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UNIVERSITI MALAYSIA SABAH SUSTAINABILITY REPORT 2024



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Preface by the Assistant Vice-Chancellor (Strategic) for Universiti Malaysia Sabah's Sustainability Report 2024



As we present the Universiti Malaysia Sabah (UMS) Sustainability Report for 2024, we are proud to reflect on the progress we have made in embedding sustainability into the very fabric of our university's operations and ethos. Central to our efforts is the EcoCampus initiative, a core value that guides UMS in creating a sustainable, eco-friendly, and resource-efficient campus environment. This year, we have made remarkable strides towards transforming UMS into a leading model of sustainable development; ecological protection; environmental compatibility; resource conservation; and environmental stewardship.

In 2024, UMS continued to strengthen its commitment to EcoCampus principles, integrating sustainability into all aspects of campus life – from energy-efficient infrastructure and waste reduction strategies to green research and sustainable academic programs. These efforts are not only enhancing the quality of life on our campus but also equipping our students and staff with the knowledge and skills needed to contribute meaningfully to global sustainability goals.

A milestone achievement this year is UMS's significant progress in the UI GreenMetric World University Rankings. In 2024, UMS has improved its standing, reaffirming our position as a prominent institution in sustainability with the rank of 51 at the global level. This achievement reflects our continuous dedication to enhancing environmental performance, promoting green practices, and fostering a culture of sustainability. It is a testament to the collective efforts of our community in implementing sustainable solutions that contribute to the well-being of both the campus and the wider community.

This report outlines the various initiatives and accomplishments that have propelled UMS forward in its sustainability journey, including advancements in energy management, waste reduction, water conservation, and green mobility. It also highlights the transformative role that our students, faculty, and staff play in driving UMS's sustainability agenda, ensuring that our EcoCampus values are not only upheld but continuously evolved to meet the challenges of the future.

As we move forward, UMS remains deeply committed to advancing sustainability and fostering an environment that supports innovation, inclusivity, and global responsibility. Our success in 2024 is just the beginning, and we are excited to continue this journey together with all stakeholders, as we work towards a more sustainable and resilient future.

We invite you to explore the detailed achievements and future goals outlined in this report, and we thank you for your continued support in making Universiti Malaysia Sabah a leader in sustainability.

Professor Dr. Mohammad Saffree Jeffree
Assistant Vice-Chancellor (Strategic)
Universiti Malaysia Sabah

Preface by the Director of EcoCampus Management Centre for Universiti Malaysia Sabah's Sustainability Report 2024



As we reflect on the journey of 2024, Universiti Malaysia Sabah (UMS) continues to strengthen its commitment to environmental, social, and economic sustainability. This year has been pivotal in reinforcing our role as a leader in integrating sustainable practices within higher education. We have made significant strides toward creating a campus that not only contributes to academic excellence but also upholds the principles of sustainability in every aspect of our operations, research, and community engagement.

In 2024, UMS has intensified its efforts to align with global sustainability goals, incorporating innovative solutions and programs that address the pressing challenges of our time, from climate change to social equity. Through numerous initiatives, UMS has fostered a culture of environmental stewardship, resilience, and inclusivity.

These efforts have been realized through active collaboration within the university and with local communities, stakeholders, and government bodies, underscoring the importance of a collective approach to achieving sustainable development.

This report encapsulates our ongoing commitment and showcases the progress we have made across several key areas: reducing our carbon footprint, promoting resource efficiency, supporting biodiversity, and enhancing social well-being. We have also focused on advancing sustainable research and development, empowering students and staff to become agents of positive change within and beyond our university.

Looking ahead, we recognize that sustainability is an ever-evolving journey that requires continuous improvement, innovation, and a shared responsibility. As we move into the future, UMS remains dedicated to fostering an inclusive, sustainable world, one where the actions of today create a better tomorrow for generations to come.

We are proud of the achievements outlined in this report, and we invite you to explore how Universiti Malaysia Sabah is making a meaningful and lasting impact on sustainability.

Professor Dr. Awangku Hassanal Bahar Pengiran Bagul
Director
EcoCampus Management Centre

1.0 SETTING AND INFRASTRUCTURE

1.1 Setting and Infrastructure

This section outlines the achievements of UMS in the **Setting and Infrastructure** category, showcasing its initiatives toward building a campus environment that supports sustainability. These initiatives include thoughtful land utilization, eco-friendly construction, preservation of open spaces, and infrastructure projects that align with relevant Sustainable Development Goals (SDGs).

The university continues to show a firm commitment to sustainability, aligning its campus development and contributing significantly to SDGs 9 (Industry, Innovation, and Infrastructure), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 14 (Life Below Water), 15 (Life on Land), and 17 (Partnerships for the Goals). The university's EcoCampus Management Centre serves as the focal point for this agenda, embedding sustainable development and environmental compatibility into its core operations.



Figure 1.1: A map of Sabah with indications to all UMS campuses



(i)



(ii)



(iii)

Figure 1.2: (i) An illustration of UMS Labuan Branch Campus, (ii) an illustration of UMS Main Campus in Kota Kinabalu, and (iii) an illustration of UMS Sandakan Branch Campus



Figure 1.3: An ariel photograph of UMS' Rural Medical Education Centre Kudat (RMEC)

The university's planning reflects a deliberate integration of sustainability into infrastructure expansion. the university operates from multiple locations: the main campus in Kota Kinabalu, branch campuses in Labuan and Sandakan, and the Rural Medical Education Centre in Kudat (Figures 1.1 to 1.3). This distributed campus system enables broader access to higher education throughout Sabah, promoting inclusion and contributing to sustainable regional development. Academic disciplines are intentionally concentrated in specific campuses (such as agriculture in Sandakan and international finance in Labuan) to drive regional economic advancement in alignment with SDG 9.

The university's main campus is situated about 10 kilometers from Kota Kinabalu city centre, maintaining a balance between an urban location and the preservation of a natural setting (Figures 1.4 to 1.5). Remarkably, approximately 96% of the total campus area is dedicated to forested zones, cultivated vegetation, and water-absorbing landscapes, with 34% preserved specifically as forest cover. These green areas serve as biodiversity conservation, carbon removal, and the provision of essential ecosystem services (Figures 1.6 to 1.7).

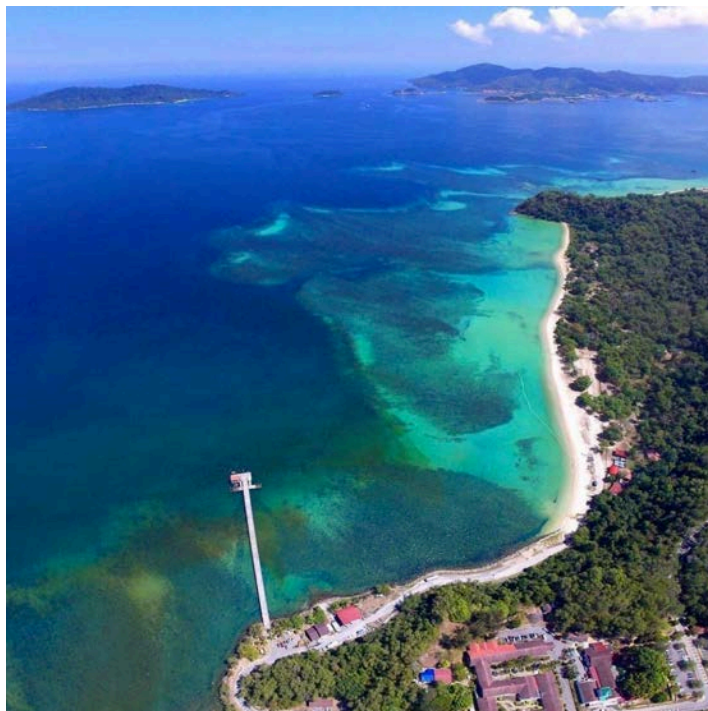


Figure 1.4: UMS main campus surrounded by nature both marine and terrestrial



Figure 1.5 UMS Main Campus, Kota Kinabalu

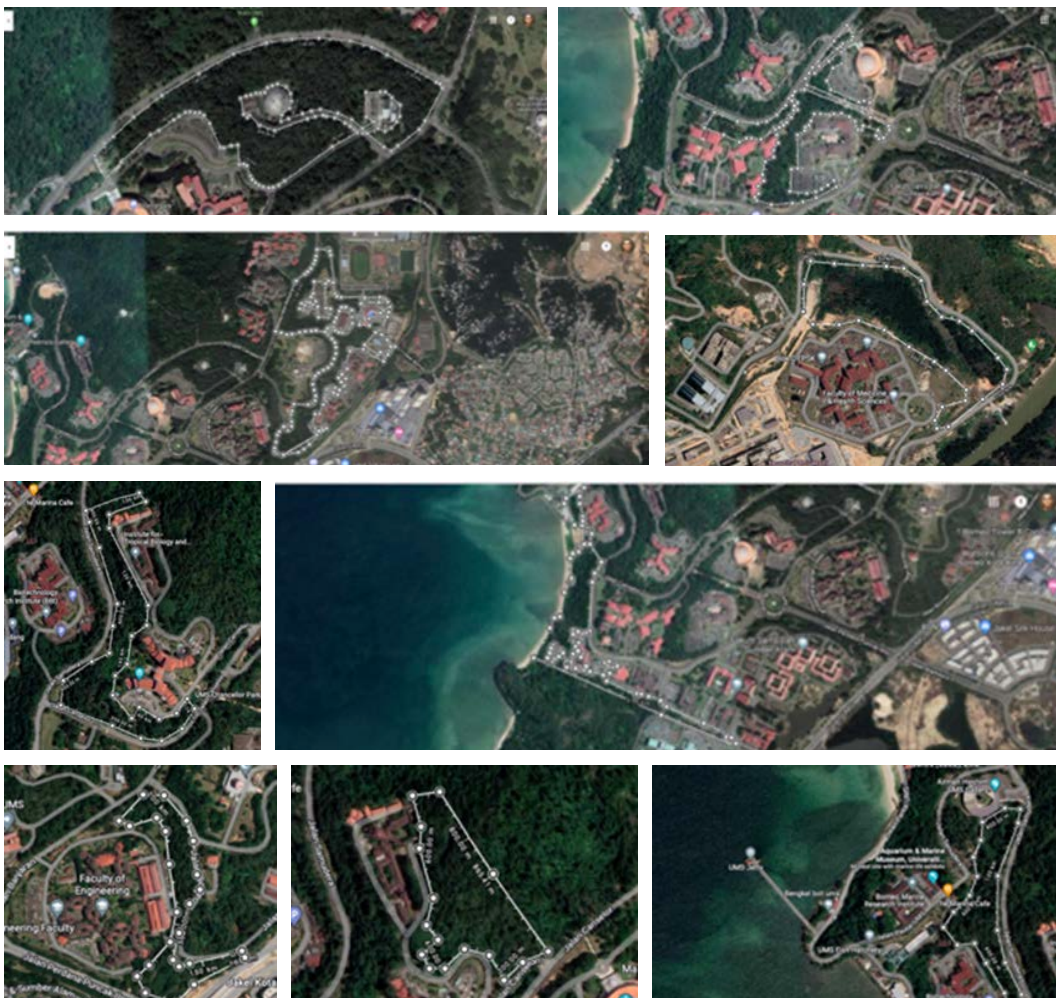


Figure 1.6: Google map showing the total area on UMS Main Campus covered in planted vegetation for the calculation of campus area covered in forest



Figure 1.7: Google map showing the total area on UMS Labuan Branch campus covered in forest vegetation

The university adopts a strategic approach to campus planning and infrastructure development, placing emphasis on responsible land use, the preservation of green spaces, and the establishment of specialized academic hubs. This approach ensures that the university's expansion remains aligned with sustainability principles while balancing development needs with ecological stewardship. The protection of forested areas, combined with infrastructure projects that limit environmental impact, demonstrates the university's dedication to environmental compatibility.

