UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SUSTAINABILITY REPORT 2024

Editors :
Mohd Fadhil Md Din
Shamsul Sarip
Zanariah Jasmani
Kiflee Jimpi
Muhamad Hairulnizam Ishak

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This sustainability report is dedicated to all UTM campus residents who worked hard to plan and develop university sustainability courses on and off campus, online, and wherever else they may be, as well as to all students, staffs, and collaborators across the nation and abroad.
May all of our endeavours bring us blessings both now and in the hereafter.

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Writers

Shamsul Sarip | Goh Pei Sean | Rakotoarisoa Maminirina Fenitra | Zilal Saari | Hadafi Fitri Mohd Latip | Nurfarhain Mohamed Rusli | Nur Ayuni Shamsul Bahri | Siti Suhaila Ihwani | Nik Masriza Zakaria | Nurrull Huda Abdul Wahid | Siti Nur'asyiqin Ismael | Liew Wai Loan | Siti Suhaila Ihwani | Muhamad Hairulnizam Ishak

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Foreword

Prof. Dr. Mohd Shafry bin Mohd Rahim
Vice Chancellor UTM

Assalamualaikum, Salam Sejahtera, Salam UTM Sanjungan Bangsa, Salam Malaysia Madani.

It gives me great pleasure to present the Universiti Teknologi Malaysia (UTM) Sustainable Development Goals Report 2024 — a testament to our unwavering pursuit of a sustainable, inclusive, and resilient future.

Guided by our philosophy “In the Name of God for Mankind” and our commitment to Innovating Sustainable Solutions, UTM continues to advance excellence in education, research, and innovation in alignment with the United Nations 2030 Agenda and the Malaysia MADANI vision.

The year 2024 marks significant progress in UTM’s sustainability journey, particularly in SDG 7, SDG 9, and SDG 12 — affirming our leadership in clean energy, resilient infrastructure, and responsible production. Through breakthrough innovations in renewable technologies, smart water systems, and circular economy initiatives, UTM demonstrates how science and compassion can transform lives and protect our planet.

True to the MADANI values of compassion, respect, and mutual prosperity, UTM champions inclusivity and social empowerment — from community entrepreneurship and food security programmes to gender equality and accessibility initiatives. As a leading technological university, UTM remains steadfast in shaping minds, nurturing innovation, and building a sustainable Malaysia for the world.

As we journey toward 2030, UTM remains steadfast in advancing purpose-driven transformation, bridging technology with humanity to create lasting impact for a better, sustainable Malaysia and the world — Innovating Sustainable Solutions.

In the Name of God for Mankind
Innovating Sustainable Solutions

Thank you

Preface

Mohd Fadhil Md Din
Shamsul Sarip
Zanariah Jasmani
Kiflee Jimpi
Muhamad Hairulnizam Ishak

Universiti Teknologi Malaysia 2024

The Universiti Teknologi Malaysia (UTM) Sustainable Development Goals (SDG) Report 2024 represents the culmination of a year-long collaborative effort to document, evaluate, and communicate UTM's progress in advancing sustainability within and beyond the university. This report serves as both a reflection of our achievements and a reaffirmation of our commitment to the United Nations 2030 Agenda for Sustainable Development.

As a leading research and innovation university, UTM integrates sustainability as a core principle across its academic, research, operational, and community engagements. The year 2024 has been transformative marking significant progress in key areas such as SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production). These achievements underscore the university's strategic direction in aligning technological advancement with environmental stewardship, social inclusivity, and responsible governance.

The report highlights how UTM's research ecosystem continues to contribute meaningfully to global and national priorities. From high-impact publications on clean energy, smart infrastructure, and circular economy systems to community-driven projects like Waste to Wealth, Living Lab Agrotani, and Solar PV Terasing, each initiative embodies UTM's ethos of translating knowledge into action. It also captures the collaborative spirit between faculties, research centers, students, and industry partners in driving measurable progress toward the SDGs.

Equally important, the report celebrates UTM's dedication to people and inclusivity. Efforts such as the Zakat UTMJB Assistance Program, Braille Book Initiative, and Global Women's Breakfast 2024 reflect the university's resolve to ensure equitable access to opportunities, support well-being, and empower underrepresented communities reinforcing our alignment with SDG 1 (No Poverty), SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities).

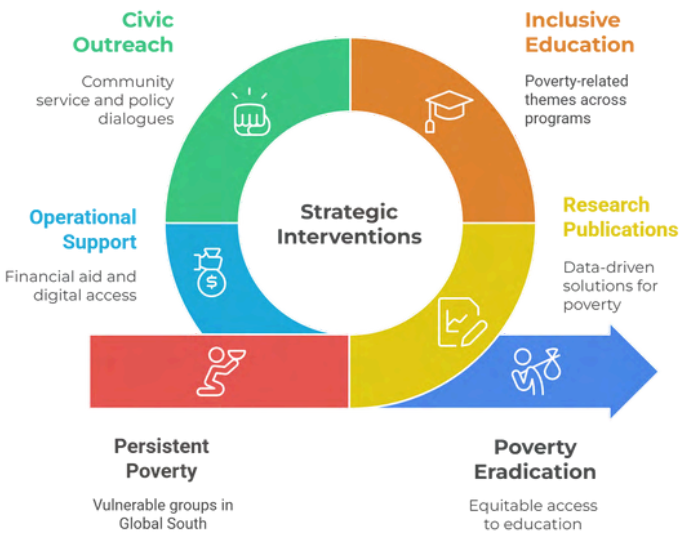
The editorial team acknowledges the invaluable contributions of UTM faculties, research alliances, sustainability coordinators, and students who provided data, insights, and success stories for this publication. Their commitment and collaboration made this report a comprehensive reflection of UTM's sustainability landscape. We also extend our deepest gratitude to the UTM Vice-Chancellor, YBhg. Prof. Dr. Mohd Shafry bin Mohd Rahim, for his vision and leadership in positioning UTM as a global model of sustainability through innovation, research excellence, and societal impact.

As we look toward 2030, the editors hope this report will serve as both a source of inspiration and a call to action. Sustainability is a shared journey one that requires partnerships, compassion, and perseverance. Through continued dedication, UTM will remain steadfast in driving transformative change for a greener, fairer, and more resilient future.

With sincere appreciation, we present this report as a testament to UTM's unwavering pursuit of knowledge, sustainability, and humanity.

RESEARCH

In 2024, UTM advanced its commitment to SDG 1: No Poverty through six impactful research publications addressing multidimensional poverty, energy access, financial inclusion, and social vulnerability. Studies explored the role of social entrepreneurship in poverty alleviation, AI-driven financial inclusion, and the impact of energy poverty on health, education, and food security. UTM researchers also assessed community resilience in crisis settings and analyzed gender-based disparities in financial access. These contributions reflect UTM's strategic focus on inclusive, data-driven solutions that support sustainable development, particularly for vulnerable groups in the Global South, positioning the university as a key player in poverty-related research.



LEARNING AND STUDENTS, PUBLIC AND CIVIC ENGAGEMENT, AND OPERATIONS:

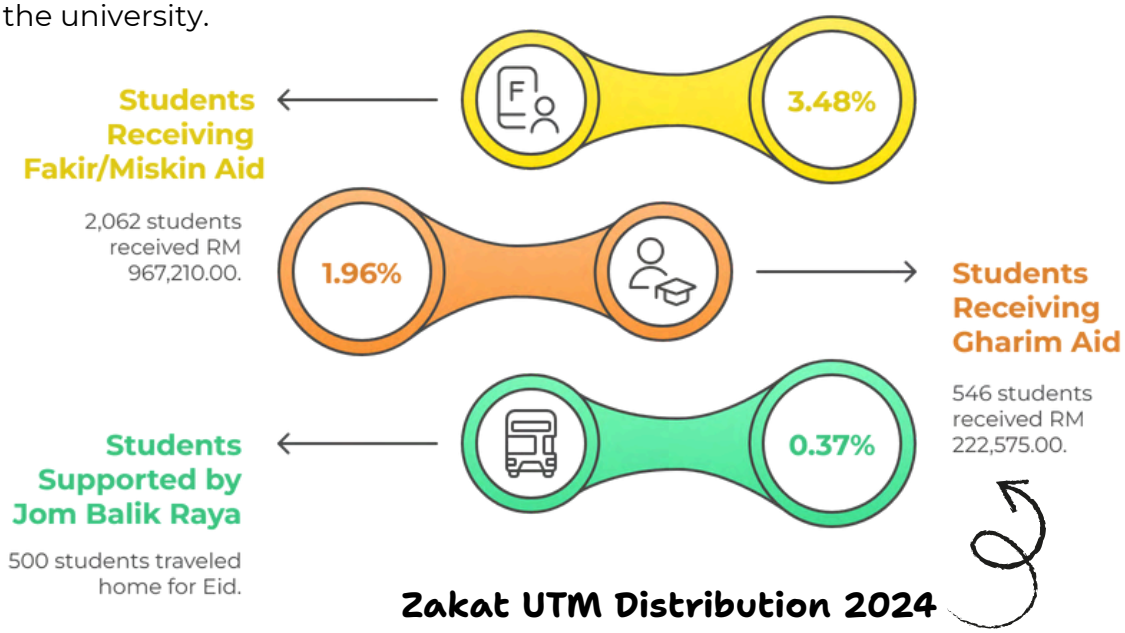
UTM deepened its SDG 1 impact through inclusive education, civic outreach, and operational support systems. Learning modules embedded poverty-related themes across economics, social policy, and sustainability programs, equipping students with real-world problem-solving skills. Community service initiatives and student-led projects targeted income inequality and basic needs in rural Johor.

