the Environmental Sustainability Program by the College of Engineering, focus on teaching participants to create products like soap, candles, compost, air freshener gel, and creative crafts. Supported by organizations like the SPE Student Chapter, MASMED, and the Selangor Department of Social Welfare, these programs aim to raise awareness, develop recycling skills, and encourage sustainable practices by transforming waste into marketable and eco-friendly products.



Figure 3.9: Demonstration of Soap Making from Used Cooking Oil at UiTM Mukah, Sarawak



Figure 3.10: Demonstration of Compost Preparation from Food Waste at UiTM Mukah, Sarawak



Figure 3.11: KitCash Workshop on Soap and Candle Making from Used Cooking Oil, UiTM Pasir Gudang

### 3.3.5 Toxic Waste Treatment

Toxic waste management is vital for UiTM to ensure the safety of those living and working within its campus. Chemical, biological, biohazard, and clinical waste are collected, labeled, stored, and transported for safe disposal in compliance with the Environmental Quality (Scheduled Wastes) Regulations, 2005. Managed by SAILCOTT (M) INTERNATIONAL SDN BHD, waste handling follows strict protocols, including scheduled collection, separation by Department of Environment codes, and delivery to licensed disposal facilities. UiTM Shah Alam maintains an inventory of waste under 12 specific codes as presented in Table 1 below, supported by safety data sheets for hundreds of chemicals, ensuring efficient and safe disposal. Monthly reports from SAILCOTT support these efforts, which align with UiTM's Green Campus goals, safeguarding the environment and campus community.

Table 3.5: Scheduled Waste Code Generated in UiTM, Shah Alam

Code	Description
SW206	Spent inorganic acids
SOW322	Waste of non-halogenated organic solvents
SW404	Pathogenic waste, clinical waste or quarantined materials
SW409	Disposed containers, bags or equipment contaminated with chemicals, pesticides, mineral oil or scheduled wastes
SW410	Rags, plastics, papers or filters contaminated with scheduled wastes
SW416	Sludges of inks, paints, pigments, lacquer, dye or varnish
SW417	Waste of inks, paints, pigments, lacquer, dye or varnish
SW418	Discarded or off-specification inks, paints, pigments, lacquer, dye or varnish products containing organic solvent
SW421	A mixture of scheduled wastes
SW423	Spent processing solutions, discard photographic chemicals or discarded photographic wastes
SW427	Mineral sludges including calcium hydroxide sludges, phosphating sludges, calcium sulphite sludges and carbonates sludges
SW430	Obsolete laboratory chemicals



Figure 3.12: Clinical waste collected in 2023

### 3.3.6 Sewage Treatment

In UiTM, our waste management cluster is committed in addressing SDG 3, 7, 11, 12 and 13 of which in summary is to ensure the consumption and production that includes targets focused on environmentally sound management and communities of all waste shall be addressed through prevention, reduction, recycling and reuse, and reduction of waste. Waste management has been contributing to each of these goals over time. In 2020, UGC refined the approach by aligning it to 2025 UiTM Sustainable Campus, which is best to have said as waste-wise campus to rethink, reduce, recycle, refuse, and reuse waste.

UiTM Shah Alam operates six sludge treatment plants using two systems: Extended Aeration and Hi-Kleen. Both systems efficiently treat sewage and minimize sludge production, with no sludge removal required in 2023 due to a reduced student population. The Extended Aeration System, used at STPs in locations like STP Canseleri, Kolej Mawar, Kolej Teratai and ROTU, employs oxygen to support aerobic microorganisms in breaking down solids. Sludge rich in microorganisms is recirculated to enhance decomposition. Treated sludge is dried on-site before collection by vehicles with an 8m<sup>3</sup> capacity. The Hi- Kleen System, used at DATC and Masjid UiTM, combines primary and secondary treatments. Like the Extended Aeration System, it recirculates sludges to promote further decomposition.

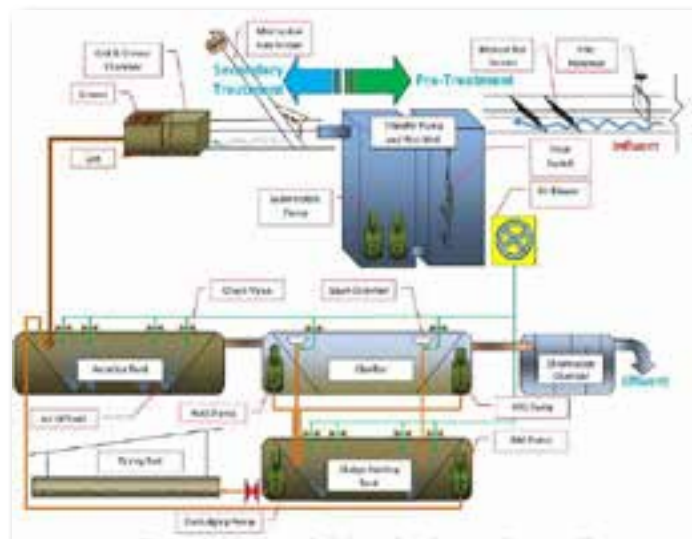


Figure 3.13: Extended Aeration System Process Flow

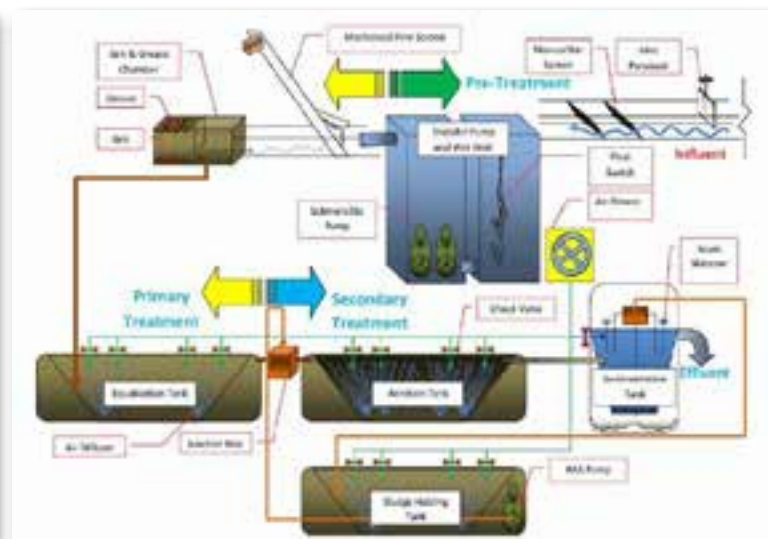


Figure 3.14: Hi-Clean System Process Flow

Effluent discharge from both systems complies with Malaysia’s Environmental Quality Act, 1974. Although 2023 saw slightly higher effluent quality measurements (e.g., pH, BOD5, and suspended solids) compared to 2022, all results remained within regulatory limits, demonstrating the efficiency of the treatment processes.

### 3.4 Moving Forward

The Waste Management cluster is committed in addressing SDGs 3, 7, 11, 12 and 13 of which in summary is to ensure the consumption and production that includes targets focused on environmentally sound management and communities of all waste shall be addressed through prevention, reduction, recycling and reuse, and reduction of waste. Waste management has been contributing to each of these goals since. In 2023, UGC refined the approach by aligning it to 2025 UiTM Sustainable Campus, which is best to have said as waste-wise campus to rethink, reduce, recycle, refuse, and reuse waste.

It is notable that the most common waste in the world is paper, food and plastic which require further research and proper management. The use of raw materials within the manufacturing of new products in paper and cards causes deforestation together with enormous energy and water usage. Food waste has major social, financial, and environmental impacts while single-use plastic products suffocate land and ocean. Thus, sustainable waste management is crucial to keep materials in use for as long as possible and minimize the amount of solid waste that is disposed of in landfill or through incineration.

Sustainable waste management could keep “waste materials” in the loop through donation or composting instead of the current system of sending waste to landfill where it breaks down and releases CO2 and methane, both of which contribute heavily to global warming. The idea that focuses on avoidance, reduction, reuse, recycling, energy recovery, and finally, treatment or disposal needs to be designed in making the world a better place as has been envisaged among the UiTM community.

SDG Areas:



## CLUSTER 4.0: Water Management

### 4.1 Introduction

UiTM is committed to promoting sustainable and efficient water management practices. This is in line with SDG # 6 – Clean water and sanitation; and SDG #17 – Partnerships for the Goals. The SDG #6 goal is to ensure availability and sustainable management of water and sanitation for all. The SDG #17 goal is to strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

The cluster focuses on tackling the water management crisis through 2 key approaches: (1) developing practical solutions for water resource management, and (2) formulating effective policies to promote sustainable water consumption. The cluster roles include:

- To create awareness on the importance of water education and management.
- To encourage the campus community to reduce water usage and increase water conservation.
- To assess the water consumption, water treatment and water recycling in the campus.
- To develop an integrated green water management system for UiTM.

The Water Cluster projects, carried over from previous years, include initiatives in student learning, research grants, infrastructure, and sustainable green communities. To achieve our green campus goals, it is essential for all UiTM members to participate in water management awareness efforts.

### 4.2 Cluster Objectives

The cluster's primary goal is to develop comprehensive strategies and initiatives that alleviate pressure on existing water resources. To monitor performance, five (5) key indicators (WR1 to WR5) have been established, each worth 200 points (totaling 1000 points with a 10% weightage). All targeted indicators (WR1 - WR5) were successfully achieved in both 2023 and 2024. Table 4.1 outlines the specific criteria and 2024 achievements.

**Table 4.1: The criteria and score of water management cluster for year 2023**

No	Water (WR)	Point	Achievement
WR1	Water conservation program & implementation	200	
WR2	Water recycling program implementation	200	
WR3	Water-efficient appliances usage	200	
WR4	Consumption of treated water	200	
WR5	Water pollution control in campus area	200	
	<b>Total</b>	<b>1000</b>	

### 4.3 Cluster Strategies

The Ministry of Natural Resources, Environment, and Climate Change is committed to preserving the environment and supplying Malaysia with clean water resources through the National Water Resources Policy (NWRP) created in 2012. To help actualize this policy, the UiTM Green Centre (UGC) has implemented awareness campaigns, discussed the most successful practices, and monitored water management practices on UiTM campuses. Their initiatives include water conservation, recycling, and the use of water-efficient applications. To promote these ideas, UGC has coordinated with the community through CSR programs, collaborated with local government bodies and governmental departments, and established industrial ties.

### 4.4 Cluster Projects and Achievements

The Water Cluster implements diverse projects spanning education, research, and sustainable water management. For student development, initiatives include water quality monitoring field trips, integrated water curriculum courses, recycling projects, and practical training at UiTM's Pilot Plant Laboratory for industrial wastewater treatment. Research efforts focus on innovative solutions like rainwater harvesting systems, chiller water recycling, advanced sewage treatment technologies, aquaponics studies, and water-efficient landscaping sprinklers. To optimize resource use, the cluster has deployed water-saving appliances such as auto-sensor taps and dual-flush toilets, while implementing treated water utilization and strict anti-pollution policies. These comprehensive measures collectively advance both water conservation awareness and practical sustainability solutions.

#### 4.4.1 Water Conservation Program and Implementation

The aim of the water conservation program is to encourage and educate the UiTM community on wise water management resources. The continuation of the conservation programs enables UiTM to keep the environment healthy, for example by diverting less water from rivers or bays as well as saves cost. The focus of the programs is on awareness and educational activities, and the water harvesting system. The success of the programs is measured based on scales which are (1) none, (2) preparation stage, (3) early implementation stage, and (4) actual water conserved.

UiTM has achieved more than 50% water conservation which shows that UiTM commitment to water conservation programs has yielded successful results. Water conservation initiatives should also include students as educational and awareness programs are important and crucial. Scarcity of water and sustainability for the future generations must be put forward. One of the ongoing activities involved student fieldwork at water conservation sites, including hands-on training at UiTM's Pilot Plant Laboratory.

Field sampling on water quality monitoring exposes the student to the importance of water conservation. **Figure 4.1** shows students being exposed to the method of sampling and calculating the water quality based on the physical, chemical, and biological organisms found in the rivers.



Figure 4.1: Field Exposure to Students on the Water Quality Monitoring

UiTM Pilot Plant Laboratory enables students to have hands-on experience on how the industrial wastewater is being produced and treated before disposal into the environment. This enhances the water conservation understanding through understanding of the treatment used and its relation towards the Malaysian Environmental Regulations.



Figure 4.2: Student academic activities at the UiTM Pilot Plant Laboratory (IETS)

The next focus is the rainwater harvesting system. In pursuing the goal of managing water effectively, a rainwater harvesting system has also been implemented since 2010. This system will collect and store rainwater for the Landscape Department at UiTM. This technology is used for the purpose of watering plants and landscaping. The goal is to provide an alternative source of water for landscaping activities. This is an environmentally responsible practice and promotes self-sufficiency among the UiTM community. UiTM has a plan to expand its rainwater harvesting system in other catchment areas (e.g., Faculties, colleges, and administration buildings) for the purpose of cleaning and landscaping activities.