Such initiatives directly advance several SDGs. SDG 9 (Industry, Innovation, and Infrastructure) is supported through the creation of specialized knowledge hubs, while SDG 11 (Sustainable Cities and Communities) is addressed by integrating campus facilities responsibly within urban settings. Additionally, SDGs 12, 14, and 15 are promoted through the conservation of natural resources and the protection of biodiversity. The decentralized campus structure also contributes to SDG 17 (Partnerships for the Goals) by encouraging collaboration across regions to improve educational access and foster regional growth.

By embedding sustainability into both infrastructure planning and daily campus operations, the university upholds the core EcoCampus values of sustainable development and environmental responsibility. These actions facilitate balanced growth, safeguard ecosystems, and ensure a lasting commitment to environmental stewardship, ultimately reinforcing the university's role as a leader in creating a sustainable campus environment.

2.0 RESOURCE MANAGEMENT

2.1 Energy and Climate Change

This section presents the achievements of UMS in the **Energy and Climate Change** category, emphasizing its initiatives in energy efficiency, renewable energy adoption, and climate action. These efforts are closely aligned with relevant SDGs and reflect the university's strong commitment to sustainable practices.

In line with federal government standards and guided by its own sustainable energy plan and practices since 2013 and Sustainable Energy Management Policy since 2018, the university actively works to minimize energy consumption and reduce environmental impact through the use of energy-efficient appliances. The university prioritizes the replacement of outdated or damaged equipment – particularly those over five years old, subject to budget availability – with modern, energy-saving alternatives that deliver better performance while consuming less electricity.

Significant progress has been made in upgrading campus facilities with high-efficiency electrical equipment. For example, 50% of centralized air-conditioning systems in selected buildings have been replaced with split-unit air conditioners rated three stars or above for energy efficiency. In addition, 75% of desktop computers have been substituted with laptops through the Bring Your Own Device (BYOD) Program, encouraging more energy-conscious computing. Lighting systems have also undergone a complete transformation, with all fixtures converted to LED or fluorescent tubes renowned for their energy-saving benefits. Furthermore, all traditional overhead projectors have been replaced with LCD projectors, further enhancing energy efficiency across campus.



Figure 2.1: Installed 3-Star rating Split Unit air-conditioner



Figure 2.2: The preference of laptops over desktops based on energy efficiency feature



Figure 2.3: The use of energy efficient florescent and LED lights

These efforts highlight the university's dedication to SDG 7 by actively reducing energy consumption and advancing the adoption of clean energy technologies. Through the prioritization of energy-efficient appliances, the university also contributes to SDG 12, encouraging responsible consumption and production while reducing its overall environmental footprint.

To further enhance sustainability, the university integrates smart building technologies aimed at optimizing building performance, improving safety, and supporting sustainable operations. In compliance with Malaysian regulations, all buildings are equipped with centralized fire alarm and extinguishing systems, emergency telephones, and internal ventilation systems to ensure the safety and well-being of occupants. Beyond these regulatory requirements, the university has introduced additional measures such as secure entry door systems and CCTV surveillance to strengthen campus safety and access control.

Currently, around 81% of the university's major buildings are fitted with smart building technologies, as shown in the table below. This extensive adoption reflects the university's alignment with SDG 9 by promoting resilient, safe, and efficient infrastructure. At the same time, it supports SDG 11 by fostering sustainable, well-managed campus environments that prioritize both operational efficiency and the welfare of the university community.

No	Appliance	Percentage	Remarks
1	Air-Conditioner	50%	Replacing energy inefficient centralized air-conditioning in certain buildings with energy efficient split air-conditioning units with the energy rating of three-star and above.
2	Computer	75%	Replacement of desktop computers with laptops through the university's BYOD Program.
3	Florescent / LED Light tubes	100%	Replacing of lighting fixture with LED and florescent light tubes in building.
4	Projector	100%	Replacing old overhead projectors with LCD projectors.
	Average	81%	

The university is dedicated to expanding its use of renewable energy as part of its strategy to lower its carbon footprint and advance environmental sustainability. In line with the Renewable Energy Act 2011, which governs renewable energy production in Malaysia, the university sources its electricity from Sabah Electricity Sdn. Bhd. (SESB), the sole public energy provider in the state.

Currently, about 10% of SESB's total energy generation comes from renewable sources, including biomass (39,500 kW), solar (7,880 kW), hydro (6,500 kW), and biogas (9,400 kW). Consequently, approximately 10% of the university's overall energy consumption is derived from these cleaner energy options. In addition, the university operates a wind turbine system at its Peak Meteorological Data Logger Station, further supplementing its renewable energy usage.

Although large-scale renewable energy production on campus is not yet permitted, the reliance on SESB's renewable energy supply reflects its commitment to SDG 7 by increasing the proportion of clean energy in its consumption mix. At the same time, this shift away from fossil fuels supports SDG 13 by helping to reduce greenhouse gas emissions and contributing to global climate change mitigation efforts.



Figure 2.4: Sabah's biomass energy generation plant located in the district of Sandakan



Figure 2.5: Sabah's largest solar energy generation plant located in the district of Kudat



Figure 2.6: University's bus stops and traffic indicators, and standalone solar energy system



Figure 2.7: Sabah hydro power plant in the district of Tenom



Figure 2.8: Sabah's biogas energy generation plant located in the district of Sandakan



Figure 2.9: Wind turbine system on UMS Peak to supply electricity to meteorological data logger

The university maintains a proactive approach to monitoring and managing its electricity consumption, with the aim of identifying opportunities for energy conservation and reducing its overall environmental footprint. By systematically tracking usage patterns throughout the year, the university is able to gather valuable insights into its energy performance and implement targeted strategies to enhance efficiency across its various facilities, from lecture halls and laboratories to student accommodations and administrative offices.

An assessment of electricity usage for the period of January to October 2024 compared to the same months in 2023 reveals a varied trend. Certain months registered a decline in consumption, such as January (-4.5%), March (-1.3%), and October (-20.9%), while others recorded increases, including May (+6.2%), August (+6.6%), and September (+8.4%). These fluctuations are influenced by multiple factors, such as seasonal climate variations affecting cooling requirements, the intensity of academic and research activities, and the operational demands of campus services and events.

Overall, the total electricity consumption for January to October 2024 shows a slight decrease of 0.2% compared to the previous year. This marginal reduction indicates that while energy demand remains high during peak academic and operational periods, the university's ongoing initiatives – such as upgrading to energy-efficient equipment, optimizing the use of facilities, and integrating smart building technologies – are beginning to offset increased usage in certain months. This balance reflects the university's commitment to responsible energy management as part of its broader sustainability goals.

Table 2.1: The university's monthly electricity usage trends and percentage change between 2023 and 2024

Month	Percentage Change in Usage (%)
Jan	▼ -4.5
Feb	▲ +2.4
Mac	▼ -1.3
Apr	▲ +3.2
May	▲ +6.2
Jun	▲ +2.1
Jul	▲ +1.4
Aug	▲ +6.6
Sep	▲ +8.4
Oct	▼ -20.9
Nov	N/A
Dec	N/A
Total	▼ -0.2

Source: UMS Maintenance and Development Department

Through active monitoring and management of its electricity consumption, the university reinforces its commitment to SDG 7 by promoting energy efficiency and encouraging responsible energy use. Efforts to reduce electricity demand also support SDG 13 by helping to lower greenhouse gas emissions and contributing to global climate change mitigation.

The university acknowledges that increasing the proportion of renewable energy in its total energy mix is a critical step toward meeting its long-term sustainability objectives. By giving priority to clean energy sources, the university seeks to reduce its dependence on fossil fuels and further limit its carbon footprint. At present, the university sources its renewable energy from SESB, where 10% of the total energy generated comes from renewable sources. This results in a renewable energy supply-to-demand ratio of 10% for the university. While this marks meaningful progress, the university remains committed to identifying and pursuing additional opportunities to raise this percentage in the future.



Figure 2.10: Borneo Post news about renewable energy production in Sabah

By actively expanding its use of renewable energy, the university advances SDG 7 by increasing the proportion of clean energy in its overall consumption and promoting access to sustainable, affordable energy solutions. At the same time, reducing dependence on fossil fuels supports SDG 13 by helping to lower greenhouse gas emissions and contributing to global climate change mitigation efforts.

As a public institution, the university complies with the construction and renovation policies set by the Public Works Department (JKR/PWD) under Malaysia's Ministry of Works. Reflecting the government's sustainability agenda, JKR/PWD introduced a strategic plan in 2015 to enhance the green ratings of public buildings, which led to the formulation of the Polisi Pembangunan Lestari JKR Malaysia 2016-2020.

At the university, the Development and Maintenance Department implements this policy in collaboration with the Chancellery Office and accredited contractors. The university is working towards adopting the Green Building Index (GBI) Rating System, which evaluates buildings based on six key sustainability criteria: (1) sustainable site planning and management, (2) indoor environmental quality, (3) energy efficiency, (4) materials and resources, (5) water efficiency, and (6) innovation. The university's initiatives in green building implementation, aligned with these criteria, are presented in the following table and figures.

Green Building Index (GBI) Environmentally Friendly Feature	Building Implementation Element
Sustainable Site Planning and Management	The university's building blocks are constructed having large open airy spaces. This element would allow heat to be dispersed naturally.
Indoor Environmental Quality	The university's buildings are constructed with natural ventilation outlets to disperse trapped naturally.
Energy Efficiency	The university's buildings are constructed having large indoor atrium. This element would allow heat to be disperse naturally.
	The university's buildings have large windows and light passages.