Public engagement efforts included policy dialogues, awareness campaigns, and partnerships with NGOs. Operationally, UTM expanded financial aid schemes, food banks, and digital access programs to support low-income students, ensuring equitable access to education and campus life while aligning institutional practices with the global goal of eradicating poverty.

In 2024, Zakat UTMJB distributed RM 1.89 million to support UTM students and staff through five zakat categories: Fakir, Miskin, Gharim, Fisabilillah, and Amil. The largest portion—RM 967,210.00—was allocated to 2,062 students under the Fakir and Miskin categories, providing financial aid for living expenses and internships. Tuition assistance was also given to undergraduates (up to RM 1,000 each), while postgraduates were eligible upon thesis submission. This Gharim aid totaled RM 222,575.00 for 546 students.

Under the Fisabilillah category, RM 599,980.42 funded 104 religious and spiritual programs by student groups and Islamic units. These initiatives fostered moral values and Islamic knowledge. Staff were supported through back-to-school and Eid assistance programs totaling RM 55,000.00. A notable initiative, "Jom Balik Raya," launched in collaboration with the Student Representative Council, enabled 500 students to travel home for Eid using UTM buses, at a cost of RM 41,000.00.

Zakat UTMJB hopes these contributions lead to lasting blessings, moral growth, and continued good character among recipients. The integrity shown by UTM's team in distributing zakat ensures it reaches the truly deserving, making a real difference in lives across the university.



RESEARCH

UTM demonstrated a strong commitment to SDG 2: Zero Hunger through innovative research and community engagement that transforms waste into valuable resources for sustainable food systems. A key highlight was the collaboration with Majlis Perbandaran Kulai (MPKu) under the Waste to Wealth program, where UTM showcased practical solutions in sustainable agriculture and food security. At UTM Ecopark, researchers including Assoc. Prof. Dr. Zarina Muis and Assoc. Prof. Dr. Alafiza Mohd Yunus demonstrated hydroponic farming systems (DFT) for efficient, low-impact food production.

Complementing this, Dr. Huszalina Hussin introduced food waste-to-fertilizer technology, producing organic compost with UTM-developed machines to address waste management and soil fertility enhancement. Meanwhile, Assoc. Prof. Dr. Norahim Ibrahim shared advances in organic compost innovation under the Living Lab Agrotani project at Dusun UTM, highlighting biotechnology integration in sustainable farming. These initiatives not only advance sustainable agriculture but also empower communities through knowledge transfer, such as the Projek Kejiranan Hijau Iskandar Puteri, ensuring that UTM's research translates into real-world impact.

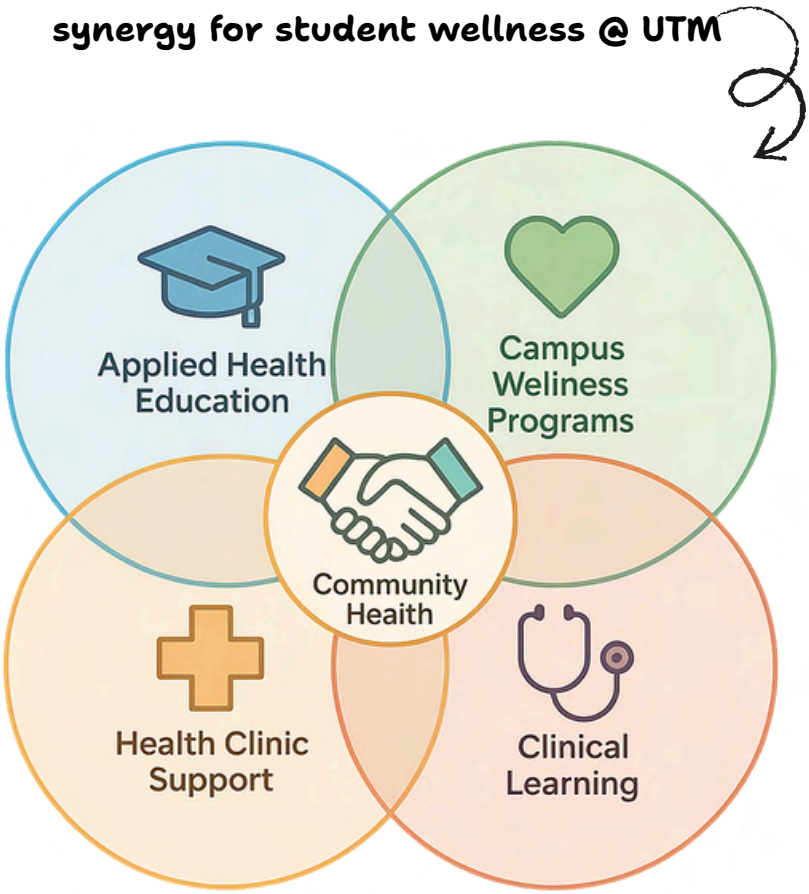
LEARNING AND STUDENTS, PUBLIC AND CIVIC ENGAGEMENT, AND OPERATIONS:

UTM deepened its SDG 2 impact through inclusive education, civic outreach, and operational support systems. Poverty-related themes were embedded into courses on economics, social policy, and sustainability, equipping students with real-world problem-solving skills. Community service initiatives and student-led projects addressed income inequality and basic needs in rural Johor, while public engagement efforts included policy dialogues, awareness campaigns, and NGO partnerships. Operationally, UTM expanded financial aid, food banks, and digital access programs to support low-income students, ensuring equitable participation in education and campus life.

For SDG 2, UTM extended its impact through education and community-driven initiatives. The Waste to Wealth KTHO Programme, continued by the Merbauan Agrotechnology Club (Magrotech) and the Sustainability Bureau of JKM KTHO, was held at the Living Lab of the Faculty of Science, UTM Orchard. The programme, led by Assoc. Prof. Dr. Norahim Ibrahim (Person-in-Charge of the Living Lab), involved local and international students, staff, and external partners. The event featured the official launch of the Living Lab by the Dean of the Faculty of Science, Assoc. Prof. Dr. Shafinaz Shahir, and included an appreciation session for sponsors—Nutrition Technologies, Agri Season, and strategic partner MBIP. These initiatives reinforce UTM's role as a hub for sustainable agriculture, food security, and community resilience, aligning institutional practices with the global goals of ending poverty and hunger.