Figure 4.3: Rain Harvesting System at UiTM

### 4.4.2 Water Recycling Program Implementation

The achievement of initiative WR2: Water Recycling Program Implementation is measured based on five scales, which are (1) none, (2) preparation stage, (3) early implementation stage, and (4) actual water recycled of either 25-50% or (5) more than 50%.

The Water Recycling Program Implementation reported at UiTM is currently within the fifth scale, i.e. has achieved its target of more than 50% water being recycled. The following are the UiTM initiatives under WR2:

#### A. Educational program - UiTM Rainwater Harvesting Project

Water Rainwater Harvesting Project is a process of collecting and storing rainwater for non-potable usages such as building cleaning, general household cleaning, cooling towers, fire suppression as well as landscape irrigation. At UiTM, the rainwater harvesting project is mainly used by the UiTM Landscape Department. The proposed water pump system in the water retention pond and its ponds is shown rightside.

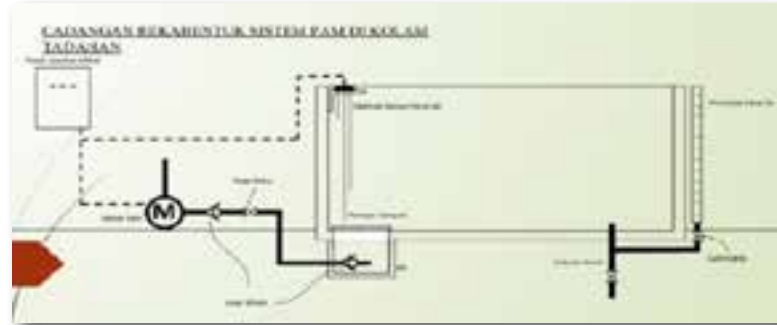


Figure 4.4: Schematic diagram for the rainwater harvester at UiTM Landscape Unit



Figure 4.5: Rainwater being collected in the detention pond before being used for irrigation purposes

#### B. Education Programmes on Water Courses

To promote awareness and active research related to water recycling among the UiTM community including students, three (3) faculties have embedded related programmes into some of their courses as shown in Table 4.2 below.

Table 4.2: Education in Water Related courses at UiTM

Faculty	Subject	Source Data
School of Civil Engineering	Environmental Engineering and Sustainability (ECW445)	UHEK
	Water and Wastewater Engineering (ECW567)	
	Environmental Engineering Laboratory (ECW568)	
	Groundwater Engineering (ECW581)	
School of Chemical Engineering	Wastewater Engineering (CPE675)	UHEK
	Environmental Engineering (CPE649)	
Faculty of Applied Sciences	Water Resource Technology (EVT525)	UHEK
	Wastewater Technology (EVT577)	
	Water and Wastewater Technology (CMT635)	
	Water Pollution Control Technology	

### C. Students' Projects Related to Water Recycling

The Faculty of Applied Sciences have introduced "Water Treatment" as the final year project (FYP) theme in 2023/2024. The list of final year projects for 2024 is shown in **Table 4.3** below.

**Table 4.3: Students' FYP regarding water recycling for Faculty of Applied Science**

No.	Final Year Project	Theme	Year	Faculty
1	Conversion of date branch into activated carbon via microwaves using H <sub>3</sub> PO <sub>4</sub> as activator for cationic dye removal	Water Treatment	2024	Faculty of Applied Sciences
2	Evaluating the drinking water quality in water dispenser and tap water at Faculty of Applied Sciences, UiTM Shah Alam using water quality parameters	Water Treatment	2024	Faculty of Applied Sciences
3	Analysis and quality assessment of groundwater in Pasir Mas	Water Treatment	2024	Faculty of Applied Sciences
4	Converting guava peel into activated carbon via microwave activation assisted ZnCl <sub>2</sub> for cationic dye removal	Water Treatment	2024	Faculty of Applied Sciences
5	Natural Treatment with Phytoremediation Method by Using Aquatic Plants to Analyse Water Quality.	Water Treatment	2024	Faculty of Applied Sciences
6	Determination of Activated Carbon from Pulasan Waste Biomass via Microwave Assisted ZnCl <sub>2</sub> for Cationic Dye Removal	Water Treatment	2024	Faculty of Applied Sciences
7	Utilizing Moringa Seeds and Oyster Mushrooms for Total Suspended Solids Reduction in Wastewater	Water Treatment	2024	Faculty of Applied Sciences
8	Removal Oil by Peanut Shell as Adsorbent	Water Treatment	2024	Faculty of Applied Sciences
9	Determining the quality of the drinking water from the water dispenser and the water bending machine from Melati College.	Water Treatment	2024	Faculty of Applied Sciences
10	Oil Removal from Parkia speciosa (stinky bean)	Water Treatment	2024	Faculty of Applied Sciences
11	Application of bamboo charcoal for nitrate removal in the industrial wastewater treatment	Water Treatment	2024	Faculty of Applied Sciences
12	Biochemical Methane Potential from Tropical Fruits	Water Treatment	2024	Faculty of Applied Sciences
13	Regeneration of used activated carbon using hydrogen peroxide	Water Treatment	2024	Faculty of Applied Sciences
14	Solid State Fermentation of <i>Sauropus Androgynus</i> Using <i>Saccharomyces Cerevisiae</i>	Water Treatment	2024	Faculty of Applied Sciences
15	Determination of Activated Carbon from The Mixture of Pistachio Peel and Walnut Peel via Microwave Assisted H <sub>3</sub> PO <sub>4</sub> for Cationic Dye Removal	Water Treatment	2024	Faculty of Applied Sciences
16	Converting Guava Peel into Activated Carbon via Microwave Activation Assisted H <sub>3</sub> PO <sub>4</sub> for Cationic Dye Removal	Water Treatment	2024	Faculty of Applied Sciences
17	Integrating Localized Effective Microorganism Mudballs in Treating Water Systems with High Levels of Eutrophication due to Anthropogenic Activities.	Water Treatment	2024	Faculty of Applied Sciences
18	Solid-State Fermentation of <i>Eleocharis Guineensis</i> Leaves Using <i>Rhizopus Oryzae</i>	Water Treatment	2024	Faculty of Applied Sciences
19	Integration of Biofloculants Collected from Red Tilapia with Effective Microorganism Mudballs for Wastewater Treatment in Aquaculture System	Water Treatment	2024	Faculty of Applied Sciences
20	Removal of heavy metal from double loop aquaponic system	Water Treatment	2024	Faculty of Applied Sciences
21	The Viability Study Of Banana Peel as Natural Coagulant in Wastewater Treatment Process.	Water Treatment	2024	Faculty of Applied Sciences
22	Weather factors and thermal comfort among resident in Commercial Centre Section 7,	Water Treatment	2024	Faculty of Applied Sciences
23	Urban Heat Island (UHI) and Outdoor Thermal Comfort in Shah Alam, Selangor	Water Treatment	2024	Faculty of Applied Sciences
24	Investigation of biofilms and Algae causing shellfish contaminations in water bodies Port Dickson, Negeri Sembilan	Water Treatment	2024	Faculty of Applied Sciences
25	Weather factors and thermal comfort among resident in Recreation Park (Section 2 Lake, Shah Alam)	Water Treatment	2024	Faculty of Applied Sciences
26	Regeneration of used Activated Carbon using H <sub>2</sub> O <sub>2</sub> treatment	Water Treatment	2024	Faculty of Applied Sciences
27	Removal of Hazardous Erythrosine Dye using Bottom Ash as Adsorbent by Adsorption Techniques	Water Treatment	2024	Faculty of Applied Sciences

### D. Educational Programmes - Water Recycling Strategies (WRS)

The development of new water recycling strategies to treat wastewater from six (6) Sewerage Treatment Plants (STPs) at UiTM Shah Alam by the Facility Department. The strategies are still in the proposal stage and they are confidential. In 2020, an appointed consultant has proposed a membrane-based treatment system for effluent from Mawar College's Sewage Treatment Plant (STP). The proposal includes a cost-benefit analysis (CBA) to evaluate this solution.

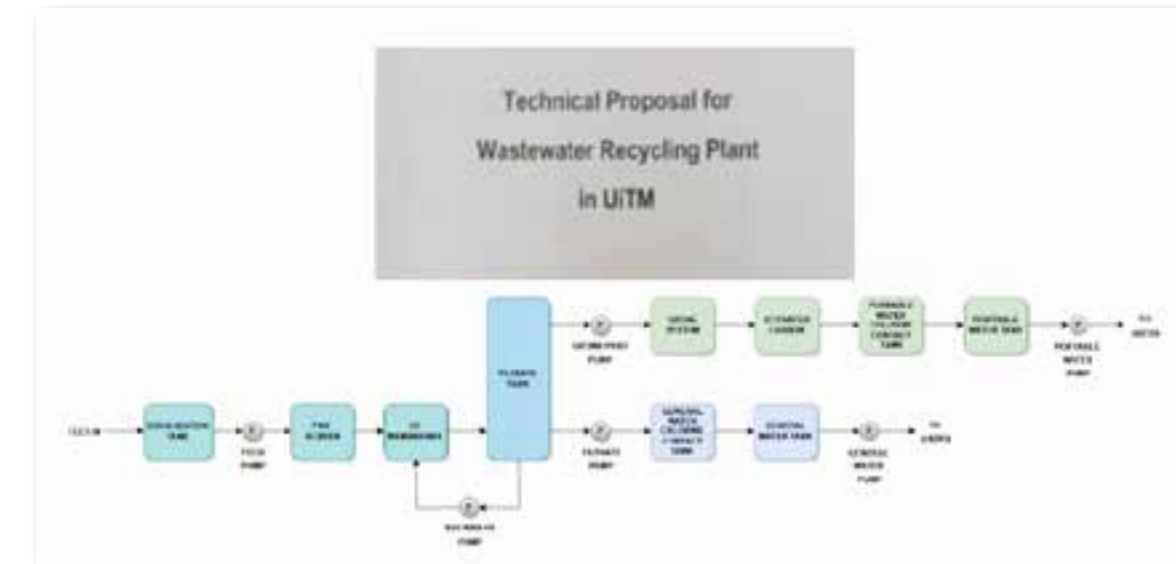


Figure 4.6: Technical Proposal of the WRP process flow

### E. Educational program - Aquaponic Water Research

Aquaponics is an emerging method of local food production worldwide, using closed integrated production systems to grow vegetables and rare fish in various settings. Aquaponics covers several fields, such as aquaculture (fish - feed, health, yield, and wellbeing; mud - waste, mineralization, reuse), hydroponics (plant yield and growth, nutrition, protection, etc.), water (quality, waste, recirculation, etc.), microbiology, and engineering for industrial and domestic uses. The project recycles water from the fish tank to irrigate the plants on top of the system and then back to the fish tank and vice versa.



Figure 4.7: Aquaponic water research in Faculty of Applied Science

### 4.4.3 Water-efficient Appliances Usage

Using water-efficient appliances is another way of ensuring water savings at UiTM. The Key Performance Indicator (KPI) of achieving more than 50% of water-efficient appliances installed had already been met in previous years. The five scales to monitor the water-efficient application are: (1) none, (2) preparation stage, (3) early implementation stage, and (4) actual efficient appliances installed of either 25-50% or (5) more than 50%.

UiTM uses highly efficient appliances, which are: (1) auto sensors and, (2) dual-flush toilets. The auto sensor is a device used in the chiller and air conditioning systems to control the volume and flow of water. Its significant function is to control the temperature of the building. At UiTM, this sensor is used at Dewan Agong Tuanku Canselor (DATC).



Figure 4.8: Auto Sensor and Dual-flush toilet

A dual-flush toilet is a variation of the flush toilet which uses two buttons or a handle mechanism to flush different amounts of water. A lesser amount of water is designed to flush liquid waste and the larger quantity of water is designed to flush solid waste. This modern dual-flush system will save more water. Most restrooms at UiTM are equipped with dual flush toilets.

These appliances do not only conserve water but also conserve energy. This in turn will reduce greenhouse gas pollutants which may lessen the risk of climate change/or carbon footprint in the future. This support UiTM's commitment to improve its performance in all issues related to energy and climate change.

### 4.4.4 Consumption of Treated Water

Similar to the other initiatives, the treated water consumed at UiTM has also achieved the target, i.e., more than 75% of treated water had been consumed. The five scales to monitor the consumption of treated water are: (1) none, (2) 1 - 25% treated water consumed, (3) > 25 - 50% treated water consumed, (4) > 50 - 75% treated water consumed and (5) > 75% treated water consumed.

All buildings are supplied with treated water supply and the consumption of treated water is 100%. Compared to 2022, total treated water consumption increased by 6.46% in 2023. Usage peaked in October 2023 with a 33.16% surge, attributable to the new semester's commencement and student intake. While January and February 2023 saw increases of 29.07% and 27.21% respectively, these figures represented decreases of 14.19% (January) and 18.97% (February) when compared to December 2022 levels.