Figure 2.11: Faculty of Science and Natural Resources building complex with large central atriums



Figure 2.12: Chancellery building with natural ventilation outlets



Figure 2.13: Faculty of Tropical Forestry main building with large indoor atrium

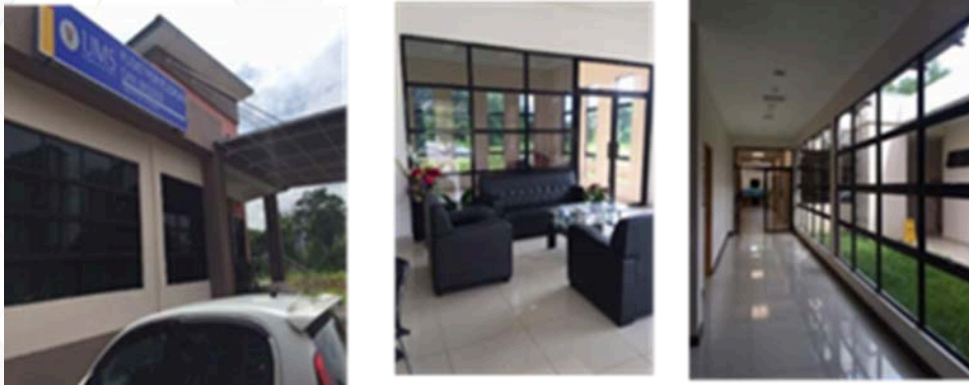


Figure 2.14: Building with large windows and glassed office corridor next to a central building atrium

The university's dedication to sustainability is reflected in its wide-ranging initiatives encompassing energy efficiency, smart building integration, renewable energy adoption, electricity usage monitoring, and green building practices. By upgrading to energy-efficient appliances, increasing the use of renewable energy, and embedding sustainable building principles into its infrastructure, the university not only reduces its environmental footprint but also nurtures a culture of sustainability across its campus operations.

These measures directly support multiple Sustainable Development Goals (SDGs). The university advances SDG 7 (Affordable and Clean Energy) by prioritizing energy efficiency and incorporating renewable sources into its energy mix. The use of smart building technologies and modern, efficient infrastructure contributes to SDG 9 (Industry, Innovation, and Infrastructure) by enhancing the resilience and sustainability of campus facilities. Efforts in responsible consumption, resource optimization, and environmentally conscious construction further align with SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production). Additionally, the university's focus on reducing greenhouse gas emissions through energy conservation and renewable energy usage plays an important role in advancing SDG 13 (Climate Action).

Beyond the SDG framework, these actions reflect the university's EcoCampus core values of conserving resources and protecting the environment. Energy-efficient appliances and smart building systems help lower electricity usage, ensuring the responsible management of natural resources. Increasing renewable energy reliance reduces fossil fuel dependency, helping to curb environmental degradation and improve air quality. Incorporating green building elements into campus design further promotes ecological sustainability by reducing heat retention, enhancing natural ventilation, and maximizing daylight use.

In summary, the university's sustainability strategies highlight its ongoing commitment to energy efficiency, green infrastructure, and responsible resource stewardship. Through continuous improvement and the integration of sustainability into its development policies, the university strengthens its contribution to global environmental conservation while creating a greener, more sustainable campus. These efforts not only align with the SDGs but also safeguard ecological health and resources for the long term, underscoring the university's leadership in advancing sustainability within the higher education sector.

2.2 Waste

This section outlines achievements of UMS in the **Waste** category, showcasing its initiatives in waste reduction, reuse, recycling, and responsible disposal. These efforts, which encompass both organic and inorganic waste management, are closely aligned with relevant SDGs and reflect the university's strong commitment to sustainability. The section also highlights targeted programs aimed at reducing paper and plastic use across the campus community.

The university adopts the 3R principle (Reduce, Reuse, and Recycle) as the foundation of its waste management strategy. A key focus is minimizing paper and plastic consumption through a series of dedicated initiatives. The Paper Use Reduction Program, launched in 2015, promotes the shift to digital documentation via the Sistem Automasi Pejabat (online office automation system) and is supported by a Double-Sided Printing Campaign. Digital learning is further advanced through the e-Pembelajaran Program (iTEL@UMS), which encourages lecturers and students to share lecture notes and assignments online. The Library eBook Program also contributes to reducing paper demand by providing access to a wide collection of digital books.

For plastic reduction, the university implemented the Ban-on-Single-Use-Plastic Program in 2011, beginning with the prohibition of polystyrene food containers. This initiative has since expanded to encourage the use of refillable water bottles and reusable shopping bags. Collectively, these measures support SDG 12 (Responsible Consumption and Production) by fostering sustainable consumption practices and significantly reducing waste generation on campus.



Figure 2.15: The university's online office administration automation system



Figure 2.16: Plastic use reduction campaign by increasing the use of refillable bottles and reusable bags



Figure 2.17: The university's activity on promoting strawless lifestyle

The university monitors the total volume of organic waste generated on campus, which primarily consists of food waste and leaf or plant debris. The majority of this waste originates from campus eateries and dining outlets. In accordance with local regulations, most of the collected waste is transported to the city's designated landfill for disposal.

In 2024, the university recorded the generation of 520 tons of food waste and 104.2 tons of leaf and plant materials, as detailed in the following Table 2.2.

Table 2.2: Total organic waste produced by type

No	Type of Organic Waste	Total Produced (Ton)
1	Food Waste	520
2	Leaf & plant materials	104.2

The university treats organic waste through a combination of landfill disposal and recycling. In 2024, a total of 520 tons of food waste and 84.2 tons of leaf and plant materials were directed to landfills, while an additional 20 tons of leaf and plant materials were recycled.

Table 2.3: Toxic waste management and treatment by type

No	Type of Toxic Waste	Amount (Ton)						
		Total	Landfill	Reduced	Reused	Recycled	Downcycled	Upcycled
1	Food waste	520	520	N/A	N/A	Cooking oil	N/A	N/A
2	Leaf & plant materials	104.2	84.2	N/A	N/A	20	N/A	N/A

The university manages organic waste through multiple treatment methods, such as installing oil and grease traps, recycling used cooking oil, and conducting composting activities, as detailed in Table 2.4 below.

Table 2.4: Sources of organic waste and corresponding treatment methods

No	Source of Waste	Treatment
1	Eating outlets	Licensed food & beverage businesses operating a kitchen shall install organic oil/grease traps to prevent being part of sewage. Used cooking oil are sold to recyclers. Other organic waste are collected and disposed in designated garbage bins, which would then be collected by the respective town hall or district councils to be disposed by the City Hall at designated landfill sites.
2	Landscaping Sites	Appointed landscaping contractors shall separate large trunks and branches from other leaves/organic waste. The leaves/organic landscape debris shall be reused at other planted location as natural composting materials.
3	Study Plots	Leaves/organic waste shall be recycled through composting processes and reuse as fertilizer in on-going academic activities at the Sandakan branch campus.



Figure 2.18: Organic oil/grease trap at eating outlets with kitchens



Figure 2.19: Segregated/recycle bins at various departments and facilities within the university



Figure 2.20: Used cooking oil from eateries were purchased by off-campus recyclers



Figure 2.21: leaves (eg. grass)/organic waste at landscaping sites and study plots



Figure 2.22: Composting station at UMS Sandakan Branch Campus

The university monitors the total volume of inorganic waste generated on campus, which includes paper, wood, metal, and plastic. Paper waste is typically handled by individual faculties and institutes, while wood and metal furniture are managed by the Bursar Department. Both soft and hard plastics are overseen by cleaning contractors appointed by the university. In 2024, the total inorganic waste generated amounted to 26.42 tons, as shown in the Table 2.5 below.

Table 2.5: Total inorganic waste produced by type

No	Type of Inorganic Waste	Total Produced (Ton)
1	Paper	6
2	Wood (Furniture)	7.23
3	Metal (Furniture, etc)	1.19
4	Soft Plastic	12
5	Hard Plastic	0

In 2024, a total of 6 tons of paper were recycled, while wood waste saw 3.62 tons reused and 3.61 tons recycled. Metal waste management included 0.6 tons reused and 0.59 tons recycled. Furthermore, 12 tons of soft plastic were recycled.

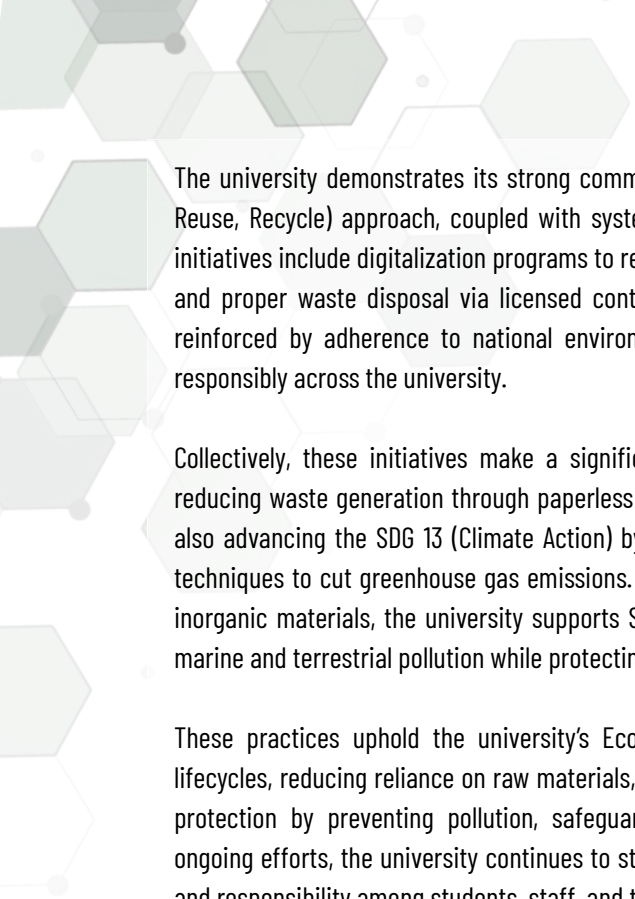
Table 2.6: Toxic waste management and recycling by material type

No	Type of Toxic Waste	Amount (Ton)						
		Total	Landfill	Reduced	Reused	Recycled	Downcycled	Upcycled
1	Paper	6	N/A	N/A	N/A	6	N/A	N/A
2	Wood (Furniture)	7.23	N/A	N/A	3.62	3.61	N/A	N/A
3	Metal (Furniture, etc)	1.19	N/A	N/A	0.6	0.59	N/A	N/A
4	Soft Plastic	12	N/A	N/A	N/A	12	N/A	N/A
5	Hard Plastic	N/A	N/A	N/A	N/A	N/A	N/A	N/A

At the university, inorganic waste is primarily generated from landscaping and renovation activities. Its management is guided by sustainable waste plan and practices since 2013, the university's Sustainable Waste Management Policy (Dasar Pengurusan Sisa Lestari) in 2020 and two key government regulations: (i) the Environmental Quality (Scheduled Wastes) Regulations 2005, and (ii) the Solid Waste and Public Cleansing Management Act 2007. These regulations require that inorganic waste to be properly handled and processed at designated facilities, in accordance with the procedures outlined in the table below.

Table 2.7: Sources of inorganic waste and corresponding treatment methods

No	Source of Waste	Treatment
1	Landscape Works	Landscaping works produce soil-based waste and wood-base waste. The university implements waste disposal as its non-recyclable inorganic waste treatment through its contractors and respective permit holders. As stipulated in the respective contracts, the contractors are to transport the landscape waste out of the campuses and be disposed at Kota Kinabalu City Hall (DBKK) approved disposal sites. The university extensively treats its inorganic waste that have been produced through landscaping works.
2	Renovations Works	Renovation works produce wastes that are disposed by the licensed renovation contractors according to guidelines established by both Federal and State governments. The university extensively treats its inorganic waste that have been produced by renovation works through its contractors and respective permit holders.