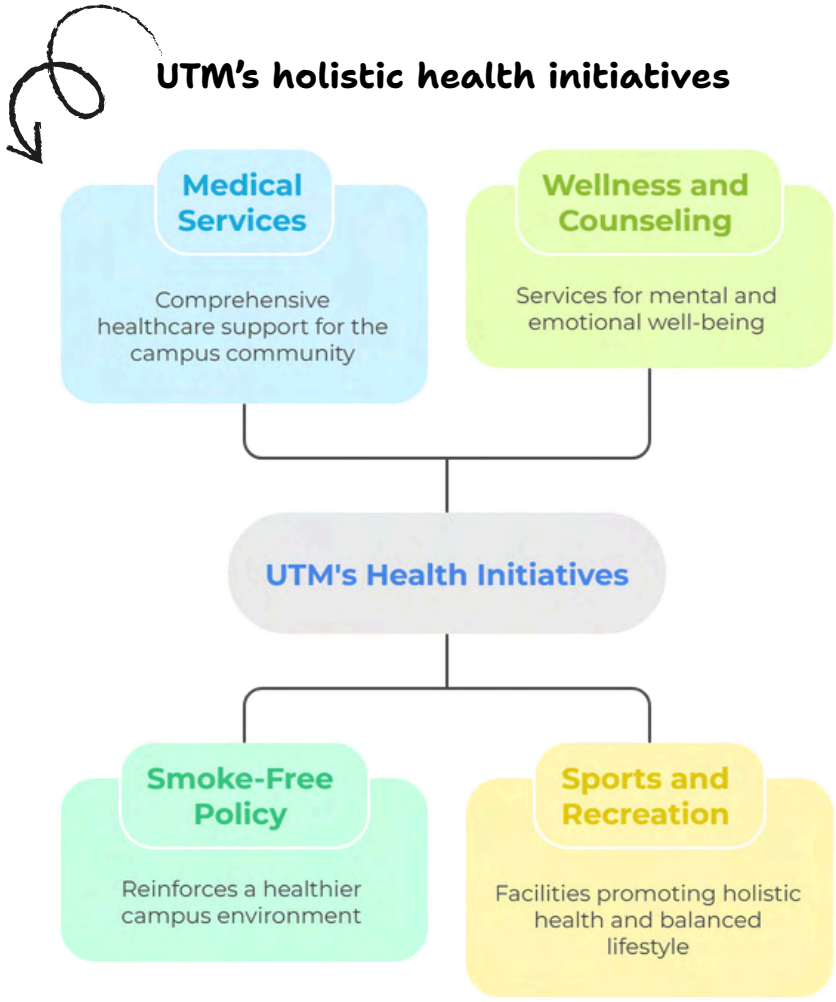
RESEARCH

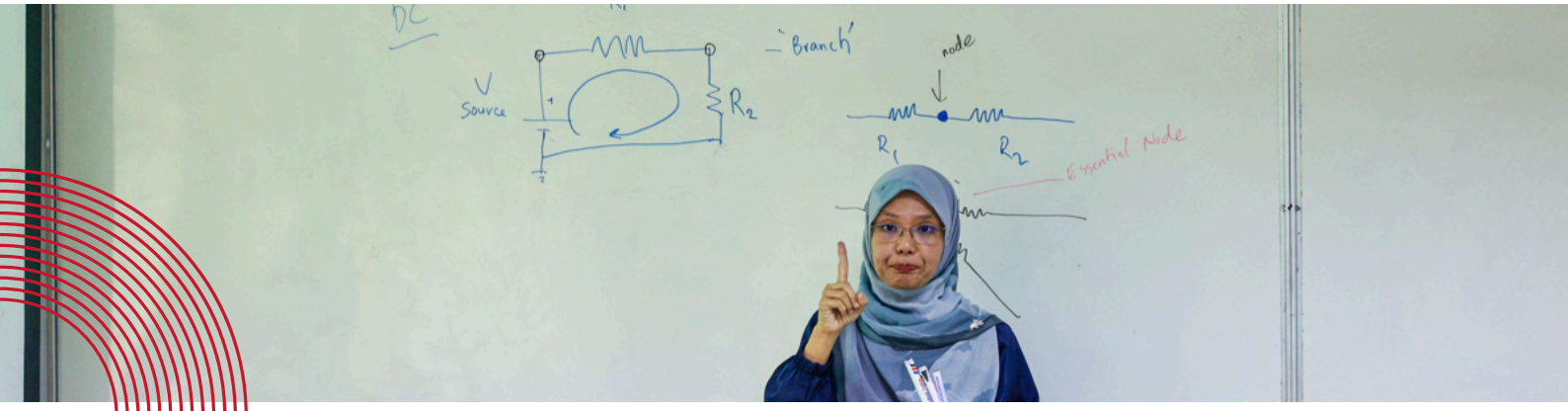
UTM researchers advanced studies on mental health, ergonomics, health sciences and sports science, while also developing wearable technology for health monitoring. These efforts were further strengthened through studies on physical fitness, workplace well-being, and injury prevention, which not only enhanced academic contributions but also supported practical solutions. Collectively, these initiatives contributed significantly to community health policy and the promotion of sustainable healthcare models



PUBLIC AND CIVIC ENGAGEMENT

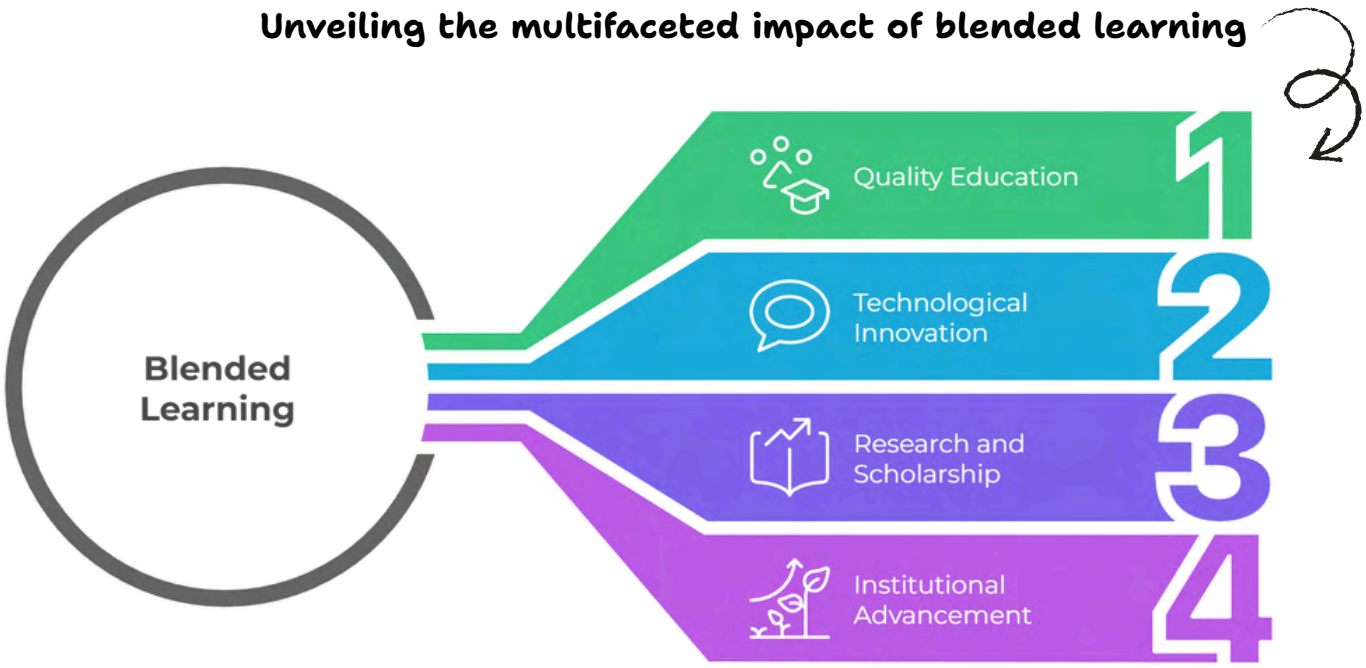
UTM collaborated with local health authorities to organize impactful community programs, complemented by mobile health clinics and blood donation campaigns that directly served the public. These efforts were further enhanced through public lectures, workshops, and awareness campaigns addressing mental health and lifestyle diseases. Additionally, partnerships with NGOs extended UTM's outreach to rural Johor, ensuring that health education and services reached wider and more vulnerable communities

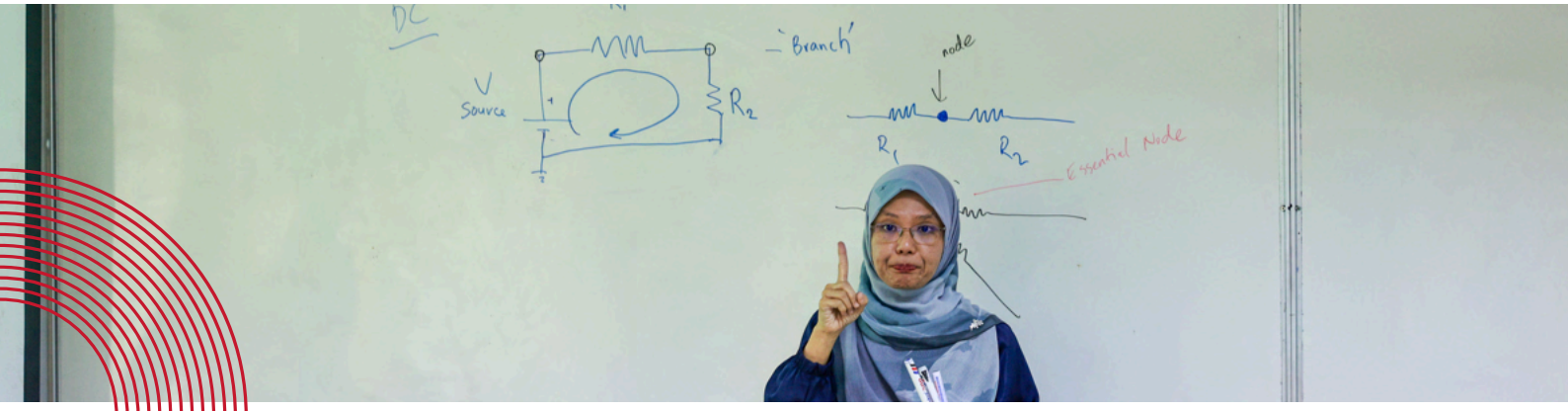




RESEARCH

Malaysia Education Blueprint (Higher Education) 2015–2025 by the Ministry of Higher Education (MOHE) has highlighted blended learning (BL) as a key strategy that supports Malaysia's Sustainable Development Goals (SDG) commitments, especially SDG 4: Quality Education. BL platforms enable multi-site/open research (MOOCs/micro-credentials) and reproducible datasets/code. Between 2022 and 2024, several initiatives have integrated emerging technologies such as AI-driven feedback systems, adaptive quizzing tools, virtual laboratories, and secure online proctoring platforms into blended courses. These innovations not only enhance the quality and flexibility of teaching and assessment but also stimulate academic scholarship and institutional advancement. Many of these pilot projects have evolved into Scholarly Teaching and Learning (SoTL) publications, competitive research grants, and intellectual property (IP) outputs, demonstrating how BL functions as both a pedagogical and research driver aligned with UTM's digital transformation and SDG 4 (Quality Education) goals.



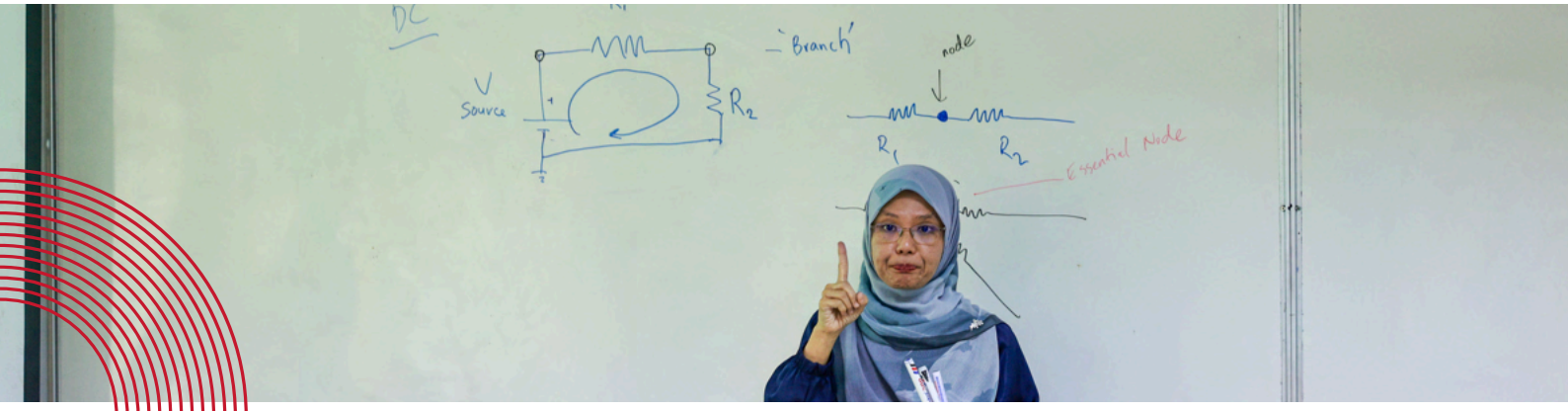


LEARNING AND STUDENTS

In UTM, BL has demonstrated measurable improvements in student performance. Scholarship of Teaching and Learning (SoTL) studies conducted between 2022 and 2024 has shown significance improvement in average assessment scores compared to fully face-to-face courses. This improvement is attributed to the flipped learning model and the use of continuous online assessments, which encourage students to prepare in advance and engage more during in person sessions. Moreover, the flexibility of recorded lectures, asynchronous activities, and mobile-accessible materials allows greater participation from rural students, working learners, and those with caregiving responsibilities. Enhanced accessibility features including captions, transcripts, and multimodal learning resources may support students with disabilities and those for whom English is a second language, it will be ensuring that learning opportunitiesare inclusive and equitable.BL has also enhanced student engagement.