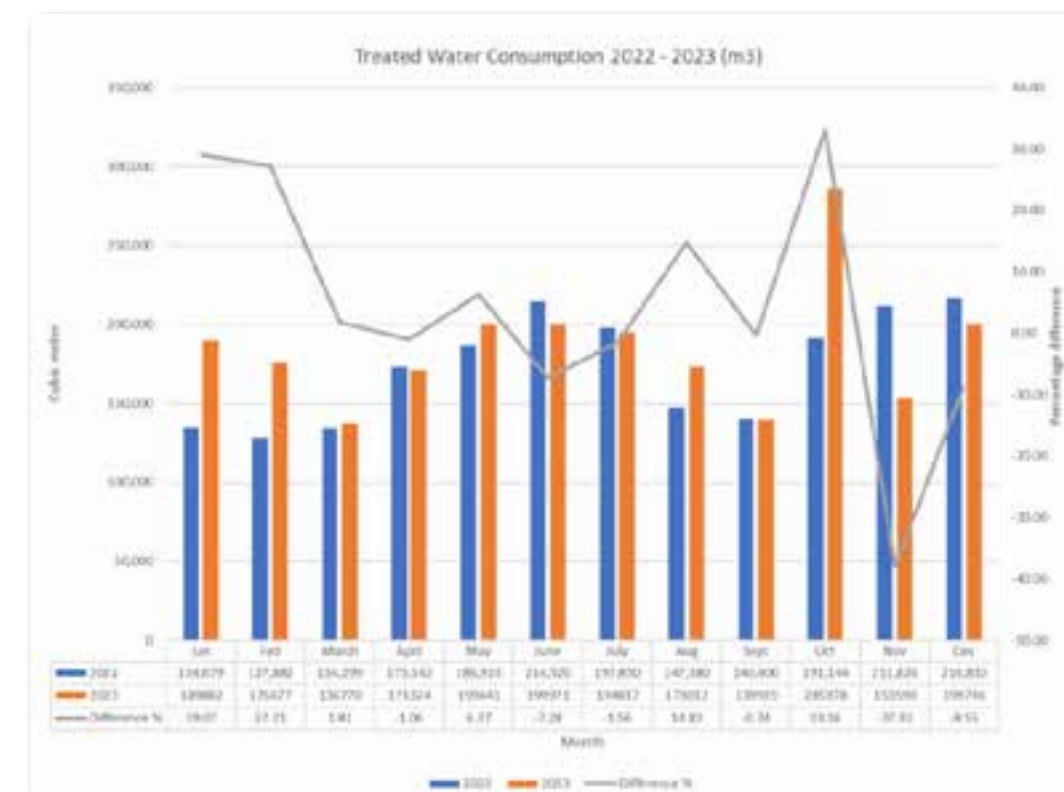


Figure 4.9: Treated water consumption for 2022 and 2023 (Source: PPII, UiTM)

### 4.4.5 Water Pollution Control on Campus

There are policies and programs in place for water pollution control at the university. UiTM is proactive in monitoring the Sewage Treatment Plant (STP). The five scales to monitor water pollution control on campus include policy and programs for water pollution control either at the (1) designing stage, (2) construction stage, (3) early implementation stage, (4) fully implemented and monitored occasionally and (5) fully implemented and monitored regularly.

Figures 4.10 to 4.16 show the effluence analysis results for the six STPs at UiTM, which are at the Chancellery, Mawar College, Teratai College, Reserve Officer Training Unit, DATC and Pusat Islam. STP monitoring is done monthly whereby the pH, BOD, COD, TSS and OG levels are observed at these locations..

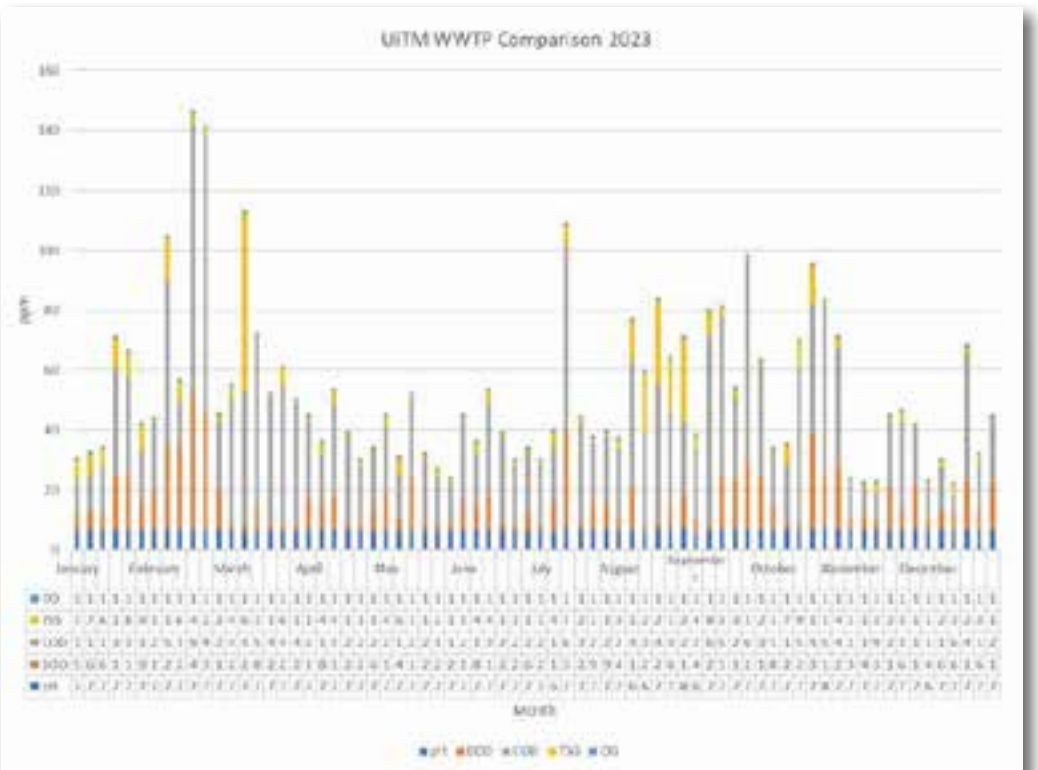


Figure 4.10: Effluent analysis results for 6 STPs in UiTM

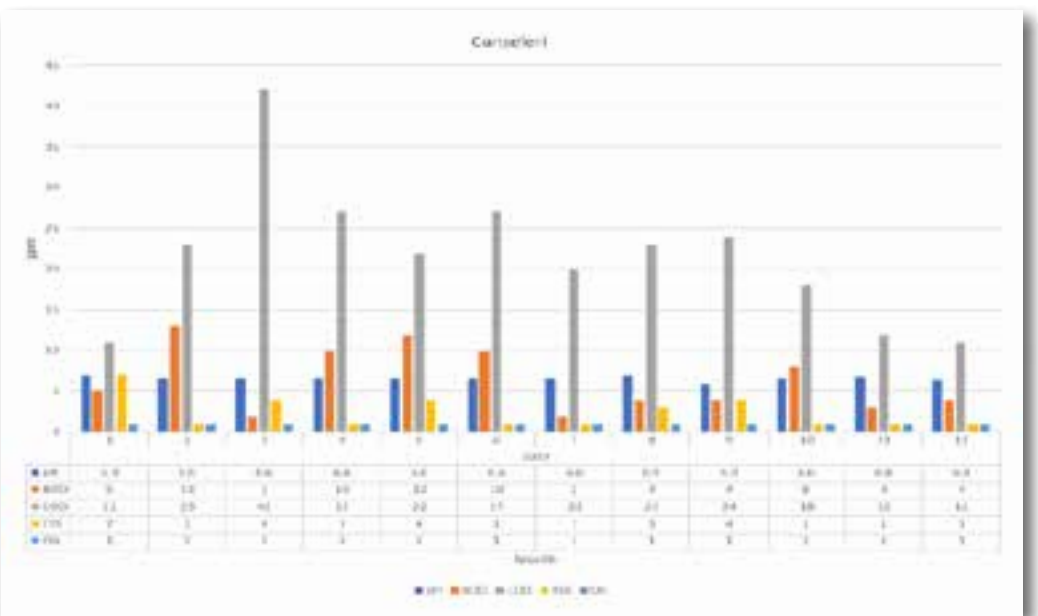


Figure 4.11: Chancellery STP results

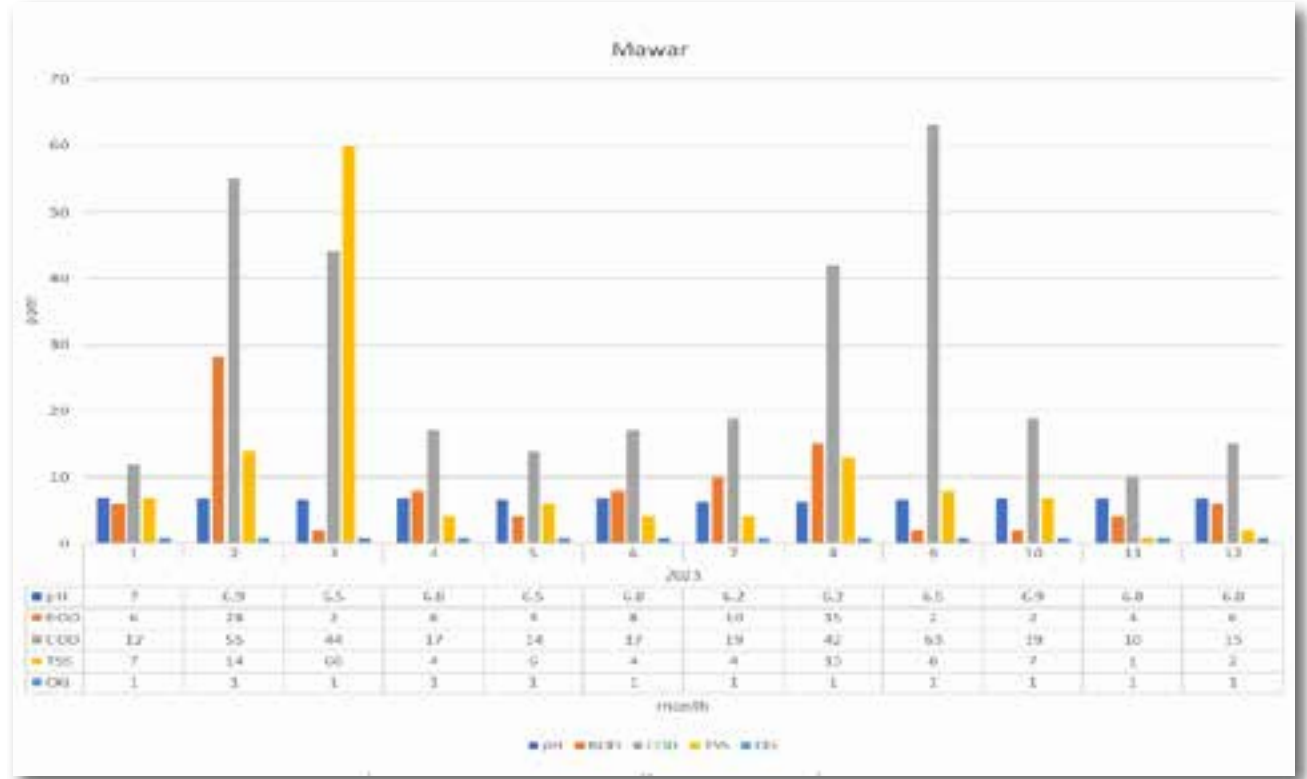


Figure 4.12: Mawar College STP result

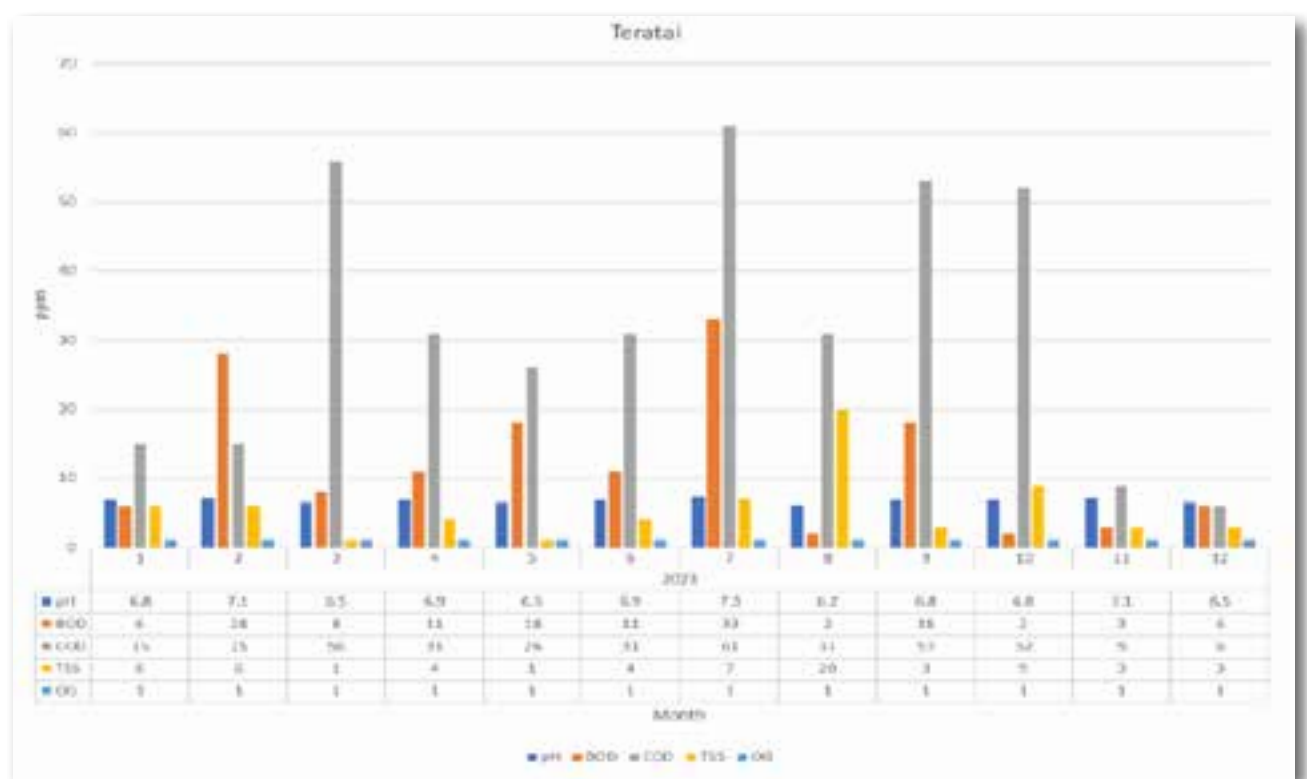


Figure 4.13: Teratai College STP result



**4.5 Moving Forward**

The objective of water management is to ensure sustainable use of water to meet future water needs. UiTM has continued to achieve and implement water management initiatives in relation to water conservation program and implementation, water recycling program implementation, water-efficient appliances usage and the consumption of treated water. Additionally, the water pollution control target on campus has been achieved. Such efforts shall continue with additional enhancement.