The university demonstrates its strong commitment to sustainable waste management through a structured 3R (Reduce, Reuse, Recycle) approach, coupled with systematic monitoring and treatment of both organic and inorganic waste. Key initiatives include digitalization programs to reduce paper usage, a ban on single-use plastics, composting of organic waste, and proper waste disposal via licensed contractors – all aimed at minimizing environmental impact. These efforts are reinforced by adherence to national environmental regulations and internal policies, ensuring that waste is managed responsibly across the university.

Collectively, these initiatives make a significant contribution to SDG 12 (Responsible Consumption and Production) by reducing waste generation through paperless systems, recycling efforts, and sustainable consumption practices. They are also advancing the SDG 13 (Climate Action) by decreasing landfill waste, encouraging recycling, and applying composting techniques to cut greenhouse gas emissions. In addition, by minimizing plastic waste and ensuring the proper disposal of inorganic materials, the university supports SDG 14 (Life Below Water) and SDG 15 (Life on Land), helping to prevent both marine and terrestrial pollution while protecting biodiversity.

These practices uphold the university's EcoCampus core values by conserving resources through extended material lifecycles, reducing reliance on raw materials, and fostering a circular economy. At the same time, they promote ecological protection by preventing pollution, safeguarding ecosystems, and preserving environmental integrity. Through these ongoing efforts, the university continues to strengthen its sustainability agenda while cultivating environmental awareness and responsibility among students, staff, and the wider community.

2.3 Water

This section presents the achievements of UMS in the **Water** category, highlighting its initiatives in water conservation, efficient resource management, and pollution prevention. These efforts are closely aligned with relevant SDGs and reflect the university's dedication to sustainability. The scope includes programs and practices related to water recycling, rainwater harvesting, optimization of treated water usage, and awareness campaigns designed to foster responsible water consumption across campus.

The university actively advances water conservation through the Tagal System, a traditional Dusun practice implemented near the student center to improve water quality and promote long-term resource sustainability (Figure 2.23). A central strategy is the use of natural water sources for non-potable applications such as irrigation and aquaculture. By making use of on-campus lakes, the university reduces its reliance on treated water, reserving it for essential purposes while simultaneously supporting ecological protection (Figure 2.24).

To cultivate a culture of water conservation, the university implements administrative initiatives such as the 5S and EKSA programs, which improve both awareness and efficiency in water usage among staff. Awareness efforts, including the university's Utility Savings Campaign, further engage staff and students in responsible water consumption, contributing to SDG 12.8 by promoting sustainable resource use. The introduction of online expenditure savings guidelines encourages all departments to integrate water-saving practices into daily operations (Figure 2.25). In addition, outreach via various communication platforms, including YouTube, helps extend these sustainability messages to the wider community, supporting SDG 17 (Partnerships for the Goals) (Figure 2.26). Collectively, these initiatives demonstrate the university's strong commitment to sustainable water management and the responsible stewardship of natural resources.



Figure 2.23: A signboard denoting the implementation of the Tagal system next to one of the many lakes on UMS main campus located next to the Students' Affair Department



Figure 2.24: A natural lake next to the Faculty of Science and Technology on UMS main campus that is used to water planted flora in the university by appointed contractors



Figure 2.25: Water saving tips

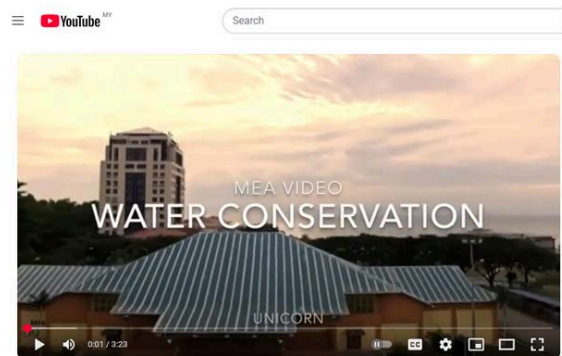


Figure 2.26: Youtube Video on Water Conservation

The university places water recycling at the forefront of its sustainability strategy, making a direct contribution to SDG 6 (Clean Water and Sanitation), SDG 14 (Life Below Water), and SDG 15 (Life on Land). By reducing reliance on treated water and promoting ecological preservation, these initiatives underscore the university's commitment to resource efficiency and environmental stewardship.

A notable example is the rainwater harvesting system installed at the Faculty of Science and Natural Resources and the Institute for Tropical Biology and Conservation. Collected rainwater is reused for purposes such as plant irrigation and equipment cleaning, reducing dependence on piped water by up to 60% (Figure 2.27). Another innovative measure is the aquaponic system at the Marine Biology Research Institute, which integrates aquaculture and hydroponics to recycle a minimum of 10 m³ of water daily. This system supports sustainable fish farming and plant cultivation while safeguarding aquatic ecosystems (Figure 2.28). In addition, certain laboratories within the Faculty of Science and Natural Resources recycle condensate from air conditioners into distilled water, thereby decreasing the extraction of water from natural sources.

The university is also exploring greywater recycling in student residential facilities, such as the Kingfisher accommodation. This system reuses wastewater from sinks and showers for non-potable purposes, including toilet flushing and landscape irrigation, with the goal of cutting treated water usage by 10%. Complementing these initiatives is the promotion of water-efficient fixtures, such as sensor-activated taps and dual-flush toilets, which can conserve up to 50% of water.

Through these integrated efforts, the university demonstrates strong leadership in sustainable water management. By aligning its practices with the SDGs, the university not only lessens its environmental impact but also fosters a culture of conservation among students and staff, thereby positioning itself as a leading example of responsible water resource management in higher education.



Figure 2.27: Rainwater harvest at the Faculty of Science and Natural Resources and Institute for Tropical Biology and Conservation



Figure 2.28: Aquaponic system developed at for Marine Biology Research Institute

The university has adopted a range of water-efficient appliances to support sustainability efforts and reduce overall water consumption, in alignment with SDG 6 (Clean Water and Sanitation). These installations include sensor-activated faucets, push-button faucets, ceramic cartridge faucets, and dual-flush toilet systems, all of which contribute to improved water efficiency across campus.

Sensor-activated faucets, predominantly installed in new laboratory facilities, automatically control water flow and shut off when not in use, effectively minimizing wastage while enhancing hygiene and user convenience (Figure 2.29). In older campus buildings, push-button faucets and ceramic cartridge faucets are utilized as cost-effective water-saving solutions. Ceramic cartridge faucets help reduce water usage by approximately 6%, while push-button faucets (commonly found in laboratories, kitchens, and pantries) are designed to limit excess water consumption (Figure 2.30). Additionally, dual-flush toilet systems have been installed in restrooms, enabling users to select either a low or high-water flow depending on need. This system can lower water usage by up to 50% per flush, significantly reducing treated water demand on campus (Figure 2.31).

At present, 75% of the university's water fixtures are classified as water-efficient, with plans in place to upgrade the remaining 25% to further improve sustainability performance. These measures not only contribute to lowering operational costs but also enhance the university's standing in the sustainability ranking by demonstrating a firm commitment to responsible water management. By reducing treated water consumption, the university also helps preserve local water resources and ecosystems, reinforcing its role as a leader in environmental sustainability within the higher education sector.



Figure 2.29: Sensor-embedded faucets



Figure 2.30: Push button type faucets and low-flow ceramic cartridge type faucets



Figure 2.31: Toilet with low/high flow function

The university manages treated water consumption efficiently through careful resource allocation and the adoption of sustainable practices. Supplied by the Talibong and Babagon Water Treatment Plants, the reservoirs at the Kota Kinabalu and Labuan campuses ensure that water quality meets national standards while supporting SDG 6 (Clean Water and Sanitation). By reserving treated water exclusively for potable and essential purposes, the university minimizes waste and reduces environmental impact, with more than 75% of total water use on campus comprising treated water.

The implementation of advanced metering systems allows for accurate monitoring, enabling efficient water management and ongoing refinement of conservation strategies. Between 2013 and 2021, the university successfully reduced its treated water consumption by 50%, underscoring its strong commitment to sustainability. The use of natural water sources for non-potable applications has further decreased reliance on treated water, reinforcing the university's dedication to responsible resource management and conservation.



Figure 2.32: A treated water reservoir located near the Students Affair Department on UMS Kota Kinabalu Campus



Figure 2.33: A treated water tower located on UMS Labuan Branch Campus.

The university upholds strict compliance with national and local regulations, including the Solid Waste and Public Cleansing Management Act 2007, to prevent water pollution. Among its key measures is the installation of oil and grease traps in all campus kitchens and food outlets, effectively capturing contaminants before they enter the drainage system, thereby reducing pollution and protecting aquatic ecosystems. In addition, laboratories operate under the university's Integrated Laboratory Safety Guidelines, which enforce rigorous protocols for the proper handling and disposal of chemical waste, ensuring the protection of terrestrial ecosystems.



Figure 2.34: Organic oil/grease trap at eating outlets with kitchens

Established in 2010, the Water Research Unit plays a key role in monitoring and researching water quality to identify pollution sources and implement effective corrective measures. By maintaining the ecological balance of campus water bodies, the university advances its commitment to SDGs 14 (Life Below Water) and 15 (Life on Land), while strengthening sustainability efforts. These proactive measures ensure responsible resource management and contribute to long-term environmental protection.

The university also cultivates a strong culture of sustainability through awareness campaigns and educational programs focused on water conservation and pollution prevention. By actively involving students and staff, the university encourages collective action toward environmental stewardship, reinforcing its alignment with SDG 17 (Partnerships for the Goals). This integrated approach – combining policy, technology, research, and community participation – demonstrates the university's dedication to sustainable water management.

The university's holistic strategy reflects a deep commitment to sustainability, aligning with SDG 6 (Clean Water and Sanitation), SDG 12 (Responsible Consumption and Production), SDG 14, SDG 15, and SDG 17. Initiatives such as rainwater harvesting, aquaponic systems, treated water optimization, and the installation of water-efficient appliances have significantly reduced reliance on treated water while improving overall resource efficiency. These actions not only minimize water waste but also enhance ecological resilience, ensuring the long-term sustainability of water resources.

By optimizing water usage and prolonging the lifespan of natural water sources, the university advances its core principle of resource conservation. At the same time, it promotes ecological protection by preventing water pollution and safeguarding aquatic and terrestrial ecosystems. Beyond infrastructure upgrades, the university actively nurtures a sustainability-minded community through awareness initiatives, administrative programs, and partnerships with external stakeholders. By embedding sustainable water management into both its operational and academic frameworks, the university continues to make meaningful contributions toward environmental responsibility and long-term resource stewardship.

2.4 Transport

This section presents the achievements of UMS in the **Transport** category, highlighting its initiatives to promote sustainable transportation, reduce carbon emissions, and ease traffic congestion. These efforts are aligned with relevant SDGs and reflect the university's ongoing commitment to environmental sustainability. The scope covers vehicle management, alternative transportation options, pedestrian-friendly infrastructure, and policies designed to reduce dependency on private vehicles within the campus.

In compliance with Malaysian development regulations, the university allocates exactly 30% (148,641 m²) of its 491,671 m² built-up area for parking. Given the total main campus area of 3,754,000 m², this represents just 4.0% of the campus land – calculated at a ratio of 0.0396 – falling within the recommended range of 1% to 4%. This allocation ensures that parking facilities do not dominate the campus landscape, leaving substantial space for green areas, academic buildings, and recreational facilities.