The approach further develops students' digital literacy and 21st-century skills by familiarising them with online collaboration platforms, cloud-based tools, and e-assessments, preparing them for the demands of the modern workplace. In addition, BL supports personalised learning and early intervention. Learning analytics from the Learning Management System (LMS) allow lecturers to monitor student progress and provide targeted support to those at risk of underperforming. The system also ensures resilience and continuity of learning during disruptions such as floods, haze, or public health emergencies, while reducing the need for commuting, thereby contributing to lower carbon emissions.

In addition, BL supports personalised learning and early intervention. Learning analytics from the Learning Management System (LMS) allow lecturers to monitor student progress and provide targeted support to those at risk of underperforming. The system also ensures resilience and continuity of learning during disruptions such as floods, haze, or public health emergencies, while reducing the need for commuting, thereby contributing to lower carbon emissions.

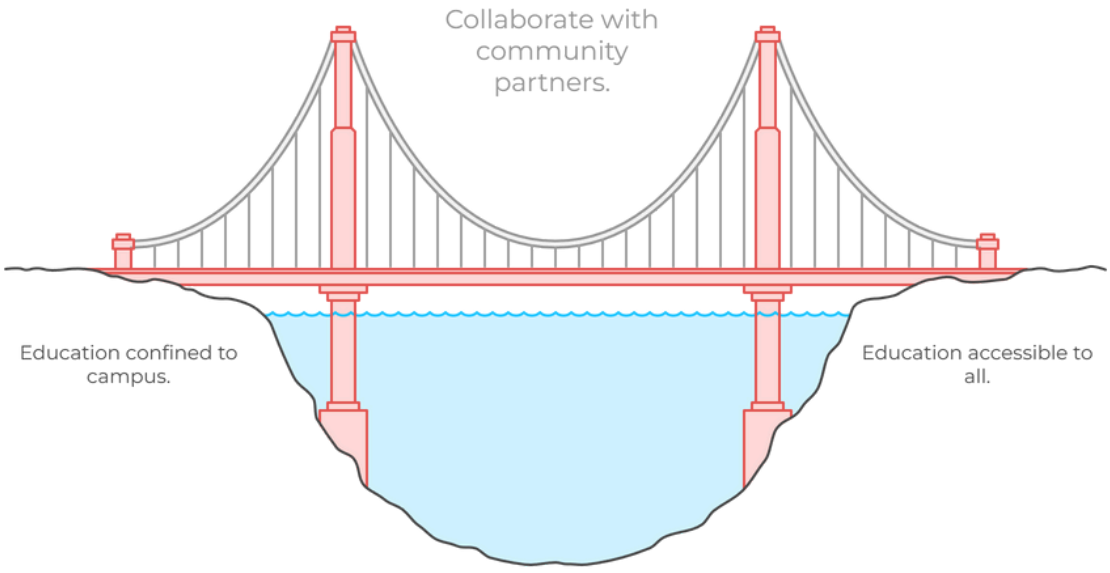


PUBLIC AND CIVIC ENGAGEMENT

Public and civic engagement creates the social ecosystem that enables BL to thrive. By collaborating with community organisations, schools, industries, and NGOs, universities can co-design blended courses that address real-world needs, making learning more relevant and impactful. For example, open MOOCs and micro-credentials offered to the public allow working adults, SMEs, and rural communities to access high-quality education flexibly, building trust in the BL model and extending its benefits beyond campus boundaries.

Engaging the public also generates valuable feedback, helping universities refine online content, ensure cultural and linguistic inclusivity, and address access challenges such as digital literacy and internet connectivity. Civic partnerships can provide shared infrastructure like community learning hubs, enabling equitable participation in BL for underserved groups.

Furthermore, public involvement positions BL not just as a teaching strategy, but as a shared societal investment in lifelong learning. When communities see tangible benefits such as upskilled workers, empowered women, or digitally literate youth, they become advocates, sustaining momentum for BL adoption.



RESEARCH

UTM women researchers demonstrated strong contributions through international recognition and impactful publications. Assoc. Prof. Dr. Syuhaida Ismail received the WFEO GREE Women in Engineering Award 2024, alongside other prestigious accolades, reflecting leadership in STEM and breaking gender barriers.

34 research output

Scopus publications on gender and women-related themes, covering leadership, education, workforce participation, social issues, and innovation

In parallel, UTM scholars produced 34 Scopus-indexed works focusing on gender diversity, early childhood and STEAM education, women's workforce participation, social challenges, and innovation. Collectively, these initiatives not only advanced academic knowledge but also reinforced UTM's role in shaping policies and practices that promote gender equality across education, employment, and leadership.

LEARNING AND STUDENTS

Female students strengthened leadership and self-confidence through active participation in sports and co-curricular activities. Achievements such as the UTM Women's Kabaddi Team securing First Runner-Up at Porkkalam 2.0 and the Best Raider award highlighted women's holistic development, integrating academic growth with physical performance and leadership skills.

PUBLIC AND CIVIC ENGAGEMENT

UTM engaged communities through initiatives promoting women's leadership and well-being. The Global Women's Breakfast 2024 fostered dialogue on diversity in science, while the Chit Chat Kelestarian Program addressed work-life balance and women-friendly policies. In collaboration with YADIM, government agencies, and NGOs, UTM also co-hosted the SMILED Symposium, which explored mental health solutions from Islamic perspectives, linking inclusivity and sustainable community development with SDG5.

OPERATIONS

UTM academics highlighted the importance of balancing work and family responsibilities during the Chit Chat Kelestarian Program. Proposals such as flexible hours and work-from-home options were raised as potential women-friendly practices. While not yet formally adopted, these discussions indicate a positive direction toward inclusive policies that could enhance staff well-being and institutional productivity.

student achievement

Women students achieved success in sports competitions, gaining recognition for resilience, teamwork, and leadership

recognition in STEM

UTM women received international awards for contributions in engineering and research, demonstrating global leadership and breaking gender barriers.

RESEARCH

UTM's SDG 6 efforts advanced clean water and sanitation through strong, applied research across materials, processes, and field deployment. Teams developed high-performance membranes (PVDF, ceramic, dual-layer, MXene- and TiO_2-based), biochar and biomass-derived adsorbents, and photocatalytic/ photo-Fenton systems to remove heavy metals, dyes, pesticides, endocrine disruptors, and pharmaceuticals. Studies optimized forward osmosis, membrane distillation, and microbial/electrochemical routes for wastewater, including palm-oil and industrial effluents, with circular-economy valorisation of wastes into functional media. IoT-enabled monitoring was demonstrated for aquaculture and urban water, supported by modelling, bibliometrics, and ecotoxicological risk assessments. Field work—from river protection and soil/sediment contamination to rural rainwater and Orang Asli supply—translated lab innovations into practical, policy-relevant solutions that strengthen water security in Malaysia

At Universiti Teknologi Malaysia (UTM), sustainable water management is not a single project — it's a culture. It's embedded in our research, teaching, campus operations, and strategic partnerships. Our work under SDG 6 addresses the pressing global challenges of water quality, water efficiency, and universal access to safe water and sanitation.