The additional effort will involve further study and research, consultation and linkages with internal and external parties which will advance knowledge, raise awareness on water issues among the population and generate a framework for action.

Such efforts prove UiTM's commitments in achieving the United Nations SDGs, becoming a Smart Sustainable Green Campus, and preserving the ecosystem. The success, continuity and sustainability of natural resources conservation are in line with the UiTM 2025 Strategic Plan towards becoming a Globally Renowned University.

**SDG Areas:**



**CLUSTER 5.0**  
*Transportation*

**CLUSTER 5.0: Transportation**

**5.1 Introduction**

In 2011, the Malaysian Ministry of Energy, Green Technology, and Water introduced the Low Carbon Cities Framework (LCCF) as a strategic guide to help local authorities, higher education institutions, and other regions transition towards low-carbon, environmentally sustainable cities. Building on this foundation, the Ministry launched the Low Carbon Mobility Blueprint (LCMB) in 2018, focusing on energy management and greenhouse gas reduction in the transportation sector. This blueprint complements the Green Technology Master Plan by the Ministry of Environment and Water (KASA), offering targeted strategies and actionable plans specifically for transportation.

The Shah Alam City Council (MBSA) has demonstrated strong leadership in sustainability with its Shah Alam Low Carbon City 2030 Action Plan. The plan prioritizes transportation and mobility through measures such as promoting electric vehicles, introducing e-parking systems, expanding community and free bus services like Smart Selangor, building dedicated cycling tracks, installing EV charging stations, and organizing car free days. At UiTM, the commuting habits of students, staff, and faculty significantly influence the university’s carbon footprint, contributing to traffic congestion, air pollution, and environmental degradation.

**5.2 Cluster Objectives**

The transportation cluster aims to reduce the environmental impact of campus community travel by encouraging and supporting environmentally efficient modes of transport. It is in line with the national policy on climate change and MBSA’s low carbon city. The total score for the transportation cluster has increased steadily since UiTM participated in UI GreenMetric in 2017. **Table 5.1** below indicates UiTM’s score in the last two years in Ui-GM transportation cluster.

**Table 5.1: Achievement of Transportation Cluster in Ui-GM from 2022 to 2023**

Element	Criteria	Full Marks	Achievement	
			2022	2023
TR1	The total number of vehicles (cars and motorcycles) is divided by total campus population	200		
TR2	Shuttle services	300		
TR3	Zero Emission Vehicles (ZEV) policy on campus	200		
TR4	The total number of Zero Emission Vehicles (ZEV) divided by total campus population	200		
TR5	Ratio of ground parking area to total campus area	200		
TR6	Programmes to limit or decrease the parking area on campus in the last 3 years (from 2021 to 2023)	200		
TR7	Number of initiatives to decrease private vehicles on campus	200		
TR8	Pedestrian path policy on campus	300		
<b>TOTAL</b>		<b>1800</b>		

**5.3 Cluster Projects and Achievements**

The cluster emphasizes sustainable low-carbon transportation, focusing on environmentally friendly travel options that minimize carbon emissions. This includes solutions such as electric vehicles, cycling, walking, and public transport powered by renewable energy. The goal is to combat climate change while fostering a cleaner and more sustainable transportation system that benefits both people and the planet.

- Measure and analyze the carbon emissions generated by vehicles commuting to and from UiTM campus.
- Review the availability and effectiveness of low-carbon infrastructure and facilities within the campus.
- Develop strategic solutions to reduce campus carbon emissions through improved traffic management and sustainable transportation policies.
- Propose comprehensive and practical plans to foster a low-carbon culture within the campus community.

Sustainable low-carbon transportation aims to provide equitable, reliable, and affordable access for all members of society, regardless of age, gender, or social status. It prioritizes safety and security to protect the well-being of both communities and natural resources. The system is designed to be environmentally green, characterized by zero carbon emissions, with the use of clean energy, and ecologically safe. Additionally, it is built to be resilient, capable of withstanding climate change impacts and shock events, as illustrated in **Figure 5.1**.

To assess the sustainability of low-carbon transportation, key aspects such as road safety, rural accessibility, transportation infrastructure, and public transit systems within the country were analyzed and documented.



Figure 5.1: Sustainable Low Carbon Transport (@ SLOCAT, 2020)

**5.3.1 Total Number of Vehicles to Total Campus Population**

The university actively uses and manages a total of 33 vans, including passenger vans, a corpse van, and ambulances. There are 37 cars in use, comprising various models. Additionally, the university manages 9 MPVs and 11 four-wheel-drive vehicles. Therefore, the number of cars actively used and managed by the university is 90 units. The information on the average number of UiTM owned cars on UiTM campus is obtained from the university's Auxiliary Police Unit. The total campus population can be derived from Section 1.12 and Section 1.14. The campus has a total of 4,720 staff members. Additionally, there are 40,548 students, including both full-time and part-time students. Therefore, the overall campus population amounts to 45,268. The number of cars entering the university daily is 2848, while the number of motorcycles on campus is 1386. The ratio of vehicles (cars and motorcycles with combustion engines) to the total campus population is 9.552%.

**5.3.2 Shuttle Services**

The university provides a regular and free shuttle service for students. This service utilizes the university's own buses and is supplemented by additional buses from a third-party operator appointed by the university. Since 2019, Smart Selangor free buses have also been allowed to operate within the campus area. The shuttle service connects students to various locations both inside and outside the campus, including Commuter Station Padang Jawa, I-City Mall, Section 2, and Section 7. The total number of trips per day is 364 trips starting from 7.00 am until 10.30 pm.

It has been proposed that the number of shuttle buses is increased for better service on campus. This would reduce the number of private vehicles entering campus as well as meet the community expectation of better-quality shuttle bus services. Soon, the shuttle bus services will be expanded to reach a newly constructed MRT station next to campus once the MRT line service in this station is in operation. In total, 35 buses are used to serve 10 different routes inside and outside the campus area.

**Table 5.2: Shah Alam Campus' Shuttle Bus Routes and Allocations 2023**

Route	Number of Buses	Route Description
Kampus Shah Alam 'A'	3 buses	Padang Kawad – Kolej Mawar (DC)
Kampus Shah Alam 'B'	3 buses	Kolej Mawar (DC) – Kolej Seroja
Kampus Shah Alam 'C'	6 buses	Seksyen 7 – Kampus Shah Alam
Kampus Shah Alam 'C2'	3 buses	i-SOHO@i-CITY – Kampus Shah Alam
Kampus Shah Alam 'D'	4 buses	Hentian Bas Seksyen 2 – Kampus Shah Alam
Kampus Shah Alam 'E'	3 buses	Kolej Mawar (DC) – INTEC Seksyen 17
Kampus Shah Alam 'G'	4 buses	Kolej Mawar – Kolej Perindu
Kampus Shah Alam 'H'	4 buses	Apartment Palm Garden (BBK) – Kampus Shah Alam
Kampus Shah Alam 'J'	3 buses	Apartment Baiduri – Seksyen 6 – Kampus Shah Alam
Kampus Shah Alam 'K'	3 buses	Apartment Suria Jaya – Kampus Shah Alam

**5.3.3 Average Number of Zero Emission Vehicles (ZEV) on Campus Per Day**

The university owns several Zero Emission Vehicles (ZEV). These include three buggy cars and a total of 151 bicycles, which are distributed as follows: 44 units at the Sports Center, 37 units at the Co-Curricular Center, and 70 units at the Residential Colleges. In addition to the university-owned ZEVs, there are privately owned ZEV vehicles on campus. These include 11 bicycles, 7 electric cars, 5 e-scooters, and 9 manual scooters without electric motors. Altogether, the total number of Zero Emission Vehicles (ZEV) on campus is 186 units.



Figure 5.3: Buggy car

**5.3.4 Total Number of Zero Emission Vehicles to Total Campus Population**

The average number of Zero Emission Vehicles (ZEV) on campus per day is 186 and the ratio of the Zero Emission Vehicles (ZEV) to the total campus population is 0.4109 %.

**5.3.5 Ratio of Ground Parking Area to Total Campus Area**

Parking arrangements in UiTM Shah Alam were evaluated to assess their feasibility and efficiency as part of traffic planning and management initiatives. This evaluation highlighted several factors related to vehicle ownership and usage that influence parking availability. The total parking area spans 60,272 square meters, accounting for 3.80 % of the campus's overall area.

The Logistics Department is encouraged to review and develop strategies to address parking needs based on university events and campus capacity. Introducing a smart parking management system could help accommodate diverse events, monitor private vehicle usage, and track the adoption of zero-emission vehicles (ZEV). Furthermore, consistent enforcement of the clamping zone policy would discourage unauthorized vehicles, reduce traffic congestion, and contribute to lowering vehicle-related carbon emissions.

### 5.3.5 Ratio of Ground Parking Area to Total Campus Area

The feasibility and efficiency of parking arrangements were investigated for traffic planning and management in UiTM Shah Alam. It enabled the identification of several factors with vehicle ownership and usage which affected parking areas. A study on issues related to parking and traffic flow on campus was conducted by MITRANS in 2020. The total size of the parking area is 71, 689 square meters and the ratio of the parking area to the total campus area is 4.516 %.

The Logistic Department should review and strategize the management of campus parking based on campus events and capacity. A smart parking management system would be able to cope with various events to monitor the proportion of private vehicle users and ZEV. In addition, constant enforcement of the clamping zone policy would minimize the number of unauthorized vehicles on campus. It also helps minimize traffic congestion as well as reduce carbon emissions from vehicles.