The university's parking management strategy supports its broader vision of sustainable urban planning. By limiting land dedicated to parking, the university reduces the negative environmental impacts associated with extensive parking lots, such as increased heat retention and loss of green cover. This approach fosters a more pedestrian-friendly campus, alleviates traffic congestion, and improves air quality – contributing directly to SDG 11 (Sustainable Cities and Communities) by promoting inclusive, safe, resilient, and sustainable environments.

Furthermore, restricting the footprint of parking areas helps preserve natural habitats and maintain biodiversity, ensuring more land remains dedicated to green spaces and wildlife protection. This practice aligns with SDG 15 (Life on Land), demonstrating that responsible urban development can be effectively balanced with ecological conservation.

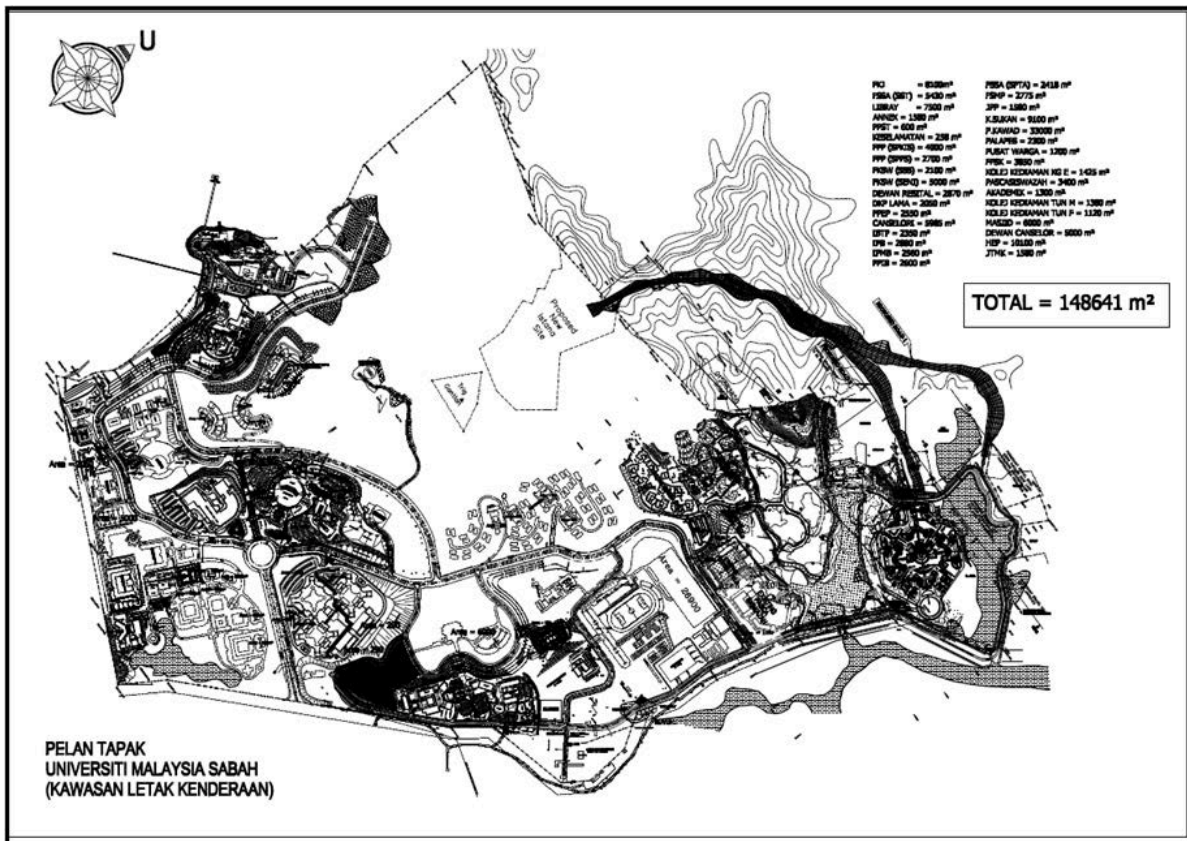


Figure 2.35: A map of the university's main campus parking areas

In 2024, the university maintains a sustainable vehicle-to-population ratio of 0.066, with a total of 1,714 vehicles (comprising 155 university fleet vehicles, 1,349 registered private cars for daily entrance, and 210 registered private motorcycles) serving a campus population of 25,654 people. This figure falls within the recommended range of 0.045 – 0.125, ensuring a balanced approach that meets mobility needs while minimizing environmental impact. By regulating the number of vehicles allowed on campus, the university helps to prevent traffic congestion and reduce unnecessary fuel consumption, contributing to a more sustainable campus environment.

Limiting vehicle numbers also leads to lower greenhouse gas emissions, reduced air pollution, and improved pedestrian and cyclist accessibility, aligning with SDG 13 (Climate Action). This approach supports SDG 11 (Sustainable Cities and Communities) by fostering a cleaner, safer, and more efficient campus environment that prioritizes the well-being of students and staff. The university further promotes alternative transportation options such as walking, cycling, and carpooling to decrease its overall carbon footprint.

Through regular monitoring and reporting of vehicle usage, the university ensures its transportation policies remain effective and adaptable to future sustainability needs. By embedding environmental considerations into transport planning, the university optimizes resource use while reinforcing its commitment to responsible urban development and ecological preservation.

Table 2.8: Total number of vehicle (cars and motorcycles) divided by total campus’ population

No. of UMS fleet of vehicles	155
No. of registered private cars for daily entrance	1,349
No. of private motorcycles registered by UMS Security Services	210
Total people at UMS = number of UMS students + number of UMS staffs = 23,411 + 2,243 = 25,654 people	
Total persons per vehicle = 1,714/25,654 = 0.066	

The university provides a free shuttle bus service to facilitate campus mobility while minimizing environmental impact. Operated by the Maintenance and Development Department, the buses run on a biodiesel blend, offering a more sustainable alternative to conventional diesel. This service ensures efficient transportation within the main campus, reducing dependence on private vehicles and easing traffic congestion. By offering accessible and reliable transport, the shuttle system strengthens campus connectivity and directly supports SDG 11 (Sustainable Cities and Communities). Operating on fixed routes and schedules, it serves both on-campus and off-campus students, promoting the adoption of sustainable travel choices.

The use of biodiesel-blended fuel also contributes to SDG 13 (Climate Action) by reducing greenhouse gas emissions and advancing the university's environmental objectives. This initiative reflects the university's commitment to eco-friendly transportation solutions while ensuring that the mobility needs of students and staff are met in a sustainable manner.



Figure 2.36: UMS own shuttle bus services for students between key locations in Kota Kinabalu



Figure 2.37: General route of a shuttle bus at Kota Kinabalu campus

The university has introduced a Zero Emission Vehicle (ZEV) policy to advance sustainable transportation across its campuses. This initiative features electric bicycles, electric buggies, and conventional bicycles at branch campuses, offered at discounted rates and free of charge during special events. These alternatives provide students, staff, and visitors with an environmentally friendly option to replace fossil fuel-powered transport, thereby reducing dependence on conventional motor vehicles.

By promoting the use of electric and pedal-powered vehicles, the university significantly reduces greenhouse gas emissions and air pollution, supporting SDG 13 (Climate Action). The policy also improves mobility and accessibility within the campus, contributing to SDG 11 (Sustainable Cities and Communities). Through the provision of ZEVs, the university ensures that campus transportation remains practical, affordable, and environmentally sustainable.



Figure 2.38: Electric pedal assisted bicycles



Figure 2.39: The use of electric-power buggies for visitors around UMS main campus



Figure 2.40: Students' bicycle at UMS Sandakan branch campus



Figure 2.41: ZEV designated lanes

The university has implemented a range of innovative programs aimed at reducing parking demand and promoting sustainable land use. Measures such as reverse parking campaigns, optimized use of road reserves, and the temporary repurposing of parking areas have resulted in a 10-30% reduction in parking demand, particularly during semester breaks. These strategies make better use of existing parking capacity, reducing the need for additional infrastructure development.

The reverse parking campaign enhances space efficiency, while the road reserve utility program enables temporary parking during peak periods without requiring permanent expansion. Furthermore, converting parking areas into functional spaces such as repair garages, workshops, and mobile laboratories maximizes land utilization. Collectively, these initiatives support SDG 11 (Sustainable Cities and Communities) by promoting efficient and adaptable urban planning, and SDG 15 (Life on Land) by conserving natural spaces. The university's approach exemplifies how sustainable campus management can meet infrastructure needs while safeguarding the environment.



Figure 2.42: Cars being reverse-parked



Figure 2.43: Temporary car park near faculties and lecture complex during peak periods



Figure 2.44: The conversion of existing carparks into workstations (Repair garage at UMS Maintenance Department, Institute for Tropical Biology and Conservation's satellite laboratory, Faculty Of Science And Natural Resources' Satellite Office)

The university has introduced major initiatives to reduce private vehicle usage on campus, supporting sustainable transportation and lowering environmental impact. The university provides dedicated off-campus student transport services, ensuring reliable and affordable access to the university for those living beyond campus grounds. Special event transport services are also arranged during major occasions (such as student orientations and convocations) to minimize private vehicle use and manage traffic flow more effectively.

In addition, the university controls vehicle numbers through a formal registration system, discouraging unnecessary car usage and encouraging alternative transport options. Public transportation fees are subsidized for students, thus encouraging the use of eco-friendly commuting methods. Collectively, these measures align with SDG 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action), advancing the university's vision for a greener, more sustainable campus.



Figure 2.45: The restriction of cars not registered or without a UMS sticker on campus

The university has developed an extensive network of pedestrian pathways to provide safe, convenient, and accessible movement across its campuses. These pathways are paved, routinely upgraded, and designed to be disabled-friendly, reflecting the university's commitment to inclusivity. To further enhance safety, pedestrian crossings have been strategically relocated away from areas where vehicles stop, improving accessibility and reducing potential hazards. This initiative supports SDG 11 (Sustainable Cities and Communities) by fostering inclusive, safe, and sustainable campus environments.

In addition to enhancing walkability, the pathway network helps protect natural habitats by minimizing the need for new road construction. By preserving green spaces and maintaining biodiversity, the university contributes to SDG 15 (Life on Land), exemplifying how campus development can be harmoniously integrated with environmental conservation.



Figure 2.46: Pedestrian pathways and stairways between faculties and lecture halls



Figure 2.47: Pedestrian crossing at key locations, and the enhancement of safety through traffic signaling



Figure 2.48: Pathways for people with disabilities

The university's integrated approach to sustainable transportation and parking management underscores its strong commitment to resource conservation and environmental stewardship. By maximizing the efficiency of parking spaces, encouraging shared mobility, and adopting eco-friendly transport options, the university effectively balances infrastructure requirements with its sustainability objectives. Initiatives such as vehicle restrictions, biodiesel-powered shuttle services, and the introduction of Zero Emission Vehicles (ZEVs) not only reduce carbon emissions but also improve campus connectivity. Complementing these efforts, the development of pedestrian-friendly pathways and the protection of natural spaces reflect the university's dedication to creating a safe, accessible, and environmentally conscious campus.