310

RM 6.69 million

water-related research projects

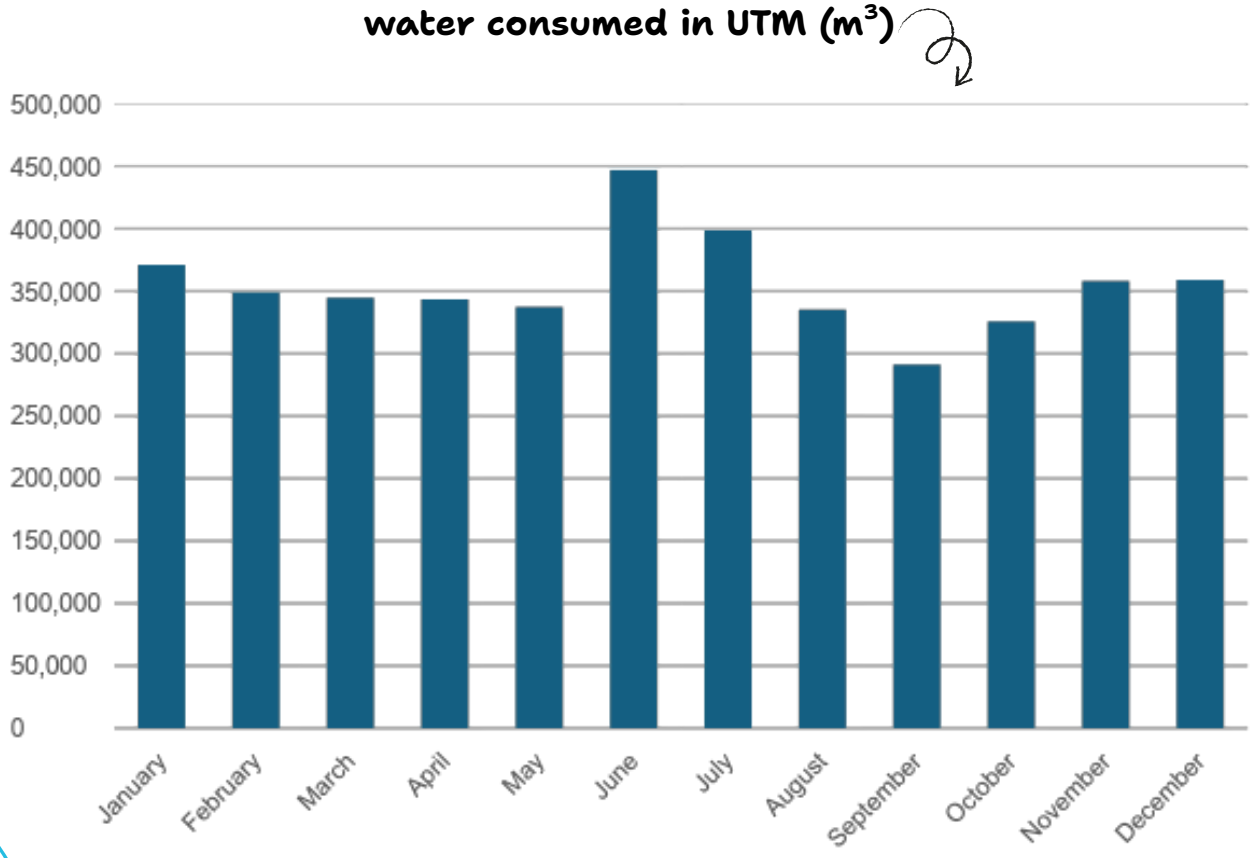
31

RM 0.56 million

community projects

OPERATIONS

Universiti Teknologi Malaysia (UTM) demonstrated its commitment to SDG 6: Clean Water and Sanitation through sustainable water management initiatives. Monthly water consumption analysis showed fluctuations, peaking in June at approximately 450,000 m^3, likely due to academic and campus activities. Continuous efforts to optimize water use through leak detection, efficient irrigation systems, and awareness campaigns helped stabilize consumption in subsequent months. These actions align with UTM's sustainability goals to reduce water wastage, enhance water recycling, and promote responsible consumption practices across the campus community, contributing directly to Malaysia's water conservation and environmental sustainability agenda.



OPERATIONS

Improving BIM-BEM Interoperability for Sustainable Energy Practices in Malaysia's Built Environment: A Mixed Method Analysis. Research explores enhancing the interoperability between Building Information Modelling (BIM) and Building Energy Modelling (BEM) in Malaysia, focusing on energy performance under high energy use conditions.

41.70

kWH/m²

energy usage per sqm

Using surveys and interviews, it identifies key energy-related properties and major interoperability issues like data loss, poor feedback loops, and inaccuracies. The study recommends strategies such as middleware tools, visual programming, and semantic enrichment to improve data flow and analysis accuracy. With strong reliability (Cronbach's alpha 0.822–0.874), the findings offer both theoretical insights and practical solutions to support sustainable construction, national energy goals, and alignment with Industry 4.0 technologies.

LEARNING AND STUDENTS

The GHG Training 2024 supports SDG 7 by equipping participants with practical skills in greenhouse gas (GHG) inventory, accounting, and reporting—key steps toward reducing carbon emissions. Held at UTM Kuala Lumpur, this program empowers organizations to manage energy use more efficiently and adopt cleaner practices. By focusing on data accuracy, real-world case studies, and hands-on tools, it promotes informed climate action and aligns with national energy efficiency goals. The training fosters capacity building for low-carbon transitions, helping industries measure, report, and reduce emissions effectively—contributing to affordable, clean energy and a sustainable pathway to net-zero emissions.

PUBLIC AND CIVIC ENGAGEMENT

UTM's community outreach in Mersing highlights its commitment to energy efficiency and clean energy. Through initiatives like the Solar PV Terasing project and solar lighting at fishing jetties, local fishing communities benefit from reliable, sustainable power. These efforts not only reduce dependence on diesel but also cut carbon emissions. UTM also provides educational programmes and workshops to raise awareness about energy conservation and clean technology. By engaging local communities directly, these initiatives promote long-term energy solutions, empower residents with knowledge, and support Malaysia's clean energy goals—aligning with sustainable development and fostering inclusive, energy-conscious communities across rural areas.