Table 5.3: Parking Areas by Zone in the UiTM Shah Alam Campus

ZON A				
BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	BANGUNAN FSPU A	40	7	33
2	BANGUNAN FSPU A (PARKIR PELAJAR)	155	0	155
3	BANGUNAN FSPU B	110	27	83
4	BANGUNAN STADIUM	155	0	155
5	AKADEMIK KEPOLISAN	11	0	11
6	MARKAS PALAPIS	24	0	24
7	CANSELERI	30	1	29
8	CANSELERI (PARKIR AWAM)	40	0	40
9	CANSELERI (PARKIR BERTINGKAT)	120	53	67
10	FAK PENGURUSAN HOTEL (MASMED)	46	13	33
11	KOMP SUKAN DELIMA	60	11	49
12	SEK TAMIL (FAK KEJ LAMA)	12	4	8
13	PUSAT I.LEARN (MITRAN)	15	14	1
14	KWS LAPANG LOT 10	44	0	44
15	DEPAN BANGUNAN WAWASAN	89	57	32
16	PUSAT ISLAM	48	18	30
17	PPII (HADAPAN BANGUNAN)	59	20	39
18	PPII (UNIT KEWANGAN ZON 5)	10	10	0
19	PPII (SEPANJANG JALAN)	91	0	91
20	POS PENGAWAL PINTU 3	8	0	8
21	KAUNTER EMAS	49	0	49
22	MTDC	127	6	121
23	PERSIMPANG DATC	10	0	10
<b>JUMLAH</b>		<b>1353</b>	<b>241</b>	<b>1112</b>

ZON B				
BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	MENARA SAAS, ANJUNG ANNEXE DAN PENDAFTAR	105	70	35
2	PARKIR BERTINGKAT (PENDAFTAR)	387	0	387
3	FAKULTI SENILUKIS DAN SENIREKA	122	23	99
4	DEWAN SRI BUDIMAN	155	57	98
5	HEP (UNIT KEWANGAN)	19	4	15
6	HEP (HADAPAN)	84	0	84
7	FAKULTI UNDANG-UNDANG	43	6	37
8	FAKULTI PENGURUSAN PERNIAGAAN DAN PTAR 2	113	45	68
9	FAKULTI SAINS GUNAAN DAN TEKNOLOGI PEJABAT	58	27	31
10	JLN UTAMA DSB KE PUSAT ISLAM	52	0	52
11	PTAR 1	7	0	7
<b>JUMLAH</b>		<b>1145</b>	<b>232</b>	<b>913</b>

ZON C				
BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	KOLEJ KENANGA 3, 4 DAN 5	19	0	19
2	KOLEJ KENANGA 2	13	0	13
3	KOLEJ CEMPAKA	118	25	93
4	KOLEJ MELATI	128	1	127
5	KOLEJ SEROJA 1	12	0	12
6	KOLEJ SEROJA 2	77	0	77
7	KOLEJ SEROJA 3	14	0	14
<b>JUMLAH</b>		<b>381</b>	<b>26</b>	<b>355</b>

ZON D				
BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	KOMPLEKS KEJURUTERAAN	618	164	454
2	AKADEMIK PENGAJIAN BAHASA	108	23	85
3	BANGUNAN OIA	107	10	97
4	KAWASAN BAS (KERETA 1)	43	0	43
5	KAWASAN BAS (KERETA 2)	25	0	25
6	BENGGEL KERENDAAN	7	0	7
7	BENDAHARI PEROLEHAN	55	0	55
8	PUSAT KESIHATAN	160	3	157
9	DATARAN CENDEKIA	85	0	85
10	MAK. FAK. KEJURUTERAAN KIMIA (LOJI PANDU)	33	0	33
11	TADIKA DAN TASKA	5	0	5
12	KOLAM RENANG	55	0	55
13	FAKULTI SAINS KOMPUTER DAN MATEMATIK	166	33	133
14	FAKULTI SAINS KOMPUTER DAN MATEMATIK (BARU)	130	32	98
15	FAKULTI SAINS KOMPUTER DAN MATEMATIK (P.AWAM)	168	0	168
16	AKADEMIK TIGA (FSA, FSSR DAN FPM)	142	64	78
JUMLAH		1907	329	1578

ZON H				
BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	KOLEJ MERANTI	39	0	39
2	KOLEJ DELIMA 2	23	0	23
3	PERSIMPANGAN DELIMA 2 KE PADANG KAWAT	24	0	24
4	KOLEJ DELIMA 3	4	0	4
5	KOLEJ PERINDU 2	12	9	3
6	KOLEJ PERINDU 3	18	0	18
7	KOLEJ PERINDU 4	8	0	8
8	KOLEJ TERATAI 1	29	0	29
9	KOLEJ TERATAI 3	2	0	2
10	KOLEJ TERATAI 4	14	0	14
11	KOLEJ TERATAI 5	28	0	28
12	KOLEJ MAWAR	181	1	180
13	KOLEJ MAWAR (DATARAN)	122	0	122
14	DATARAN CENDEKIA	84	0	84
15	KOLEJ ANGGERIK	40	0	40
16	PEJABAT POLIS BANTUAN	8	1	7
17	KOMP PRIMA SISWA	9	1	8
JUMLAH		645	12	633

BIL	TEMPAT	JUMLAH PARKIR KERETA KESELURUHAN	JUMLAH PARKIR KERETA BERNAMA	BAKI PARKIR KERETA TIDAK BERNAMA
1	ZON A	1353	241	1112
2	ZON B	1145	232	913
3	ZON C	381	26	355
4	ZON D	1907	329	1578
5	ZON E	792	0	792
6	ZON H	645	12	633
JUMLAH		6223	840	5383

**5.3.6 Programmes to Limit / Decrease the Parking Area on Campus from 2022 to 2024**

Students are encouraged to park their vehicles at Padang Kawad, a centralized parking area, to minimize the number of private vehicles entering the main campus and to alleviate the demand for parking spaces. The centralized parking facility has a parking capacity of up to 600 cars. A complimentary shuttle service is available to transport students from Padang Kawad to other areas within the campus. From Section 5.12, the total number of ground parking lots available on campus is 5,232. With the allocation of 600 parking lots at Padang Kawad, this represents a 11.5% reduction in the overall campus parking area.

Although carpooling would be a meaningful option to reduce congestion and carbon emissions, awareness and practice among students and employees are minimal. Meanwhile, initiatives toward Zero Emission Vehicles on campus are yet to materialize. Essential facilities such as cycling lanes and proper bicycle parking spaces are not available. Also, there are inadequate appropriate sign boards for parking spaces, cycling lanes, and pedestrian walkways. This study has also found that the 'park and ride' system is inefficient and ineffective. It is mainly contributed by poor communication and information about the shuttle bus schedule, frequency, and route coverage. This has resulted in the facilities being underutilized particularly by the students. Recommendations of the study are divided into short-term, and mid-term as indicated in **Figure 5.4** and **Figure 5.5**.



Figure 5.4: Short-Term Solutions to Limit or Decrease the Parking Area on Campus

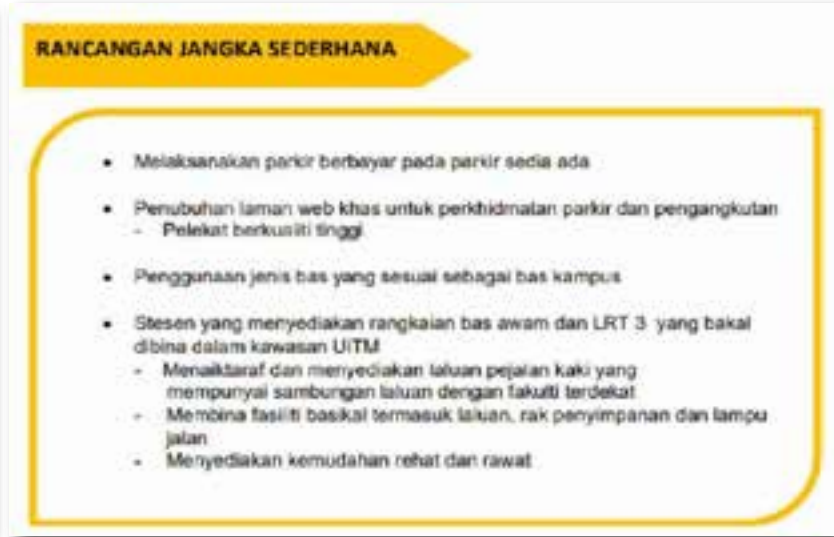


Figure 5.5: Mid-term Solutions to Limit or Decrease the Parking Area on Campus

**5.3.7 Number of Initiatives to Decrease the Number of Private Vehicles on Campus**

UiTM Shah Alam campus is actively progressing towards the implementation of the four proposed initiatives, as detailed in **Table 5.4**. To drive these efforts, an Expert Task Force has been established to devise strategies and execute Green Transportation initiatives across campus. Initiatives such as awareness campaigns, educational programs, technological advancements, and infrastructure improvements involving the University community are being considered for adoption.



Figure 5.6: Centralized parking area and signage to encourage students to park their vehicles at Padang Kawad

**Table 5.4: Details of Initiatives in Decreasing Private Vehicles on Campus**

Initiatives	Description
Notice on university's private vehicle policy at residential colleges	Extensive shuttle service is provided by the university, on a regular basis and is free of charge. All details and evidence can be found in Sections 5.5–5.8. Students who live at residential colleges are not allowed to bring their cars except for those who have obtained special approval. However, some residential colleges allow students to bring in motorcycles.
Boom gate system at Faculty of Business Management and Students Affairs Division (HEP)	Boom gate or barrier gate system is installed at various academic and administrative buildings to limit students' cars.
Discussion with e-scooter operator	Initiatives to promote the use of micromobility vehicles on campus.

5.3.8 Pedestrian Path Policy on Campus

A Road Safety Audit (RSA) was conducted on 20 August 2020 to identify any potential hazards on the existing roads within the campus. It also aims to determine possible solutions to achieve a sustainable campus. The following are pedestrian paths on the campus.



Figure 5.7: Covered walkways and pedestrian crossings



Figure 5.8: Ramp for wheelchair



Figure 5.9: Well-lit and mostly covered path at night with speed humps strategically placed



Figure 5.10: Separator between the road and pedestrian path

The Logistics Department has been assigned to monitor and disseminate the pedestrian paths/walkways policy among the university community. It is also responsible to promote the policy through constant and active engagement. UiTM has suggested that a special grant be provided to upgrade the walkway in line with a proposal and policy by the European Transportation Consultancy (ETC).

**5.4 Moving Forward**

Sustainable transportation is defined as the ability to fulfill society’s mobility needs while minimizing environmental harm and safeguarding the mobility requirements of future generations.

The initiatives implemented by the Warga demonstrate UiTM’s dedication in transforming its vision into reality by fostering environmentally sustainable transportation and supporting the development of a low- carbon campus.

Moving forward, these efforts will focus on strategies to increase public transportation usage, enhance current infrastructure, and promote low-emission vehicles and alternatives like walking and cycling as viable options to reduce reliance on carbon-intensive transportation modes.

**SDG Areas:**



**CLUSTER 6.0**  
Education and Research

**CLUSTER 6.0: Education and Research**

**6.1 Introduction**

Universities and institutions of higher learning are instrumental in driving sustainable initiatives that tackle complex socio-economic challenges, playing a vital role in shaping a nation’s progress. At UiTM, the commitment to delivering quality education and fostering impactful research lies at the heart of its transformative programs, aligning closely with the United Nations’ Sustainable Development Goals (SDGs). This dedication reflects the importance of education highlighted in SDG #4, which also connects to broader goals such as reducing poverty, enhancing quality of life, promoting economic development, addressing climate change, and protecting the environment. UiTM has consistently championed sustainability through a range of strategies that prioritize excellence in education and research. These efforts are embedded across faculties, campuses, and departments, ensuring they create meaningful benefits for the university’s community and stakeholders.

The principles of sustainability are deeply woven into UiTM’s academic and research framework, inspiring a university-wide culture of sustainable practices. Initiatives include offering sustainability-focused courses, providing research grants for sustainability-related projects, establishing dedicated sustainability hubs, and nurturing sustainability leadership among students and staff. Together, these efforts strengthen UiTM’s ecosystem for sustainable development, empowering the university to make a lasting, positive impact.

**6.2 Cluster Objective**

The primary objective of the education and research component is to cultivate awareness among campus residents regarding the significance of incorporating sustainability into their daily lives. These sustainable principles are applied beyond traditional classroom learning, co-curricular activities, self-leadership development, and community engagement. The roles and functions of education and research in promoting sustainability are illustrated in **Table 6.1** below.

**Table 6.1: The functions of Education and Research cluster**

To promote elements of sustainability in curriculum and research
To strengthen university-community engagement in adapting sustainability agenda
To nurture, educate and incorporate best practices and strategies of sustainability in education and research among campus communities
To collaborate with government and non-governmental agencies in empowering the agenda of sustainable development

**Table 6.2: Education and Research cluster achievement indicators for 2023**

No	Criteria	Point	Achievement	
			2023	2023
ED1	The ratio of sustainability courses to total courses/subjects	300	300	300
ED2	The ratio of sustainability research funding to total research funding	200	200	200
ED3	Number of scholarly publications on sustainability	200	200	200
ED4	Number of events related to sustainability	200	200	200
ED5	Number of student organizations related to sustainability	200	200	200
ED6	University-run sustainability website	200	200	200
ED7	Sustainability report	100	100	100
ED8	Number of cultural activities on campus	100	100	100
ED9	Number of university program(s) to improve teaching and learning	100	100	100
ED10	Number of sustainability community services projects organized and/or involving students	100	100	100
ED11	Number of sustainability-related start-ups	100	100	100
	<b>Total</b>	<b>1800</b>	<b>1800</b>	<b>1800</b>

The Education and Research cluster contributes 18% to the total scores of UI GreenMetric. The 11 indicators are assigned specific points ranging from 100 to 300, giving a total point of 1800. This cluster has shown consistent achievement trends for both years, as indicated in **Table 6.2**.

**6.3 Cluster Projects and Achievements**

In total there are 11 initiatives/projects of the cluster as outlined below.

**6.3.1 Sustainability Course Offered**

UiTM is dedicated to fostering a culture of sustainability by integrating sustainability principles across its curriculum. The university ensures that sustainability is embedded in various courses at all levels, equipping students with essential knowledge to navigate sustainable development in a competitive world. This commitment aligns with the Malaysian government’s focus on the SDGs, emphasizing the interconnectedness of people, institutions, and the environment.

As of 2023, UiTM offered a total of 2,923 sustainability-related courses across 29 faculties, academies, and centers. The Faculty of Architecture, Planning & Survey stood out as the leading provider of sustainability courses, offering 316 courses that year. A detailed breakdown of the sustainability-related courses offered by each faculty, academy, and centre is shown in **Table 6.3**.