These strategies contribute directly to several Sustainable Development Goals, including SDG 11 (Sustainable Cities and Communities) by promoting safe, inclusive, and efficient urban spaces, and SDG 13 (Climate Action) by lowering greenhouse gas emissions and advancing alternative transportation solutions. In preserving green areas and protecting biodiversity, the university also supports SDG 15 (Life on Land), ensuring that infrastructure growth is harmonized with environmental conservation. Through strategic planning and innovative sustainability initiatives, the university demonstrates how higher education institutions can champion responsible land use, drive meaningful environmental change, and enhance the overall well-being of their campus communities.

3.0 EDUCATION AND RESEARCH

3.1 Education and Research

This section highlights the achievements of UMS in the **Education and Research** category, showcasing its efforts to embed sustainability into academic programs, research activities, and interdisciplinary initiatives. These actions align with relevant SDGs and reflect the university's strong commitment to advancing sustainability. The scope includes data on sustainability-focused courses, research funding, scholarly publications, and collaborative projects addressing global environmental issues. It also emphasizes the university's role in fostering sustainability literacy, driving research-based solutions, and engaging in knowledge-sharing initiatives that contribute to a more sustainable future.

Sustainability is integrated into the university's academic curriculum, with 492 out of 2,441 courses (more than 20%) dedicated to topics such as environmental conservation, sustainable development, and climate change. Faculties including Food Science and Nutrition, Sustainable Agriculture, Science and Natural Resources, Tropical Forestry, Social Sciences and Humanities, and Business, Economics, and Accountancy embed sustainability principles within their programs. This supports SDG 4 (Quality Education) by equipping graduates with the skills and knowledge needed to address environmental challenges and contribute to green industries.

In addition to faculty-specific programs, the university offers interdisciplinary courses such as UK02602 Environment and Community and UK02902 Environmental Education and Sustainability, ensuring that all students develop a foundational understanding of sustainability. These courses encourage responsible citizenship, promote sustainable lifestyles, and support SDG 13 (Climate Action) and SDG 15 (Life on Land) through education that inspires environmental stewardship.

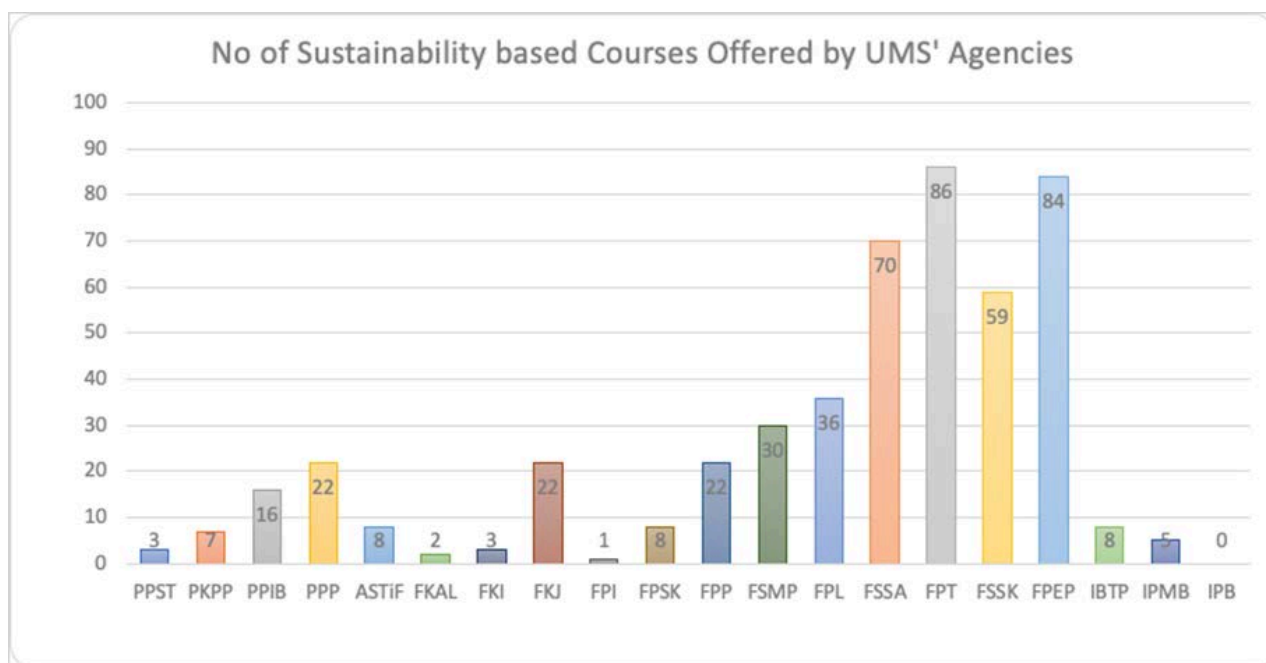


Figure 3.1: Bar chart of the number of sustainability related courses as offered by the faculties, centers, and institutes

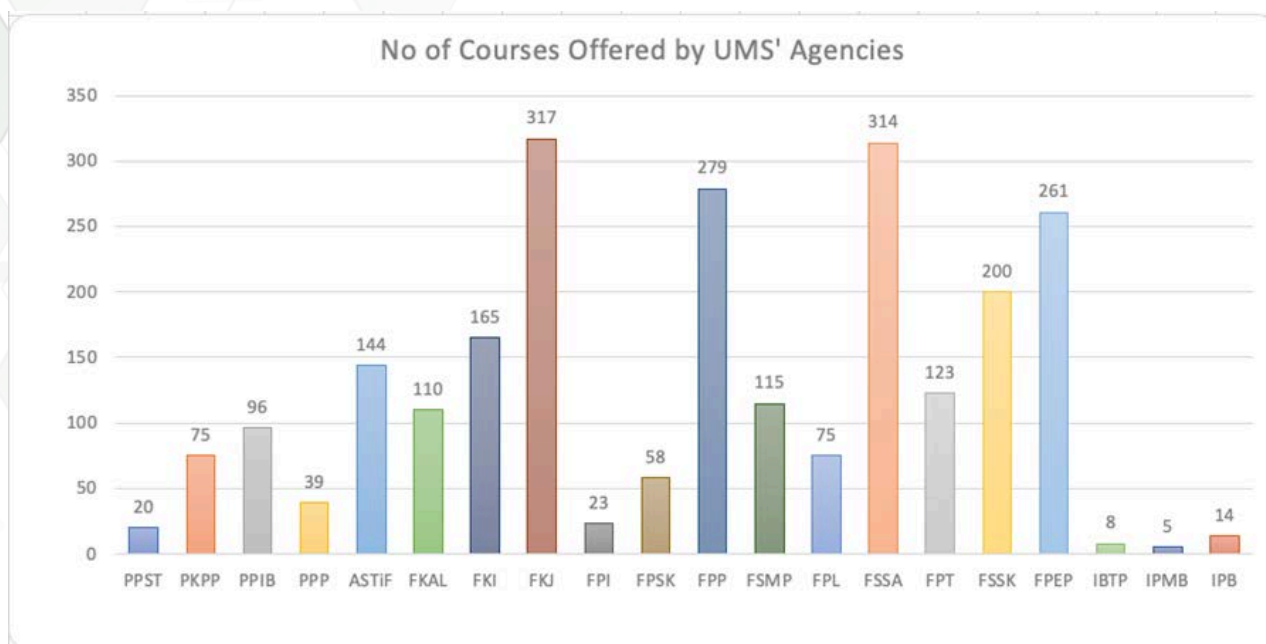


Figure 3.2: Number of courses offered by the university

Between 2021 and 2023, the university allocated an annual average of USD 1.4 million to sustainability-focused research, supporting projects in areas such as renewable energy, marine conservation, biodiversity, and climate resilience. Major contributors to this research include the Institute for Tropical Biology and Conservation, the Marine Biology Research Institute, the Faculty of Science and Natural Resources, and the Faculty of Engineering. These initiatives align with SDG 9 (Industry, Innovation, and Infrastructure), SDG 14 (Life Below Water), and SDG 15 (Life on Land), reflecting the university's strong commitment to advancing sustainable solutions.

In addition to internal funding, the university also secured external research grants from government bodies, private organizations, and international partners to further strengthen studies in clean energy, ecological restoration, and sustainable agriculture. This diversified funding approach ensures continuous financial support for sustainability research, reinforcing the university's alignment with global standards and its role in driving innovation for environmental stewardship.

Table 3.1: Total research funds dedicated by the university to sustainability research

Year	Research Funds (MYR)	Research Funds (USD)	Average Research Fund over 3 Years (USD)
2021	6,473,011	1,416,414 - a	$\text{Average} = (a + b + c) / 3$ $= 4,280,586 / 3$ $= 1,426,862$
2022	6,390,353	1,398,327 - b	
2023	6,390,353	1,465,845 - c	

Table 3.2: Total research funds from other sources

Year	Research Funds (MYR)	Research Funds (USD)	Average Research Fund over 3 Years (USD)
2021	11,401,337	2,494,822 - a	$\text{Average} = (a + b + c) / 3$ $= 9,030,716 / 3$ $= 3,010,238$
2022	14,582,459	3,190,910 - b	
2023	14,582,459	3,344,984 - c	

Between 2021 and 2023, the university produced an average of 3,764 publications annually related to green technology, environmental issues, sustainability, renewable energy, and climate change, with yearly outputs consistently exceeding 300 articles. This substantial body of work reflects the university's strong research capacity and dedicated focus on addressing global environmental challenges. These publications contribute significantly to scientific knowledge and align with SDG 9 (Industry, Innovation, and Infrastructure), SDG 14 (Life Below Water), and SDG 15 (Life on Land) by advancing research-driven sustainability solutions and promoting ecological resilience.

The strengthens the impact of its research through active collaboration with global universities, sustainability organizations, and policymakers. Many of its publications are indexed in renowned international databases, increasing their accessibility and fostering knowledge sharing across borders. The university's researchers also play an active role in international conferences, presenting their work to ensure that research outcomes contribute directly to environmental policy-making and the advancement of sustainable development.