44,593,198 kWH

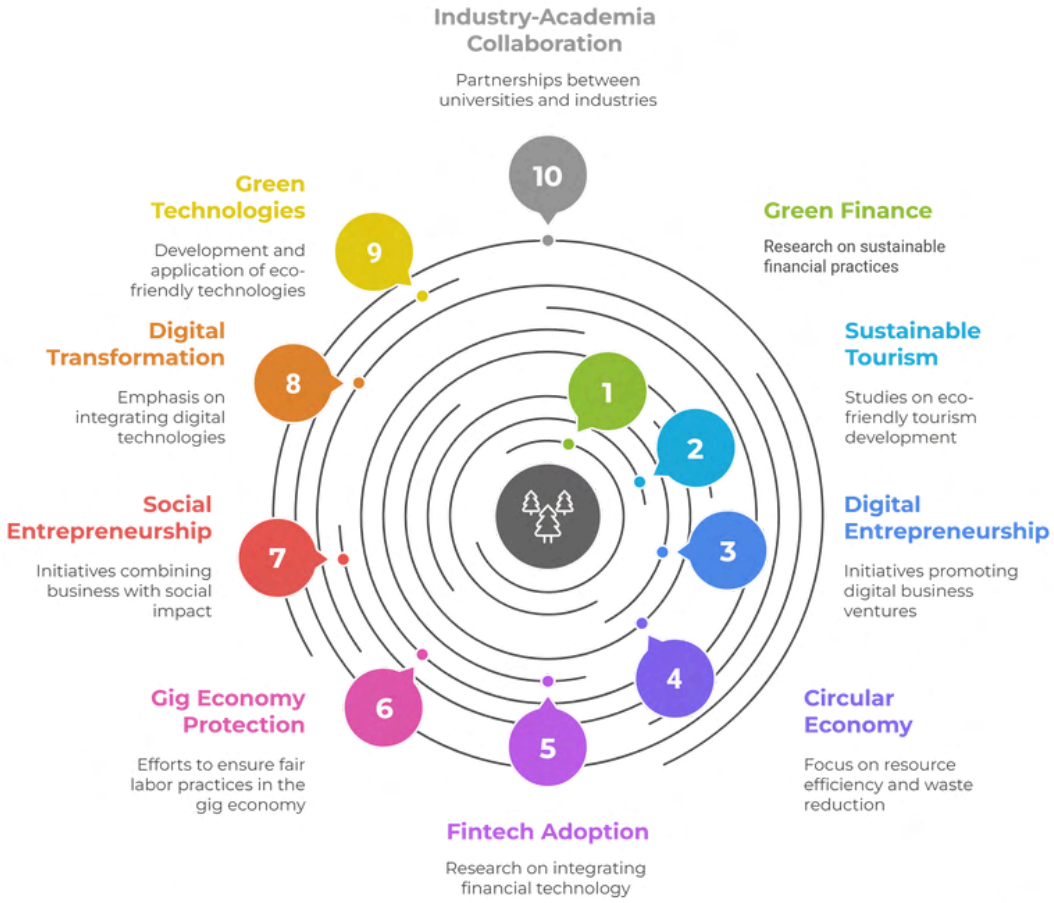
total energy used

1,069,348 m^2

university floor space

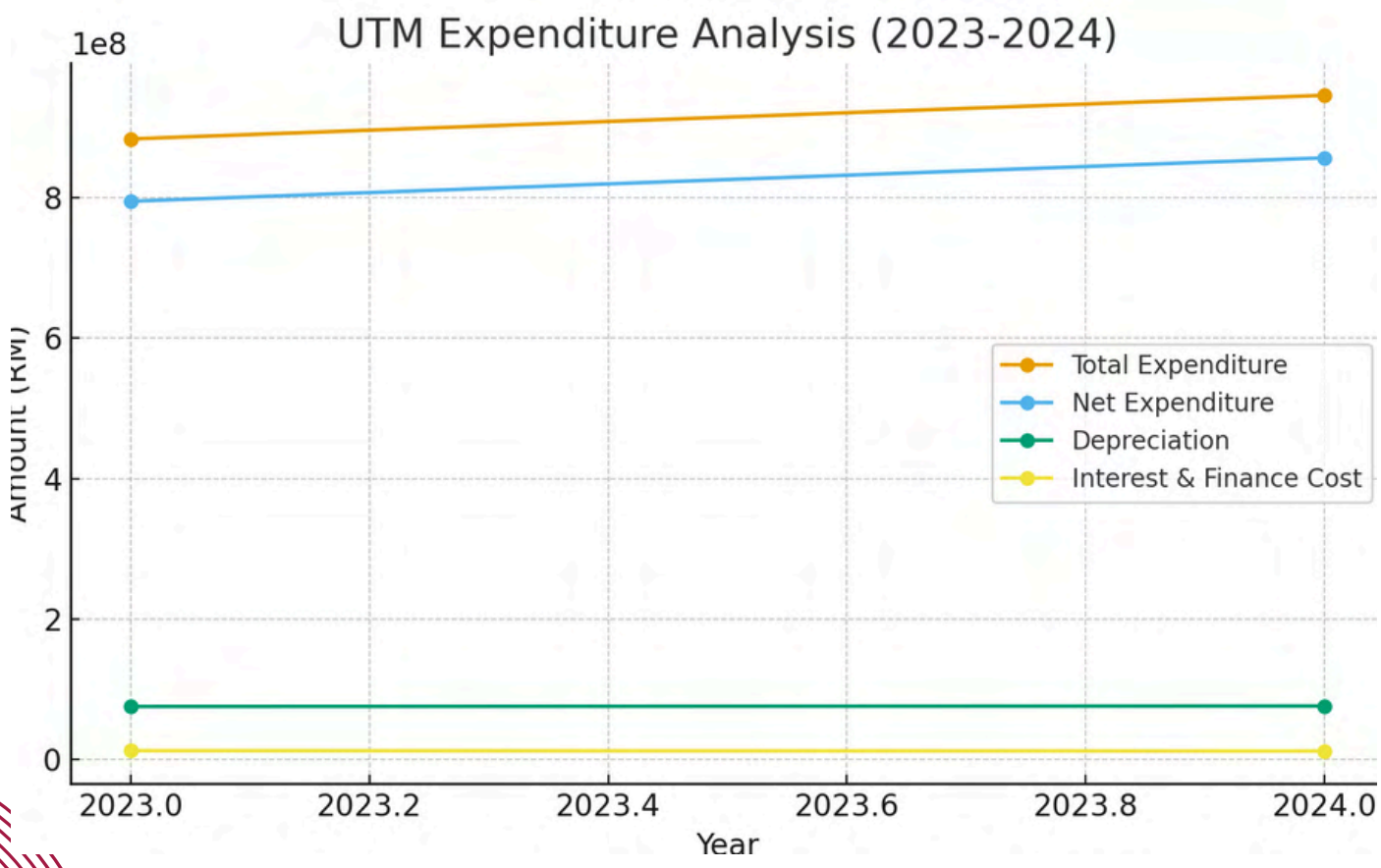
RESEARCH

Universiti Teknologi Malaysia (UTM) contributed significantly to SDG 8: Decent Work and Economic Growth through impactful research, innovation, and entrepreneurship initiatives. Studies focused on green finance, sustainable tourism, digital entrepreneurship, and the circular economy demonstrated UTM's role in advancing inclusive and sustainable economic development. Research on fintech adoption, gig economy protection, and social entrepreneurship highlighted efforts to foster equitable employment and innovation-driven industries. UTM's emphasis on digital transformation, green technologies, and industry-academia collaboration has strengthened Malaysia's knowledge-based economy, empowering local communities and supporting national aspirations for resilient, sustainable, and inclusive economic growth.



OPERATIONS

Universiti Teknologi Malaysia (UTM) recorded a total expenditure of RM946 million, with a net operational expenditure of RM857 million after excluding depreciation and finance costs. This marks a steady increase from 2023, reflecting UTM's ongoing commitment to promoting SDG 8: Decent Work and Economic Growth through responsible financial management. The expenditure supported human capital development, research innovation, infrastructure maintenance, and sustainable operations that drive quality education, employment, and productivity. UTM's prudent spending reinforces its role as a catalyst for Malaysia's innovation ecosystem, contributing to inclusive economic growth and a sustainable academic and research environment.



RESEARCH

Universiti Teknologi Malaysia (UTM) demonstrated strong research performance under SDG 9: Industry, Innovation, and Infrastructure, with the highest number of publications indexed in Scopus. UTM's research focused on advancing sustainable technologies, including smart manufacturing, renewable energy systems, AI-driven industrial processes, and resilient infrastructure. Studies on IoT-enabled monitoring, microgrid integration, and green construction reflected the university's commitment to industrial modernization and innovation ecosystems. Through collaborations with government, industry, and international partners, UTM continues to strengthen Malaysia's innovation capacity, contributing to sustainable industrial growth and technological competitiveness aligned with the United Nations Sustainable Development Goals.

OPERATIONS

Universiti Teknologi Malaysia (UTM) recorded RM 364.7 million in research income from industry and commerce, demonstrating strong alignment with SDG 9: Industry, Innovation, and Infrastructure. The majority stemmed from STEM collaborations (RM 317 million), reinforcing UTM's leadership in engineering, technology, and industrial innovation.

364.7

million (RM)

research income

Partnerships with sectors such as renewable energy, telecommunications, and smart manufacturing drove impactful solutions for national development. Additionally, RM 4.8 million and RM 38.1 million were secured from the medical and social sciences sectors, reflecting UTM's holistic approach to innovation that integrates technology with human well-being and sustainable socio-economic progress.

PUBLIC AND CIVIC ENGAGEMENT

UTM recorded a total research income from industry and commerce of RM 364.7 million, a significant increase from 2023's RM 317.1 million, reflecting stronger collaboration with industrial partners.By subject area, STEM disciplines contributed the majority, supported by 1,103 academic staff, showcasing UTM's leadership in engineering and technological innovation.Research in medicine (35 staff) and arts & social sciences (544 staff) also showed meaningful industrial engagement.This growth underscores UTM's continued advancement toward SDG 9 through research excellence, commercialization, and sustainable innovation ecosystems.

35
academic staff
medicine

1,103
academic staff
STEM

544
academic staff
arts & social sciences

UTM's strategic pathway

	Focus	Key Initiatives
2024	Infrastructure Development	Leadership in SDG 9, RM 120 M grants
2025	Innovation & Collaboration	Innovation labs growth, AI/Robotics research, global industry collaboration
06 2026	Sustainability & Digitalization	Sustainable digital campuses, UTM SDG 9 dashboard

RESEARCH

Universiti Teknologi Malaysia (UTM) strengthened its commitment to SDG 10: Reduced Inequalities through inclusive education, equitable research, and social empowerment initiatives. Research addressed themes such as disability inclusion, gender diversity, equitable digital access, and socioeconomic empowerment. Studies on Orang Asli education, disability employment, and inclusive learning environments reflected UTM's dedication to ensuring equal opportunities for all.

747
students
first-generation

With 747 first-generation students and 68 students with disabilities enrolled, UTM continues to foster an inclusive academic ecosystem. These efforts highlight UTM's leadership in promoting diversity, accessibility, and social justice within higher education and the wider community.

LEARNING AND STUDENTS

UTM's Braille project in collaboration with DBP enhances disability access in education, aligning with SDG 10: Reduced Inequalities. By translating national literary works, including those by Sasterawan Negara Datuk Siti Zainon Ismail, into Braille, the initiative empowers the visually impaired with equal access to knowledge and culture. T

68
students
disabilities

his effort promotes inclusivity, breaks barriers in information accessibility, and supports lifelong learning for persons with disabilities. Beyond education, it reflects a broader commitment to equity, ensuring no one is left behind in the digital and knowledge economy. Such initiatives are vital in creating a more inclusive, informed, and just society.

PUBLIC AND CIVIC ENGAGEMENT

UTM actively tracks and supports access to higher education for underrepresented groups, aligning with SDG 10: Reduced Inequalities. Current data shows 1,075 B40 (low-income) students, 8 students with disabilities (OKU), and 5 student-athletes enrolled. The university monitors applications and admissions of underrepresented populations, including ethnic minorities, women, and non-traditional learners. This data-driven approach helps shape inclusive policies and targeted support systems such as financial aid, accessible facilities, and mentorship programmes. UTM's commitment ensures that students from diverse backgrounds have equitable opportunities to pursue higher education, reducing barriers and promoting inclusive academic participation for all.

OPERATIONS

Universiti Teknologi Malaysia (UTM) demonstrated its commitment to SDG 10: Reduced Inequalities through inclusive education initiatives. Out of a total of 3,260 new students enrolled, 747 were first-generation students — the first in their families to pursue higher education — reflecting UTM's efforts to expand access to underrepresented communities. Additionally, 68 students with disabilities (OKU) began their degree programs, supported by enhanced accessibility facilities and inclusive learning environments. These achievements highlight UTM's dedication to promoting equity, opportunity, and diversity in higher education, ensuring that all students, regardless of background or ability, can succeed academically and socially.

Rosli Md. Illias (second from left) presented a souvenir to Siti Zainon Ismail, witnessed by Nor Asikin Mohamad (left), during the Launch Ceremony of Laman Baca Celik Hati: Braille Book Project at UTM, Johor Bahru.

RESEARCH

Research at Universiti Teknologi Malaysia (UTM) strongly advanced Sustainable Development Goal 11 (Sustainable Cities and Communities) through diverse studies addressing urban resilience, smart infrastructure, and environmental sustainability. UTM researchers explored themes such as flood risk assessment, urban heat island mitigation, green infrastructure, and smart city planning using advanced technologies like IoT, GIS, and digital twins. Collaborative works, including studies on urban green spaces, land subsidence management, and climate-resilient infrastructure, highlight UTM's leadership in shaping sustainable urban development across Southeast Asia. These initiatives reinforce UTM's commitment to creating livable, adaptive, and environmentally responsible cities for future generations.

Masjid Sultan Ismail UTM stands as a living symbol of Malaysia's rich Islamic art and architectural heritage, reflecting the nation's cultural identity and values. The mosque supports SDG 11: Sustainable Cities and Communities by preserving traditional Islamic design elements, calligraphy, and craftsmanship while integrating sustainable and modern architectural features. It serves as a hub for cultural appreciation, religious education, and community engagement, fostering awareness of heritage conservation among students and visitors. Through exhibitions, Quranic recitation events, and interfaith cultural programs, the mosque promotes inclusivity and the preservation of arts and heritage within a sustainable campus environment.