**Table 6.3: Number of sustainability-related courses offered in 2023**

No.	Faculty/Academy/Centre	Number of Sustainability-related Courses
1	Architecture Planning & Survey	316
2	Computer Science	276
3	Applied Science	263
4	Art and Design	201
5	Business Management	179
6	Music	173
7	Mass Communication	171
8	Academy of Language Studies	142
9	Law	122
10	Sport Science	97
11	Electrical Engineering	88
12	Accountancy	86
13	Mechanical Engineering	81
14	Chemical Engineering	79
15	Curriculum	78
16	Administration Science	72
17	Muamalat	64
18	Information Management	62
19	Civil Engineering	61
20	Hotel Management	59
21	Business Administration	47
22	Arshad Ayub Business School	47
23	Centre Of Islamic Art and Understanding	20
24	College Of Art	16
25	Education	13
26	Language	9
27	Transport Management	6
28	College of Engineering	5
29	Health Science	4
<b>Total number of sustainability-related courses</b>		<b>2923</b>

UiTM is committed to integrating sustainability principles and concepts in many courses offered by engaging and mapping the course curriculum to SDGs as shown in **Table 6.4**. These sustainable courses help students develop skills and knowledge needed to broaden their perspectives on social, cultural, political, and environmental issues.

**Table 6.4: Samples of the sustainability-related courses mapping to SDGs**

Course Code	Course Name	SDG	Description
MED309	Public Health Medicine	4	SDG 1: No Poverty. Safeguarding the health of the public requires a healthcare workforce which is well educated in public health and its methods in prevention and control of diseases. In year 3 Public Health Medicine (PH) posting, students will be taught on the basic science of public health i.e. epidemiology, biostatistics and other scopes in public health i.e. family health, environmental health, occupational health, and healthcare organization/management.
MCS719	Human Security	3	SDG 2: Zero Hunger. The course discusses theories, concepts, and approaches in the study of human security from a broad perspective of physical security, politics, economy, social, culture as well as religion. Local conceptualizations versus universal interpretations of human security are emphasized. Relevant topics will encompass human security in a globalized world, national identities, genetic engineering, climatic change, migration issues, ethnocentrism and the like.
MED309	Public Health Medicine	4	SDG 3: Good Health and Well-Being. Safeguarding the health of the public requires a healthcare workforce that is well educated in public health and its methods in prevention and control of diseases.
EDU620	Education And Society	3	SDG 4: Quality Education. Covers sociological concepts related to education and society. It also focuses on global issues and challenges, and how these in turn critically influence education and pedagogy from a global perspective.
MUF459	Performing Groups	1	SDG 15: Life on Land. This course provides students with training and practical experience in performing groups such as orchestra, large/small ensemble, or choir. Students will be assigned to appropriate groups according to their instrumental or vocal abilities. A variety of repertoire and performance styles will be explored. Students will apply instrumental/vocal techniques to produce quality performances and cohesive group sound as an outcome of collaborative interaction, performance practice and creative musical expression.

ELE672	Industrial Topics	2	SDG 7: Affordable and Clean Energy. This course provides an exposure to current technologies available in Malaysian industries. Every student will choose two different topics on subjects related to his/her discipline. The period for each topic is 14 lecture hours. Each topic will be conducted by a person from industry who is very experienced in his/her own field, or by academia who has the experience to address the topic. The coverage for each topic includes theoretical applications in industries, case studies, practical experiences, usage of high-end equipment, etc.
CPE675	Wastewater Engineering	3	SDG 6: Clean Water and Sanitation. This is a wastewater engineering course which concerns the characteristics of wastewater and treatment technologies. The topics covered in the course are the regulation and policies, theory and fundamentals, as well as characterization of wastewater and treatment practices, i.e. physical, chemical and biological methods.
HTT712	Tourism Destination Analysis	3	SDG 8: Decent Work and Economic Growth. This course is designed to equip students with an understanding of tourism destinations and develop analysis of the role of the destinations within the broader tourism system. It will provide students with knowledge of the assessment, evaluation and appropriate methods/techniques on both changes occurring in tourist destinations and the development and activity. Thus, it will encourage students to use analytical thinking to evaluate tourism destinations according to current and future needs.
ISH602	Halal Auditing	3	SDG 9: Industry, Innovation, and Infrastructure. The main objective of this course is to enhance knowledge on effective and efficient audit programs. This course will explain the concept of Sharia-compliant auditing in halal industry. Students will learn about the halal auditing requirements and the auditing process. Other than that, they will also be able to demonstrate the code of ethics for auditors in halal auditing process.
ALS451	Malay Sociolinguistics	3	SDG 10: Reduced Inequalities. Introduction to the role of language in society. This course emphasizes the influence of language in the community and cultural environment of the local community. The focus is on linguistic diversity as well as its impact in the context of the local community and the global community. Students are exposed to terms and concepts related to dialects, language abnormalities, language diversity, language preservation, language transition and language extinction.
MLS742	Digital Libraries and Digital Content	3	SDG 11: Sustainable Cities and Communities. The course introduces students to the development and application of digital libraries and digital content creation. It discusses concepts, theories, practices, and issues related to discipline. The management and applications of the open-source digital library management systems is studied and applied. This course provides new development and challenges in digital libraries and digital content creation.

LMW733	Consumer Protection Law	3	SDG 12: Responsible Consumption and Production. Consumer law is a hybrid – a collection of inter-connected aspects of law. A study of the inter-relationship between these different branches of law shall be undertaken in this course. Besides that, the course attempts to provide a framework for examining social and legal changes and examines at an advanced level selected problems and issues concerning contracts of sale of goods, the rationale for consumer protection, the legal inroads into the principle of "freedom of contract" and the policy considerations involved therein. Exemption clauses and other unfair terms in consumer contracts are analysed to examine major concerns of the consumer. A comparison will be made between the liability of manufacturers and sellers in contracts and torts for defective products and services. The course will also examine the various consumer protection legislation, their adequacies and shortcomings, administration, enforcement and remedies, controls by enforcement agencies and consumer organisations and judicial redress.
ISH500	Purification In Islam	3	SDG 14: Life Below Water. This course covers the conceptual framework related to purification from Islamic perspective, compliance, and non-compliance to principles of purification and the principles of purification in daily lives and in the halal industry.
HTT712	Tourism Destination Analysis	3	SDG 8: Decent Work and Economic Growth. This course is designed to equip students with an understanding of tourism destinations and develop analysis of the role of the destinations within the broader tourism system. It will provide students with knowledge of the assessment, evaluation and appropriate methods/techniques on both changes occurring in tourist destinations and the development and activity. Thus, it will encourage students to use analytical thinking to evaluate tourism destinations according to current and future needs.
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ISH500	Purification In Islam	3	SDG 14: Life Below Water. This course covers the conceptual framework related to purification from Islamic perspective, compliance, and non-compliance to principles of purification and the principles of purification in daily lives and in the halal industry.

The achievement of ED1 is measured using the ratio of sustainability courses to total courses/ subjects in a year. The number of sustainability-related courses has gradually increased each year. In the particular year of 2023, it has been reported that 76.9% of 3,801 courses or 2,923 courses offered in UiTM are related to sustainability. **Table 6.5** indicates the total number of courses and SDG courses offered by UiTM.

**Table 6.5: Total number of courses and SDG courses offered by UiTM**

Courses	Total	Percentage
Sustainability-related courses	2923	76.9
Non-SDG course	878	23.1
<b>Total courses</b>	<b>3801</b>	<b>100</b>

### 6.3.2 Sustainability Research Funding

In view of research funding related to sustainability, UiTM has allocated quite a huge amount of research funding or grants for the last 3 years, in which USD 5,057,201.45 per year has been spent to award researchers who undertake research projects in sustainability and the environment. **Table 6.6** shows the allocation of Non-UI-GreenMetric and UI-GreenMetric grants; and the average of each category for the last 3 years.

**Table 6.6: The allocation of non-UI-GM and UI-GM grants; and the average of each category for the last 3 years**

Year	Non-UI-GM Grant (USD)	UI-GM Grant (USD)	Total Grant (USD)
2021	1,864,460.15	4,337,526.80	6,201,986.95
2022	2,732,840.34	4,639,886.02	7,372,726.36
2023	455,296.57	1,141,594.46	1,596,891.03
<b>AVERAGE</b>	<b>1,684,199.02</b>	<b>3,373,002.43</b>	<b>5,057,201.45</b>

Over the past three years, the average annual research funding allocated to sustainability research was approximately **3,373,002.43 USD**, while the average total annual research funding amounted to **5,057,201.45 USD**. Consequently, the ratio of sustainability research funding to total research funding stands at **66.70 %**.

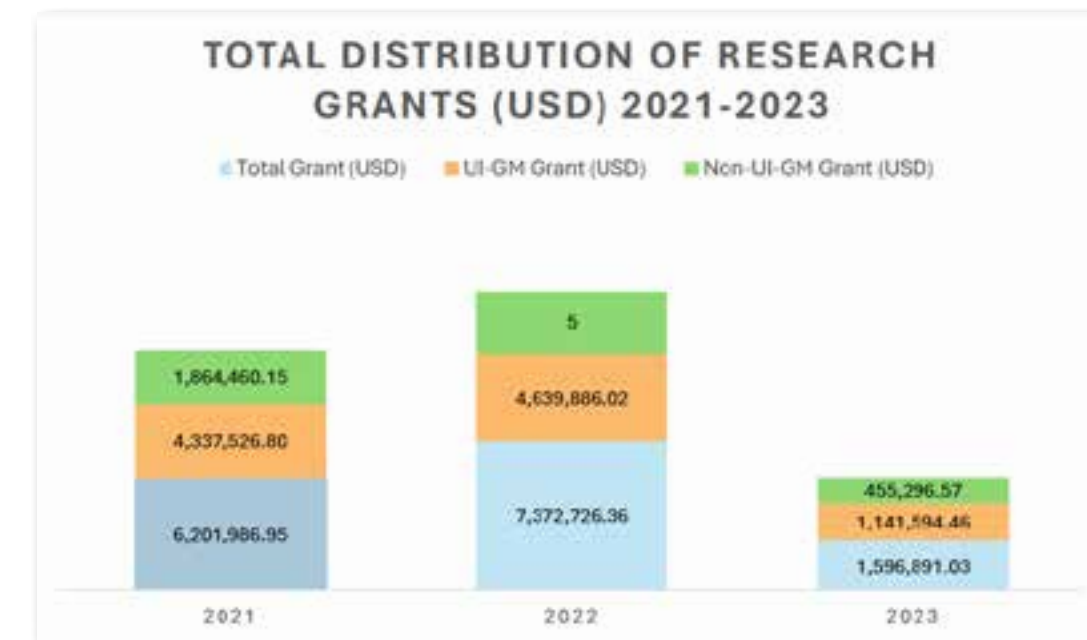


Figure 6.1: The distribution of research grants in US dollars from 2021 to 2023

**6.3.3 Sustainability Publications**

UiTM has outlined the publications as one of the important aspects to increase the visibility of UiTM researchers. As reported in Google Scholar, UiTM researchers have published a total of 6,865 publications over the last 3 years, from 2021 to 2023. Of these, **2,123 publications** have been published in the field of environment, sustainability, and SDGs. In general, the SDG's themes have been extensively addressed since 2021 publications as exhibited in **Table 6.7**.