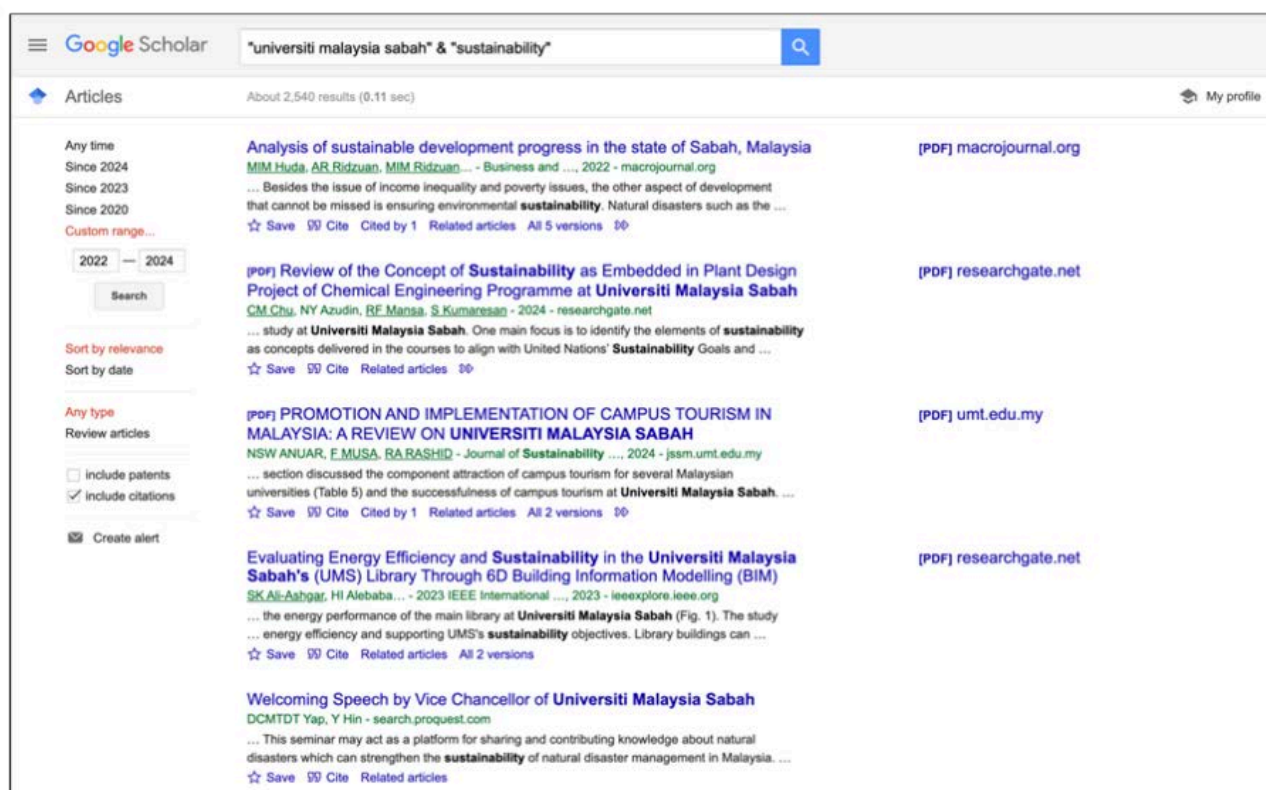


Figure 3.3: Examples of scholarly publications on sustainability



Bil	Pengarah Program	Nama Program	Tarikh	Tempat/ Kaedah	Penganjur	Peringkat
1	RAYLIGHTE DIKSON	PROGRAM KHIIDMAT MASYARAKAT PENANAMAN POKOK HERBA DAN KITAR SEMULA (KERTAS DAN PLASTIK) DI SEKOLAH KEBANGSAAN TAMPULAN, TELUPOK, TUARAN, SABAH	15/03/2023	Sekolah Kebangsaan	FPT	HEPIFAKULTIVJAKMAS
2	SARAH ZULAIKHA BINTI AZMAN	GOTONG-ROYONG PERDANA 2023	08/01/2023	Kolej Kediaman Tun	JAKMASE	HEPIFAKULTIVJAKMAS
3	MANUSHRI LAKSHMI SHARMA A/P	GOTONG ROYONG DI UMS PANTAI ODEC 2023	16/04/2023	Pantai ODEC	FPEP	HEPIFAKULTIVJAKMAS
4	KIU GUANG JIE	RAC BEACH CLEANING	29/04/2023	PANTAI UMSKAL, W.P.	KELAB ROTARACT	UNIVERSITI
5	SHFINAZ BINTI SAHRUDDIN @	PROGRAM PENGHJAJIAN MALAYSIA: PENANAMAN POKOK DAN PENCINTA ALAM SEMULA JADI DI SUSTAINABLE FOREST EDUCATION & RESEARCH AREA (SFERA@UMS) DAN OUTDOOR DEVELOPMENT CENTRE (ODEC)	18/05/2023	Sustainable Forest Education	FPT	KEBANGSAAN
6	HERDAHANTIH BINTI JEFFRI	GERAK BERSIH PERDANA KKTf23	20/05/2023	KOLEJ KEDIAMAN TUN	JAKMASTF	HEPIFAKULTIVJAKMAS
7	NUR AFRINA BINTI APPRI	PROGRAM "BEACH CLEANING"	21/05/2023	Pantai hadapan UMSKAL	KELAB MAHASISWA	HEPIFAKULTIVJAKMAS
8	ANGLIE ANAK LENG GUAN	LARIAN 3KM KE ODEC	07/06/2023	DARI FSSK KE ODEC	FSSK	HEPIFAKULTIVJAKMAS
9	ADAM LUOMAN BIN AZHAR	PROGRAM HARI ALAM SEKITAR 2023	16/06/2023	Auditorium Perpustakaan	FPEP	UNIVERSITI
10	LOW SHENG TUNG	ODEC CLEAN UP	24/06/2023	ODEC UMS	FPEP	UNIVERSITI
11	NAZMI FIKRI BIN VALENTINE	FUTURE AGROPRENEUR	24/06/2023	Dewan Serbaguna FPL	MAJLIS PERWAKILAN	UNIVERSITI
12	NORAIIDAH BINTI YUSOF	PROGRAM SAMBUTAN HARI HUTAN ANTARABANSA 2023	17/10/2023	Foyer Fakulti Perhutana	FPT	KEBANGSAAN
13	YEW KAR KEI	RECYCLING WEEK	23/11/2023	ALPHA 1.4, BETA 2.5,6,11	KELAB ROTARACT	UNIVERSITI
14	NURHIKMA AKHLIA BINTI NASIR	PROGRAM GOTONG-ROYONG MADANI FBEA 2023 (GRANI 23)	02/12/2023	Fakulti Perniagaan,	FPEP	HEPIFAKULTIVJAKMAS
15	CLARA CLAUDIA JAPANIS	BEACH CLEANING BY FSMP	02/12/2023	Pantai Awam Teluk	FSMP	HEPIFAKULTIVJAKMAS

Figure 3.4: Listing of environment and sustainability related events at the university for 2023

Particular	Year			Average
	2021	2022	2023	
Events	21	37	15	24

Figure 3.5: Average estimation of environment and sustainability related events at the university from 2021 to 2023

The university fosters a culture of sustainability by encouraging student organizations to lead activities that promote environmental awareness and responsible practices. In 2023, student unions such as Majlis Perwakilan Pelajar UMS, Kelab Sukarelawan Siswa UMS, and Jawatankuasa Kebajikan Mahasiswa (JAKMAS) organized between five and ten sustainability-related programs. These included the Outreach Tanjung Aru Marine EcoSystem Center (9 June), Living Eco 2023 – ODEC Beach Clean-Up (5 June), Icon Eco Competition (7-21 June), Eco Journalist Competition (7-21 June), EcoVation – Creative Innovation (21 June), Beach Scrub Day (14 June), Living Eco Explorace (6 July), and Wildlife Park Volunteering (22 June).

These initiatives align with SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production) by fostering community engagement and sustainable lifestyle practices. Activities such as coastal clean-ups directly support SDG 14 (Life Below Water) by reducing marine pollution, while environmental competitions and innovation projects inspire creativity and problem-solving in sustainability. Through these student-led efforts, the university strengthens environmental stewardship, leadership skills, and civic responsibility, embedding sustainability as a core aspect of campus life.



Figure 3.6: Outreach Aru Marine EcoSystem Centre



Figure 3.7: Living Eco 2023 – ODEC Beach Clean-Up

The university actively promotes multicultural harmony and inclusivity through its annual calendar of cultural activities, reflecting the objectives of Malaysia's National Cultural Policy to strengthen unity, preserve national identity, and enrich quality of life. Under the coordination of the Art and Culture Section, Student Affairs Department, the university organizes between seven and ten cultural mega events each year, including celebrations for Chinese New Year, the indigenous Harvest Festival, Hari Raya Aidilfitri, Hari Raya Haji, Deepavali, Easter, and Christmas. Events such as Fiesta Cahaya Reloaded, Theatrical Production of 'Muzikal 1963', and the Hari Raya Aidilfitri and Harvest festival celebrations provide platforms for cultural expression, intercultural exchange, and community building. These initiatives directly support SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities) by fostering cultural awareness, inclusivity, and social cohesion within the campus environment.

Through these diverse celebrations, the university creates opportunities for both students and staff to engage with and appreciate the traditions of different ethnic and religious communities, fostering mutual respect and understanding. This approach not only preserves Malaysia's rich cultural heritage but also contributes to SDG 16 (Peace, Justice, and Strong Institutions) by encouraging peaceful coexistence and promoting shared values. By embedding cultural appreciation into campus life, the university strengthens the bonds within its multicultural community while demonstrating how higher education institutions can serve as catalysts for unity and diversity.



Figure 3.8: Fiesta Cahaya Reloaded 2023



Figure 3.9: 2023 Chinese New Year Celebration



Figure 3.10: Theatrical Production of 'Muzikal 1963' organized by Akademi Seni dan Teknologi Kreatif (ASTIF)



Figure 3.11: Hari Raya Aidilfitri celebration and Harvest Festival at UMS in 2023

Since 2019, the university has published annual sustainability reports that comprehensively document its efforts in environmental conservation, energy efficiency, and community-focused sustainability initiatives. Prepared in alignment with global sustainability reporting standards, these reports integrate the UN SDGs and Environmental, Social, and Governance (ESG) principles, offering a transparent account of the university's progress. The sustainability reports showcase the tangible impact of the university's initiatives in areas such as carbon footprint reduction, biodiversity preservation, and social responsibility, underscoring its commitment to accountability and continuous improvement.

By systematically monitoring and reporting its sustainability performance, the university enhances strategic planning and ensures alignment with global standards. The consistent publication of these reports not only strengthens institutional transparency but also positions the university as a benchmark for best practices in higher education sustainability, reinforcing its role as a leader in advancing global environmental and social stewardship.



Figure 3.12: Front cover of UMS Sustainability Report 2019



Figure 3.13: Front cover of UMS Sustainability Report 2020

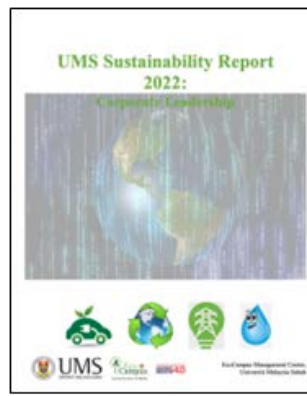


Figure 3.14: Front cover of UMS Sustainability Report 2022



Figure 3.15: Front cover of UMS Sustainability Report 2023

The university actively involves its students in community-based sustainability projects through various clubs and associations, fostering social responsibility and environmental stewardship. In 2023, more than three major initiatives were carried out, including KPT Prihatin Madani at Pulau Mantanani Besar, the Program Jelajah Sembang Diet: Pemakanan Sihat untuk Semua in Kg. Tondulu, and the Program Jaringan Komuniti (CSR) in Kg. Malubang, Pitas. These initiatives addressed key social and environmental needs, from promoting healthy lifestyles to strengthening community engagement. Such efforts align with SDG 3 (Good Health and Well-being) and SDG 11 (Sustainable Cities and Communities) by enhancing quality of life, promoting inclusivity, and building resilient communities.