The ablution area with Malay elements features a design inspired by a traditional well. Tiles with Islamic geometric patterns adorn the walls surrounding the ablution area.
Masjid Sultan Ismail UTM | UTM ISLAMIC CENTRE

RESEARCH

Universiti Teknologi Malaysia (UTM) is strongly committed to advancing research and innovation that support sustainable consumption and production practices. The university focuses on key areas such as energy efficiency, water conservation, recycling, sustainable product development, and waste management. As one of Malaysia's leading research universities, UTM leverages its expertise in technology and engineering, particularly advanced technologies and artificial intelligence, to develop cutting-edge solutions in areas including supply chain management, waste reduction, renewable energy, sustainable tourism, and food security. Through these initiatives, UTM contributes significantly to the realization of Goal 12. UTM researchers advanced climate-focused studies, including low-carbon technologies and environmental modelling, contributing valuable data and solutions to global climate challenges while integrating sustainability goals into cross-disciplinary innovation.

LEARNING AND STUDENTS

UTM integrates responsible consumption and production into its academic programs by offering specialized courses across disciplines. These courses provide students with access to the latest knowledge, tools, and technologies that foster sustainable practices, equipping them with the skills to address future challenges in their professional careers. In addition, UTM provides facilities that encourage sustainable behavior among students. Initiatives include installing water refilling stations to reduce single-use plastic bottles, promoting paperless assignment and project submissions through digital platforms, and encouraging the use of campus transportation as an eco-friendly commuting option. These efforts ensure that students not only learn about sustainability but also practice it in their daily lives.

Curricula emphasized climate literacy across programs, empowering students to understand, mitigate, and adapt to climate change through experiential learning, sustainability projects, and carbon-reduction initiatives embedded in coursework and campus life.

PUBLIC AND CIVIC ENGAGEMENT

Beyond its research and academic endeavors, UTM actively collaborates with local communities, government agencies, and NGOs to promote sustainable consumption and production practices. The university organizes and participates in community programs such as composting initiatives, waste conservation campaigns, and the promotion of organic fertilizers to reduce environmental harm.

These activities have a dual impact: they directly benefit local communities while also providing UTM with insights into real-world challenges and practices. Such engagement enables the university to contribute evidence-based recommendations to policymakers and relevant stakeholders, thereby strengthening collective efforts toward sustainable development. UTM collaborated with local communities and organizations through climate workshops, public talks, and outreach programs, strengthening environmental awareness and encouraging collective action for emissions reduction and sustainable living.

Month	Total Waste Generated (Ton)	Waste Recycled (Ton)	Waste sent to landfill (Ton)
1	620.3	1.774	309.73
2	523.84	3.066	261.53
3	432.09	2.496	215.8
4	431.65	1.957	215.6
5	582.86	1.775	290.95
6	576.38	1.773	287.7
7	596.36	2.414	297.6
8	360.84	1.755	180.1
9	366.13	2.081	182.8
10	718.6	1.75	358.7
11	706.54	1.756	352.6
12	730.17	1.751	364.7

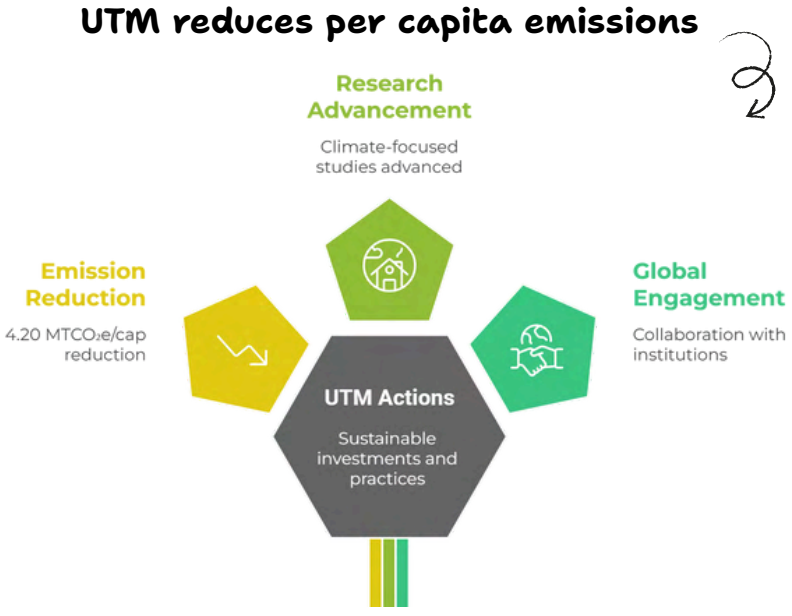
Sustainable Waste Management and Landfill Reduction Metrics

RESEARCH

Universiti Teknologi Malaysia (UTM) is committed to reducing its climate impact through sustainable investments and practices guided by Environmental, Social, and Governance (ESG) principles. The university actively undertakes multidisciplinary research, strengthening collaboration with national and international higher education institutions, and partnering with organizations to address climate-related challenges in alignment with SDG 13.

UTM's strengths in environmental science, engineering, and social science illustrate its interdisciplinary approach to climate action. Research hubs such as the Low Carbon Asia Research Centre and the Climate Change Research Group further demonstrate UTM's strong commitment to global engagement and its pursuit of innovative, science-based solutions to combat climate change. Moreover, the Faculty of Management is highly aware of the importance of sustainability research in the field of social sciences. To support this, the Sustainability Management Research Group (SMRG) has taken the lead in producing a wide range of sustainability-related research. UTM researchers advanced climate-focused studies, including low-carbon technologies and environmental modelling, contributing valuable data and solutions to global climate challenges while integrating sustainability goals into cross-disciplinary innovation.

UTM researchers advanced climate-focused studies, including low-carbon technologies and environmental modelling, contributing valuable data and solutions to global climate challenges while integrating sustainability goals into cross-disciplinary innovation.



UTM's sustainability initiatives

SULAM Projects

Collaborating with governments, communities, and industries on sustainability projects

Public Transportation Promotion

Encouraging the use of public transport to reduce carbon emissions

Natural Resource Conservation

Advocating for the responsible use and conservation of natural resources

GeoTourism Park

Offering educational value and public access to natural reserves

Waste Management Initiatives

Implementing waste sorting campaigns to reduce landfill waste

Sustainability Blueprint 2030

Reaffirming commitment to UN Sustainable Development Goal 13

Community Engagement

Collaborating with communities and organizations to raise environmental awareness

UTM 2024 GHG SAVINGS IMPACT SUMMARY

Per Capita Emission Reduction

In 2022, the carbon intensity at UTM was 16.39 $MTCO_2e$ per capita. By 2024, this value dropped to 12.19 $MTCO_2e$ per capita, resulting in a per-person reduction of:

Δ $MTCO_2e$/cap = 16.39 – 12.19 = 4.20 $MTCO_2e$/cap

Total GHG Saved by UTM in 2024

Given a total campus population of 20,000 in 2024, the total greenhouse gas emissions saved is:

4.20 $MTCO_2e$/cap × 20,000 people = 84,000 $MTCO_2e$

What Does 84,000 $MTCO_2e$ Saved Mean?

Removing ~
18,110 passenger vehicles from the road for one year

Planting ~
1.39 million tree seedlings and growing them for 10 years

Powering ~
10,850 homes with clean energy for a full year

Avoiding the emissions from burning ~
195,350 barrels of oil

RESEARCH

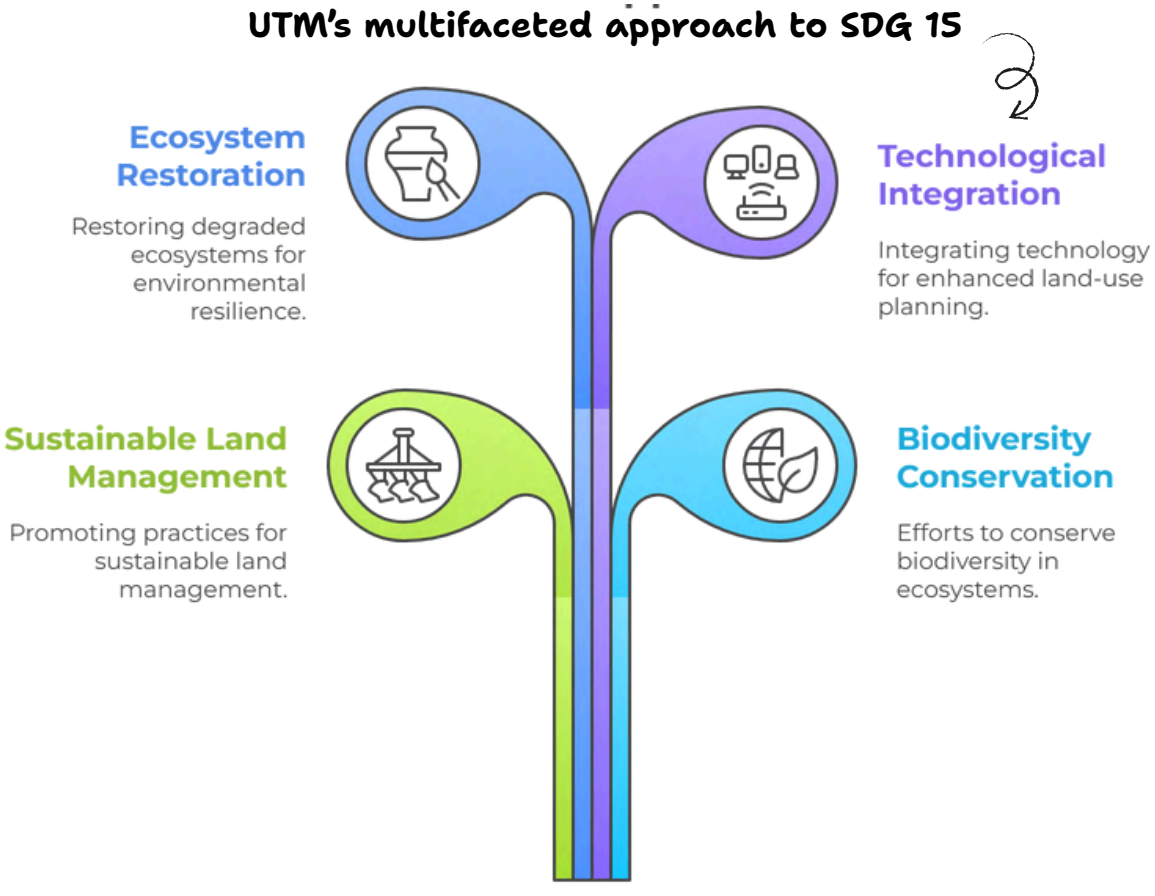
Universiti Teknologi Malaysia (UTM) advanced SDG 14: Life Below Water through impactful research focused on marine pollution, water quality, and ecosystem sustainability. Studies explored microplastic contamination, heavy metal pollution, and marine waste management, particularly in the Strait of Malacca, Pasir Gudang, and Bay of Bengal regions. Researchers investigated innovative solutions such as microalgae-based treatment, marine litter trapping models, and plastic waste valorisation into valuable materials. These efforts contribute to cleaner oceans, healthier aquatic life, and sustainable blue economy development. UTM's interdisciplinary research aligns science, technology, and policy to protect and restore marine ecosystems.