**Table 6.7: Total number of publications based on SDG 2021-2023**

Year	Total SDG Publications	All Publications
2021	671	4204
2022	887	6680
2023	565	3565
<b>TOTAL PUBLICATIONS</b>	<b>2123</b>	<b>14449</b>



Figure 6.2: Total number of publications based on SDG 2021-2023

**Table 6.8: Total number of publications based on SDG 2021-2023**

SDG	TOTAL
SDG 1	1
SDG 2	2
SDG 3	119
SDG 4	33
SDG 5	2
SDG 6	90
SDG 7	158
SDG 8	2
SDG 9	64
SDG 10	1
SDG 11	165
SDG 12	0
SDG 13	105
SDG 14	20
SDG 15	18
SDG 16	3
SDG 17	0

**Table 6.9: Total number of publications in 2023 based on SDG matching**

SDG	TOTAL
SDG 1	3
SDG 2	1
SDG 3	66
SDG 4	29
SDG 5	0
SDG 6	55
SDG 7	173
SDG 8	5
SDG 9	52
SDG 10	1
SDG 11	175
SDG 12	0
SDG 13	73
SDG 14	12
SDG 15	10
SDG 16	55
SDG 17	0

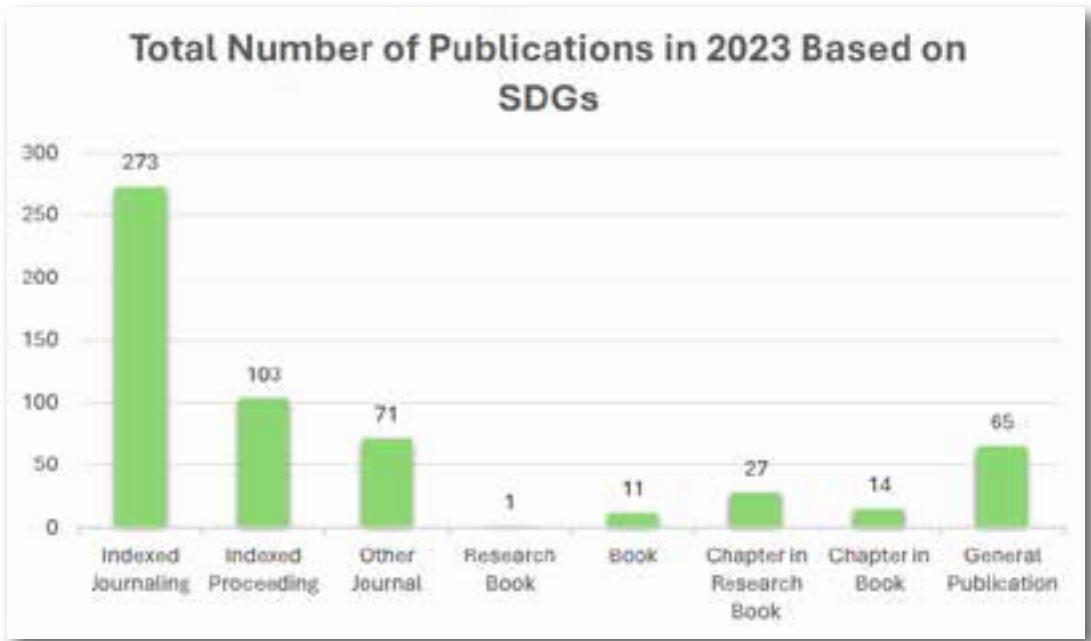


Figure 6.3: Total number of publications in 2023 based on SDGs

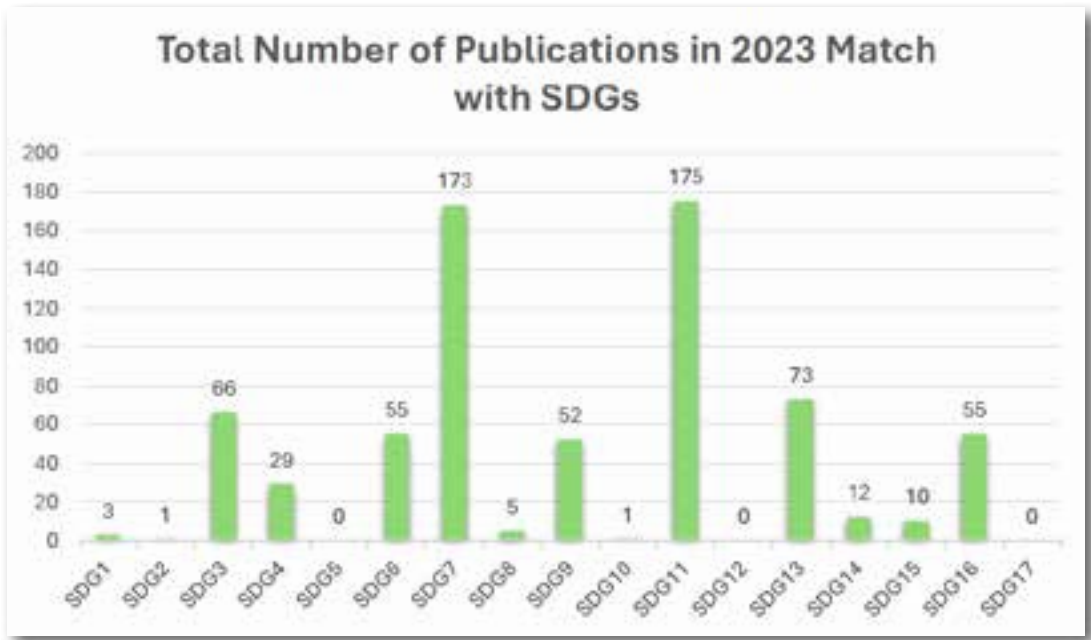


Figure 6.4: Total number of publications in 2023 that match with SDG

The figure displays three examples of how specific research titles are mapped to Sustainable Development Goals (SDGs):

- SDG 3: GOOD HEALTH AND WELL-BEING** - Title: "Vibration-based approach for structural health monitoring of ultra-high-performance concrete bridge"
- SDG 7: AFFORDABLE AND CLEAN ENERGY** - Title: "Kinetics, thermodynamic studies, and parametric effects of supercritical CO<sub>2</sub> extraction of banana peel wastes"
- SDG 11: SUSTAINABLE CITIES AND COMMUNITIES** - Title: "Feasibility of solar hybrid energy system at a conservation park: Technical, economic, environmental analysis"

Figure 6.5: Samples of mapping the publication titles to SDGs in 2023

6.3.4 Sustainability Events

UiTM managed to organize a total of **62 sustainability events** in 3 years from 2021 to 2023 inclusive of the MoU signing ceremony, talks, site visits, workshops, seminars, exhibitions, and community service programs.

**Figure 6.6** shows the distribution of the number of sustainability events for 3 years; 2021 (34 events), 2022 (72 events) and 2023 (82 events).

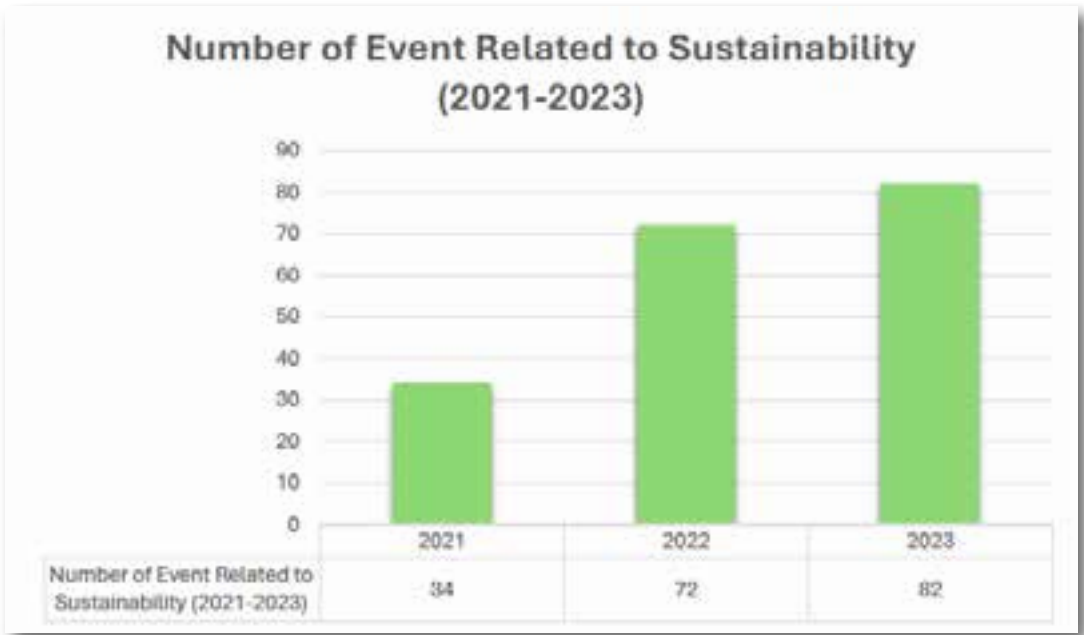


Figure 6.6: The distribution of the number of sustainability events for 3 years

6.3.5 Sustainability Student Organizations

UiTM recognizes the critical role of future generations in shaping the university’s sustainability ecosystem. By embedding sustainability values and norms into students’ life experiences, UiTM aims to nurture the mindset and behaviour necessary for effective future leadership. Consequently, active student participation in sustainability-focused initiatives through student organizations is strongly encouraged.

In 2023, **12** active student organizations carried out a variety of sustainability-related activities, including webinars, outdoor programs, and community service projects. There were **135** sustainability-related **activities** organized by student organizations per year. These activities aimed to enhance students’ knowledge and skills while contributing positively to society. Collectively, these initiatives align with Sustainable Development Goals (SDGs) #2, #4, #9 and #11, as detailed in **Table 6.10**.

Table 6.10: A list of student organizations in 2023

No	SDGs	Student Organization	Social Media Link
1	4 QUALITY EDUCATION	Applied Chemistry Society Faculty of Applied Science, UiTM Shah Alam	<a href="https://www.instagram.com/acesuitm/?hl=en">https://www.instagram.com/acesuitm/?hl=en</a>
2	11 SUSTAINABLE CITIES AND COMMUNITIES	Kelab Rekreasi UiTM Malaysia A combination of all recreation clubs under UiTM	<a href="https://www.instagram.com/kremauitm/?hl=en">https://www.instagram.com/kremauitm/?hl=en</a>
3	2 ZERO HUNGER	Persatuan Pelajar Teknologi Makanan Faculty of Applied Science, UiTM Shah Alam	<a href="https://twitter.com/pertemauitmsa?lang=en">https://twitter.com/pertemauitmsa?lang=en</a>
4	4 QUALITY EDUCATION	Environmental Law and Awareness Club (EnLAC)	<a href="https://www.instagram.com/enlacuitm/?hl=en">https://www.instagram.com/enlacuitm/?hl=en</a>
5	11 SUSTAINABLE CITIES AND COMMUNITIES	Park Amenity Management Society Faculty of Architecture, Planning & Surveying (FSPU) UiTM Shah Alam	<a href="https://www.instagram.com/pamsuitmsa/?hl=en">https://www.instagram.com/pamsuitmsa/?hl=en</a>
6	11 SUSTAINABLE CITIES AND COMMUNITIES	Persatuan Kejuruteraan Awam UiTM Shah Alam	<a href="https://www.instagram.com/pekauitmsa/?hl=en">https://www.instagram.com/pekauitmsa/?hl=en</a>
7	11 SUSTAINABLE CITIES AND COMMUNITIES	Netcentric Computing Club (NetCom) Faculty of Computer and Mathematical Sciences (FSKM) UiTM Shah Alam	<a href="https://www.instagram.com/netcomuitmsa/?hl=en">https://www.instagram.com/netcomuitmsa/?hl=en</a>
8	4 QUALITY EDUCATION	Computer Science Club UiTM Faculty of Computer and Mathematical Sciences (FSKM) UiTM Shah Alam	<a href="https://www.instagram.com/csclubuitm/?hl=en">https://www.instagram.com/csclubuitm/?hl=en</a>

9		Briged Sukarelawan UiTM UiTM Shah Alam	<a href="https://www.instagram.com/brgedsukarelawan_uitm/">https://www.instagram.com/brgedsukarelawan_uitm/</a>
10		IMEche UiTM Student Chapter UiTM Shah Alam	<a href="https://www.instagram.com/meche_uitmsa/">https://www.instagram.com/meche_uitmsa/</a>
11		Boiler & Safety Engineering Club UiTM Shah Alam	<a href="https://www.instagram.com/bsecoficial/">https://www.instagram.com/bsecoficial/</a>
12		Japanese Language Society	<a href="https://www.instagram.com/juitm/">https://www.instagram.com/juitm/</a>

**6.3.6 Sustainability Website**

In today’s era of technological advancement, a website serves as a vital representation of an organization, facilitating the communication and dissemination of essential information to the public. UiTM has taken proactive measures to ensure its website is accessible, visually appealing, user-friendly, and informative, thereby enhancing the university’s global visibility.

UiTM official website is available at <https://www.uitm.edu.my/index.php/ms/>. Furthermore, insights into UiTM’s initiatives in green campus development, environmental and sustainability programs, and the university’s sustainability performance are available through the following links:

**Table 6.11: Website names and links**

Main Website of UiTM Green Centre	<a href="https://ugc.uitm.edu.my/">https://ugc.uitm.edu.my/</a>
UiTM Green Centre Events Calendar	<a href="https://ugc.uitm.edu.my/index.php/events-calendar/sgcl-2021">https://ugc.uitm.edu.my/index.php/events-calendar/sgcl-2021</a>
UiTM Sustainability Report	<a href="https://ugc.uitm.edu.my/index.php/report">https://ugc.uitm.edu.my/index.php/report</a>
Latest news on UiTM Green Centre	<a href="https://news.uitm.edu.my/laj/uitm-green-centre/">https://news.uitm.edu.my/laj/uitm-green-centre/</a>

**6.3.7 Sustainability Report**

UiTM has actively pursued sustainability initiatives for many years, formalizing these efforts with the establishment of the UiTM Sustainability Committee on November 7, 2018. This committee was specifically formed to oversee and implement sustainability initiatives, as well as to manage data collection and monitoring related to UiTM’s sustainability efforts. The committee’s responsibilities are centered on six key focus areas: (1) infrastructure and facilities, (2) waste management, (3) water management, (4) energy and climate change, (5) education and research, and (6) transportation.

The UiTM Sustainability Report was first introduced in 2019 and serves as a platform to share the university’s key initiatives and accomplishments in sustainability with the broader public. The internal report was prepared by the UiTM Sustainability Committee, with the primary objective of reflecting UiTM’s commitment to embedding sustainability into all aspects of university life. The report highlights

achievements across six clusters: Setting and Infrastructure (SI), Waste Management (WS), Water Management (WM), Energy and Climate Change (EC), Education and Research (ED), and Transportation (TR).