Additional impactful projects included the Projek Kelestarian Penyu dan Edu-Tourism with Taman-Taman Sabah, a CSR program during the Digital Month of 2023 at SK Gudon, and the One Canon One Tree (OCOT) tree-planting campaign. These activities contribute directly to SDG 13 (Climate Action) and SDG 15 (Life on Land) by supporting biodiversity conservation, climate awareness, and sustainable resource management. By integrating these hands-on experiences into student life, the university cultivates leadership, collaboration, and problem-solving skills, while ensuring that sustainability values are embedded within the university community and extended to the wider society.

Table 3.3: List of community-based sustainability projects with students involvement

No	Project	Student Participant	Duration
1	KPT Prihatin Madani	50	Sept 2023
2	Program Jelajah Sembang Diet : Pemakanan Sihat untuk Semua (JESDIET) di Dewan Serbaguna Kg Tondulu, Tambunan, Sabah	20	Oct 2023
3	Program Jaringan Komuniti (CSR) Fakulti Perniagaan, Ekonomi & Perakaunan di Kg. Malubang, Pitas Sabah	40	Jun 2023
4	Projek Kelestarian Penyu Dan Edu-Tourism UMS dan Taman-Taman Sabah	20 students	Nov 2023
5	CSR Program in conjunction Digital Month of 2023 in Sek. Keb. Gudon, Kota Kinabalu	12 students	9 Sept 2023
6	One Canon One Tree (OCOT)	50 students	Oct 2023
7	Jom Sihat Bah 5.0!	50 students	Jul 2023



Figure 3.16: KPT Prihatin Madani at Pulau Mantanani Besar, Kota Belud, Sabah



Figure 3.17: UMS' students Corporate Social Responsibility (CSR) at SK Tambulaong in local newspapers

The university actively strengthens its global engagement through strategic international collaborations that advance research, education, and knowledge sharing in sustainability and related fields. A notable example is the UMS-UNPAD International Symposium 2024, jointly organized with Universitas Padjadjaran (UNPAD), which served as a platform for exchanging cutting-edge research, innovative technologies, and sustainable practices in marine resource management. This initiative aligns with SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 17 (Partnerships for the Goals) by fostering academic exchange, enhancing research capacity, and building strong institutional partnerships.

In addition, the university collaborates internationally in specialized scientific fields, such as through the participation of Ts. Jaeyres Jani, a Medical Laboratory Technologist from the Faculty of Medicine and Health Sciences, who served as an instructor at the International Workshop on Pathogen Epidemiology at Oita University, Japan, in January 2023. This engagement not only strengthens the university's expertise in global health and epidemiology but also supports SDG 3 (Good Health and Well-being) and SDG 17 by fostering knowledge transfer and capacity building across borders. Through these partnerships, the university reinforces its role as an active contributor to global academic networks and sustainability-driven innovation.



Figure 3.18: UMS-UNPAD International Symposium 2024



Figure 3.19: ICOMSA 2022 Poster

The university actively drives sustainability-oriented entrepreneurship through dedicated support from the Entrepreneur Research and Development Centre (ERDEC), Career and Entrepreneurship Development Centre (CEDeC), Centre for Investment, Endowment and Wakaf (CIEW), and Digital Maker Hub (DMGSabah). These agencies nurture student- and staff-led ventures that address environmental challenges while fostering economic growth and innovation. As of 2024, the university supports 20 sustainability-related businesses, ranging from renewable energy and sustainable agriculture to eco-friendly product development. Examples include Bayu Prima Resources Sdn Bhd, a UiVEST subsidiary venturing into renewable energy generation; Kundasang Aquafarm, operated by the university's alumnus using hydroponic techniques to produce vegetables efficiently; and the Water Research Unit (WRU), a licensed facility under FSSA that conducts water quality testing. These initiatives directly contribute to SDG 6 (Clean Water and Sanitation), SDG 8 (Decent Work and Economic Growth), and SDG 9 (Industry, Innovation, and Infrastructure).

Other notable startups include EcoCampus Visitor Information Centre (EVIC), which offers electric bicycle rentals to promote green mobility; KESUMBA, producing environmentally friendly handicrafts; ULINK Agro-Based Sdn Bhd, commercializing plant-based research such as Tongkat Ali and seaweed-based salt; Villaco Sdn Bhd and Denim Care Sdn Bhd, focusing on eco-friendly product commercialization; and Design-Build-Sell, enhancing students' innovation skills through practical construction projects. Ventures like Singgah Kopi and Zue Corner integrate social enterprise with sustainability by promoting local products and reducing single-use plastics. Through these diverse initiatives, the university not only generates employment and entrepreneurial opportunities but also embeds sustainability principles into its business ecosystem, reinforcing its role as a catalyst for green innovation in line with the UN SDGs.



Figure 3.20: Vivify



Figure 3.21: Singgah Kopi

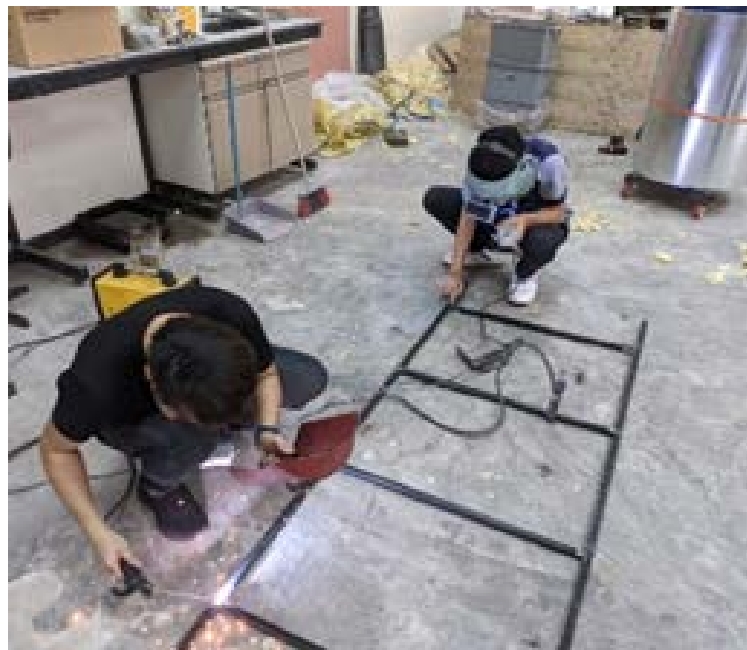


Figure 3.22: Design-Build-Sell

UMS launches highland agriculture research and learning centre in Kg Mesilau

By *Nst Regional* - March 4, 2024 @ 4:55pm



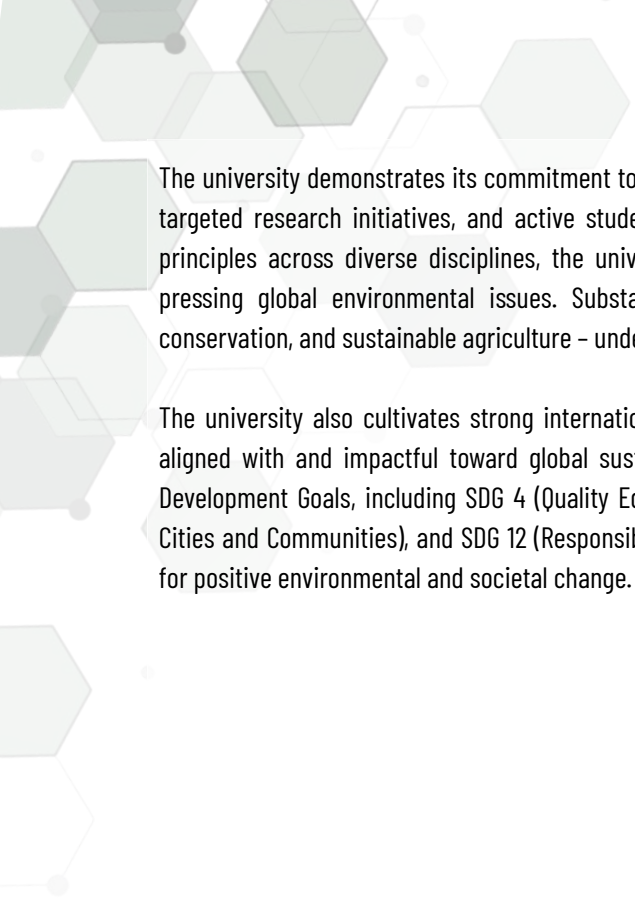
University Malaysia Sabah's (UMS) EcoFarm Management Centre is a significant collaboration project for highland agriculture research and learning at Kg Mesilau. - File pic credit (Sabah First Info)

KOTA KINABALU: University Malaysia Sabah's (UMS) EcoFarm Management Centre celebrated the inauguration of a significant collaboration project for highland agriculture research and learning at Kg Mesilau, Kundasang Ranau, Sabah First Info reported.

This initiative marks a step towards establishing a hub of excellence in highland agricultural research, including agro-tourism, as articulated by UMS Vice-Chancellor, Datuk Dr Kasim Mansor.

The Highland Agriculture Research and Learning Centre UMS Kundasang, known as PETIK, is the culmination of a partnership between UMS and the Kundasang Aquafarm initiated in 2021, with a formal memorandum of agreement (MoA) signed in 2022. This collaboration has led to the completion of 10 greenhouses equipped with hydroponic facilities for the production of leafy vegetables and fruits.

Figure 3.23: News report on the launch of UMS highland agriculture research and learning centre in Kg Mesilau



The university demonstrates its commitment to sustainability through a holistic approach that integrates academic programs, targeted research initiatives, and active student participation in environmental conservation. By embedding sustainability principles across diverse disciplines, the university equips its graduates with the knowledge and skills needed to tackle pressing global environmental issues. Substantial investments in research – particularly in renewable energy, marine conservation, and sustainable agriculture – underscore the university's position as a leader in sustainability-driven innovation.

The university also cultivates strong international partnerships, ensuring that its academic and research contributions are aligned with and impactful toward global sustainability objectives. Collectively, these efforts support multiple Sustainable Development Goals, including SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production), reinforcing the university's role as a catalyst for positive environmental and societal change.

CONCLUDING REMARK

Universiti Malaysia Sabah (UMS) has strengthened its sustainability leadership in 2024 by not only maintaining but also expanding its achievements across all key categories. From infrastructure that preserves forested zones and biodiversity to resource management that integrates smart technologies, renewable energy, and circular waste practices, the university continues to embody the principles of sustainable development. Its advancements in water conservation through rainwater harvesting, aquaponics, and greywater recycling, alongside sustainable transport initiatives such as biodiesel-powered shuttles and zero-emission vehicles, demonstrate how the university is scaling its efforts toward climate resilience and responsible resource use.

At the same time, the university has deepened the integration of sustainability within education, research, and entrepreneurship. With a growing portfolio of sustainability-focused courses, consistent investment in cutting-edge research, and more than 3,000 sustainability-related publications annually, the university has positioned itself as a vital contributor to global knowledge and innovation. The active role of students, international partnerships, and sustainability-driven startups further highlight the university's holistic approach, where academic excellence is coupled with community engagement and green innovation. These achievements not only affirm the university's enduring commitment to the UN SDGs, but also mark 2024 as a year of consolidation and progress, reinforcing its role as a catalyst for sustainable transformation in higher education and society at large.