**6.3.8 Cultural Campus Activities**

As a key driver of sustainable development, UiTM’s engagement in cultural activities across its campuses demonstrates its commitment to preserving Malaysia’s multiracial cultural heritage. Preserving cultural identities globally is essential, as they play a vital role in accelerating the transition toward a sustainable future. The broader influence of green campus initiatives extends to their surrounding communities, as evidenced by **39 cultural activities** conducted across UiTM campuses in 2023. These activities have contributed to the knowledge, skills, and social and economic development of both the university community and the nation. UiTM’s proactive organization of cultural activities aligns indirectly with several Sustainable Development Goals (SDGs), as detailed in **Table 6.12**.

**Table 6.12: Mapping of cultural activities to SDGs**

No	Program	Level	Date
1.	“Blooming Sustainability with Melati: Nurturing A Greener Future”	National University	20 October 2023
2.	Program ‘Great Green Adventure’ (GGA) Membuka Minda Para Pelajar SMK Jeram ke arah Pencapaian Sustainability Development	Industrial University	15 June 2023
3.	Program Komuniti: Environmental Sustainability Green Waste	Industrial University	10 June 2023
4.	Lawatan Penandaarasan Kelestarian Pusat Strategi Universiti Kebangsaan Malaysia (UKM) ke Pusat Hijau UiTM@UiTM Green Centre (UGC)	National University	30 May 2023
5.	UiTM and GoodWE Technologies Forge Collaborative Partnership to Advance Green Technology and Energy Efficiency	Industrial University	10 May 2023
6.	Majlis Penutup Festival Kelestarian Kampus Hijau UiTM 2022	University	19 January 2023
7.	Lawatan Kerja Persatuan GEOMASS UiTM CAWANGAN PERLIS KE UiTM SHAH ALAM.	University	18 December 2023
8.	Program Gotong-Royong Serentak di Semua Kampus Seluruh Negara	National University	29 September 2023
9.	Program Beach Cleaning PD 2023: Pembersihan Pantai Cahaya Negeri di Port Dickson	University	3 June 2023
10.	Program “Jom Masuk BEVA” Mewujudkan Sinergi antara FSPPP dan Alumni	University	13 December 2023
11.	Program Kelestarian Alam Sekitar SULAM: Pelajar KPK UiTM Shah Alam di bawah kursus Leadership and Professional Ethics for Engineers (CPE680) Menyinari Komuniti PPDK Sinar Harapan	University	9 December 2023

12.	Sakura science Exchange Program: UiTM Timba Ilmu Kelestarian Akuakultur Marin Tropika di Okinawa, Jepun	International University	22 November 2023
13.	Sustainable Strides: UiTM-KPKT Plogging Initiative Transforms Taman Seri Muda on World Habitat Day 2023	National University	25 November 2023
14.	UiTM & IPB Jalin Kerjasama Antarabangsa di Desa Mulyasari, Bogor	International University	22 November 2023
15.	Sambutan Hari Kesihatan Persekitaran Sedunia 2023 Anjuran Bersama Majlis Bandaraya Shah Alam, Fakulti Sains Kesihatan Kampus Puncak Alam dan Maeh; Menjelajah Kaitan Antara Kesihatan Manusia dan Alam Sekitar.	National University	19 October 2023



Figure 6.7: Brochures on cultural campus activities

6.3.9 International Collaborations

In line with UiTM Global Engagement’s strategy, the university’s involvement in sustainability programs with international collaborators is aimed at expanding cooperation with other universities globally. This strategy encompasses joint research, online courses, educational trips, double degree programs, student-staff exchanges, and other initiatives. In 2023, UiTM successfully conducted 57 sustainability programs in collaboration with international partners.

6.3.10 Community Service

Community service serves as a form of experiential education designed to address community needs while incorporating structured opportunities that enhance student learning. Aligned with the aspirations of the Ministry of Higher Education, UiTM has implemented community service initiatives through the Service-Learning Malaysia-University for Society (SULAM) program since 2021.

In 2023, a total of 33 sustainability-focused community service projects were conducted. Many of these initiatives were undertaken as part of SULAM compulsory courses, fulfilling course requirements across various faculties.

The community service projects organized by students are implemented with the assistance of Service-Learning Malaysia—University for Society (SULAM). SULAM is a course-based, credit-bearing educational experience in which the student participates in a structured service activity that meets identified community needs and reflects on the service activity and experiences to achieve desired learning outcomes in such a way as to gain a deeper understanding of course content, a broader appreciation of the discipline, enhanced sense of personal values and civic responsibility. A total of 101 courses at UiTM are compulsory to conduct SULAM and/or community service projects organized by students. Figure 6.8 below shows some of the community service projects in 2023.



Figure 6.8: Community service projects in 2023



Table 6.13 indicates a sample of 33 community service programs conducted in 2023 by the 6 faculties:

Table 6.13: Samples of community service programs conducted by 6 faculties

No	Faculty	Total Programs	Additional evidence link
1	College of Engineering	17	<a href="https://drive.google.com/drive/folders/1kxGuwT_xij_1M4RYAEVtyivr0c0oYwB_52usp=drive_link">https://drive.google.com/drive/folders/1kxGuwT_xij_1M4RYAEVtyivr0c0oYwB_52usp=drive_link</a>
2	Faculty of Health Sciences	1	<a href="https://www.facebook.com/health.science.uitm.selangor.malaysia/posts/pfbid028Jst95M9WgtDPguXavr_aQJlv4TSmC6Ytfr2suogctAKCp2kuEkVmQkxeuXDzYT_R_Pi">https://www.facebook.com/health.science.uitm.selangor.malaysia/posts/pfbid028Jst95M9WgtDPguXavr_aQJlv4TSmC6Ytfr2suogctAKCp2kuEkVmQkxeuXDzYT_R_Pi</a>
3	Academy of Language Studies	4	<a href="https://drive.google.com/drive/folders/19J-lNsU3FoluCh2F5Qikz1F0iErbP4aD7usp=drive_link">https://drive.google.com/drive/folders/19J-lNsU3FoluCh2F5Qikz1F0iErbP4aD7usp=drive_link</a>
4	Faculty of Education	3	<a href="https://drive.google.com/drive/folders/12PiIBz7Wk0Ljwl0v4na9eiRnMaM8z0uE4?usp=drive_link">https://drive.google.com/drive/folders/12PiIBz7Wk0Ljwl0v4na9eiRnMaM8z0uE4?usp=drive_link</a>
5	ACIS	7	<a href="https://drive.google.com/drive/folders/1sK17-s46yYStlqmlorM7d76mV_DRJ708?usp=drive_link">https://drive.google.com/drive/folders/1sK17-s46yYStlqmlorM7d76mV_DRJ708?usp=drive_link</a>
6	Faculty of Applied Science	1	<a href="https://www.facebook.com/share/p/VtoFQhSVWCZtqi2C/?mibextid=WC7FNe">https://www.facebook.com/share/p/VtoFQhSVWCZtqi2C/?mibextid=WC7FNe</a>
<b>TOTAL</b>		<b>33</b>	

6.3.11 Sustainability-related Start-ups

UiTM embraces entrepreneurial potential among the students and has incorporated this element into its curriculum. UiTM believes exposure to entrepreneurial skills may guide them to becoming a well-balanced and globally competent students. Hence, entrepreneurship subjects have been introduced at all levels: undergraduate and postgraduate programs. Further, the establishment of the Malaysian Academy of SME & Entrepreneurship Development (MASMED) has played an effective role in the development of entrepreneurship skills among students. Students are encouraged to regularly participate in entrepreneurial activities and competitions in Malaysia and abroad. To sustainability initiatives, UiTM has been providing full support to staff and students to incorporate sustainable practices into commercial and non-commercial activities through start-ups. In 2023, 20 new commercial start-ups and 724 non-commercial start-ups were initiated.



Figure 6.8: Ablesten Sdn Bhd startup



Figure 6.9: Robot-mediated tele-rehabilitation for autism therapy system startup

6.4 Moving Forward

The primary purpose of education and research focusing on sustainability is to expand the existing body of knowledge by providing solutions to different problems in pedagogy while improving teaching and learning practices. The cluster covers the most SDGs area (13) showing its importance in educating the community, especially the future generation.

Educational researchers seek answers to questions bothering learner motivation, development, and classroom management. While research-based learning aims to help prospective teachers obtain information, knowledge, skills, and attitudes for sustainable environmental development. The implementation method of continuing education is important in environmental education. UiTM has planned and taken continuous efforts and initiatives to equip its Warga with skills, capacity, and motivation to plan and manage change towards sustainability.

SDG Areas: ALL



Summary  
Continuous Effort Towards Sustainability

## Summary - Continuous Effort Towards Sustainability

### UiTM Green Centre Strategic Planning

UiTM Green Centre (UGC) establishment as the “game changer” is vital in promoting and ensuring warga UiTM as a whole move towards greening the campus. UGC has put forward a tagline of **‘GREENER AND HEALTHIER LIFESTYLE’** to support the UiTM mission which is also in accordance with United Nations Sustainable Development Goals (SDGs). The SDGs are meant to ensure our future generation enjoys the same resources that are available today. In promoting sustainability efforts, education is believed to be one of the mediums to synergize actions and policies in achieving the 17 SDGs.

UGC planning and approaches are in line with the UiTM 2025 Strategic Plan on becoming a Globally Renowned University (GRU) by 2025. The GRU2025 is focused on different themes namely **Globally Competent** (year 2022), **Globally Marketable** (year 2023), **Globally Respected** (year 2024) and **Globally Renowned University** (year 2025). In capturing the initiatives and effort, UGC was given some targets under Performance Indicator (PI) 108 which focus on the program to reduce the use of paper and plastic on Campus. Accordingly, UGC has developed the ‘IS-CARE’ system to keep track of activities and performance of all UiTM Green Campus initiatives. The system allowed any initiatives undertaken to be measured in accordance with the 17 SDGs and the university’s aims toward low carbon cities in year 2030. Using the “IS-CARE” platform, the report will then communicate disclosures on an organization’s most significant impact, whether positive or negative, on activities toward a sustainable environment, society, and economy. To support the PI given, UGC has initiated four Strategic Action Plan (SAP) namely **“BEING GREEN IS EASY”**, **“DON’T BE TRASHY, RECYCLE!”**, **“BIN LESS, RECYCLE MORE!”** and **“RECYCLE STARTS WITH YOU!”** which has been successfully kicked off and shall continue in the future.

In achieving the low carbon and green learning institution status, UGC does not work in silos. There are other units within UiTM that coincide with UGC initiatives towards greening and sustaining UiTM such as the Institute for Biodiversity and Sustainable Development (IBSD). IBSD was founded in 2020 as the backbone to SDGs impact activities and initiatives for UiTM. IBSD focuses on strengthening fundamental and applied research in biodiversity and sustainable development. Other units, for instance, the Research Management Centre (RMC), Business Innovation & Technology Commercialisation Centre (BITCOM), Accounting Research Institute (ARI), Institute of Infrastructure Engineering and Sustainability Management (IIESM) and most faculties and campuses are directly and indirectly participating in the UiTM journey towards greening the campus. Research on sustainability is normally multidisciplinary as it connects one field with another.

Green campus sustainability is an effort by the universities to create environmentally responsible, resource-efficient, and healthy learning and working environments. It is the responsibility of Warga UiTM in support of UiTM 2025 strategic planning of becoming a Globally Renowned University. This means empowering the youth and UiTM citizens to practice and appreciate sustainability more than ever. Inspiring sustainability collaboration between universities, ministries, industries, agencies, NGOs, NPOs, communities and related stakeholders help UiTM embrace the vision of becoming a green campus. Notwithstanding that, UiTM participation in local and international sustainability ratings has proven our seriousness to gain the needed recognition. The goal is to create a sustainable campus that serves as a model for sustainable living and learning, and to educate the next generation of sustainability leaders.

### Green Campus Sustainability Strategic Plan

The Green Campus Sustainability Strategic Plan 2022 – 2025 outlines UiTM’s long-term goals, objectives, and strategies for promoting environmental and social responsibility. A well-designed sustainability strategic plan can help UiTM to improve the environmental and social impact, mitigate risk and ensure compliance with relevant laws and regulations, enhance reputation and brand image, foster innovation, and competitiveness, attract more students, and retain customers, employees, and other stakeholders, as well as increase operational efficiency and reduce costs.

The plan incorporates a detailed analysis of UiTM current sustainability performance, identifies areas for improvement, and sets targets and metrics to track progress over time. The strategic plan will map UiTM sustainability activities (by cluster) to the 17 SDGs towards achieving the best ranking of sustainability-related ratings through UI GreenMetric, LCC2030C, QS Sustainability, and the SDGs Impact. The plan should be regularly reviewed and updated to ensure that it supports the UiTM 2025 strategic plan and remains relevant and responsive to the changing needs and expectations of UiTM stakeholders. The plan should also aim at improving UiTM’s visibility and sustainability lifestyle. The initiatives cover the following themes:

- capacity building for low carbon campus
- sustainable waste management in campus
- energy in buildings
- passive and low carbon transportation
- enhance water conservation and practice low-water landscape strategies in campus
- green lifestyle awareness.

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