PUBLIC AND CIVIC ENGAGEMENT

Universiti Teknologi Malaysia (UTM) supported Program Hari Sungai Sedunia 2024 by mobilising 300 volunteers over two days at Sungai Tebrau. The event included river-cleaning activities, community education on watershed protection, and collaborations with local stakeholders to emphasise the importance of river ecosystems. By actively organising and participating in this conservation initiative, UTM reinforced its commitment to SDG 14: Life Below Water — promoting healthier rivers, sustainable water resources, and stronger aquatic ecosystems. This programme was the result of a collaboration between UTM, the Johor Corporation Foundation (JCorp), and the Department of Irrigation and Drainage (JPS), with the theme "Rivers and Waterways in Our Community." The main objective of the programme was to raise awareness and instil a sense of responsibility among all parties regarding the importance of protecting and sustaining Malaysia's rivers.More than 2,000 visitors enlivened the celebration of HSS 2024.

RESEARCH

Universiti Teknologi Malaysia (UTM) advanced SDG 15: Life on Land through research promoting sustainable land management, biodiversity conservation, and ecosystem restoration. Studies explored forest conservation valuation, mangrove protection, soil rehabilitation, and carbon stock assessment in tropical rainforests. Researchers also investigated microbial-induced carbonate precipitation, bioremediation of heavy metals, and biodiversity data crowdsourcing to support ecosystem monitoring. UTM's multidisciplinary projects integrated geospatial technology, machine learning, and citizen science to enhance forest and land-use planning. These initiatives contribute to safeguarding terrestrial ecosystems, restoring degraded land, and ensuring sustainable resource use for environmental resilience in Malaysia and beyond.



LEARNING AND STUDENTS

Universiti Teknologi Malaysia (UTM) and Universitas Negeri Malang (UM) collaborated on an edutourism programme at Taman Negara Tanjung Piai. Twenty-four (24) students and four (4) lecturers designed AR-enhanced storybooks about mangrove trees, and created interactive 'knowledge boxes' to enrich the visitor experience. By blending immersive learning with conservation themes, the event promoted sustainable land use, protected mangrove ecosystems, and engaged communities in stewardship. This initiative supported SDG 15 by turning the land-conservation narrative into an educational action.

PUBLIC AND CIVIC ENGAGEMENT

In December 2024, Universiti Teknologi Malaysia (UTM) and Malaysian Agricultural Research and Development Institute (MARDI) signed a memorandum of understanding at the "World Soil Day 2024" event held at UTM's Pagoh campus. news.utm.my Themed "Caring for Soils: Measure, Monitor, and Manage", the programme focused on advancing sustainable agriculture and food production—including hydroponic vegetable harvesting and bio-fertiliser launches. Participants learned about eco-friendly farming innovations, emphasising the university's policy commitment to ensure sustainably-farmed food on campus by supporting technologies and partnerships that promote healthy soil, local cultivation, and green food supply chains.

RESEARCH

Universiti Teknologi Malaysia (UTM) contributed significantly to SDG 16: Peace, Justice, and Strong Institutions through research promoting governance, inclusivity, and resilience. Studies explored AI risk management, anti-corruption practices, ESG governance, and digital transparency, enhancing institutional integrity. Social research addressed inclusive education for persons with disabilities and intersex individuals, gender and labour rights, and community resilience in post-conflict and disaster contexts. Projects such as crisis governance, cybersecurity risk mitigation, and policy-driven justice frameworks reflect UTM's dedication to fostering ethical leadership, accountability, and equitable development, strengthening Malaysia's institutional and societal foundations for sustainable peace and justice.

UTM's contributions to SDG 16

LEARNING AND STUDENTS

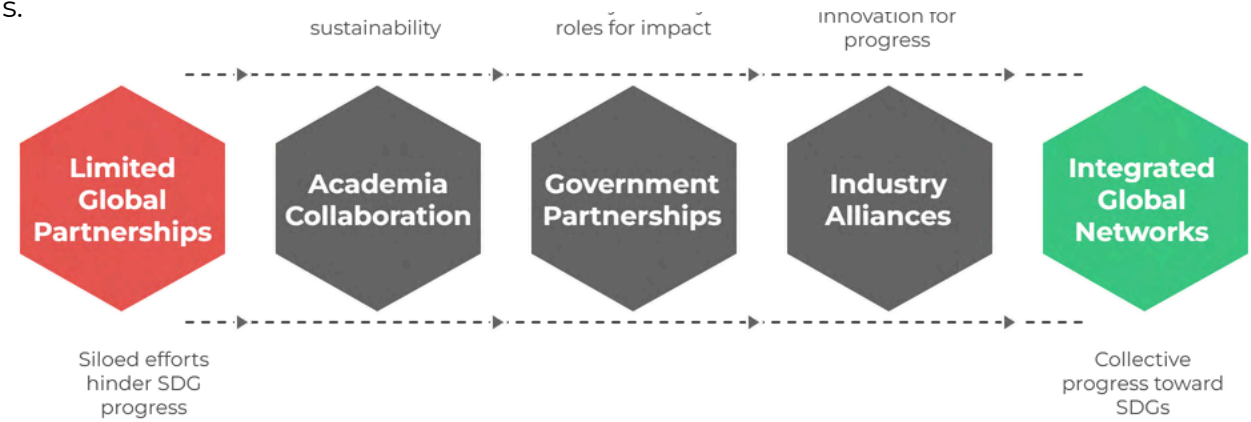
Universiti Teknologi Malaysia (UTM) strengthened its strategic partnership with GDS International to bolster Malaysia's ambition of becoming a global data-centre and supply-chain hub. Through this collaboration, UTM delivered outreach and capacity-building programmes to policy-makers and legislators, helping to upskill them in digital infrastructure, supply-chain governance, technology regulation and digital economy policy. The initiative ensures that governmental stakeholders are equipped with critical insights to steer effective legislation, foster innovation ecosystems and integrate sustainability considerations into Malaysia's rapidly evolving tech-policy landscape.

PUBLIC AND CIVIC ENGAGEMENT

UTM In February 2024, Universiti Teknologi Malaysia (UTM) reinforced strategic partnerships with key Sarawak agencies—including Jabatan Tanah dan Survei Sarawak (JTS) and Centre for Technology Excellence Sarawak (CENTEXS)—through a formal official visit and memorandum signings. Through these collaborations, UTM is offering expert advice in land surveying, geographic information systems, technology deployment, and policy formulation to regional government bodies. These engagements enable UTM to contribute research-based evidence, data-driven insights, and technical support, thereby strengthening institutional capacity and supporting informed decision-making at the state level.

RESEARCH

Universiti Teknologi Malaysia (UTM) advanced SDG 17: Partnerships for the Goals through impactful collaborations and multi-disciplinary research. UTM strengthened alliances with academia, government agencies, and industries, such as MARDI, Redtone, GDS International, and international universities, to address sustainability, digital transformation, and climate resilience. Research across fields—from renewable energy and smart agriculture to ESG performance and waste management—demonstrated strong international cooperation. Through joint projects, policy advisory roles, and data-driven innovation, UTM continues to build global networks that integrate technology, education, and sustainability science, fostering collective progress toward achieving the United Nations Sustainable Development Goals.



LEARNING AND STUDENTS

Universiti Teknologi Malaysia (UTM) hosted a delegation from Russian Venture Company (RVC) alongside representatives from Russia's Ministry of Science and Higher Education, Kazan Federal University and Novosibirsk State University. This event served as a significant cross-sectoral dialogue platform—bringing together academia, government agencies and international industry to explore global innovation, research collaborations and digital economy frameworks.By enabling exchange across sectors and nations, UTM is advancing the Sustainable Development Goals through inclusive, multi-stakeholder forums and reinforcing partnerships that drive sustainable development and knowledge-sharing.

PUBLIC AND CIVIC ENGAGEMENT

Universiti Teknologi Malaysia (UTM) hosted the Humanities and Social Sciences Global Summit, forging alliances with regional NGOs and government agencies to advance SDG policy and practice. During the summit, UTM provided expert input into problem identification, strategy development, modelling of future scenarios with and without interventions, and monitoring frameworks for social-policy outcomes. Through these engagements, the university engaged directly with policymaking stakeholders—enhancing adaptive management processes, fostering evidence-based governance, and enabling regional organisations to implement and report on SDG-aligned interventions, supporting stronger

Senior delegates from various international universities

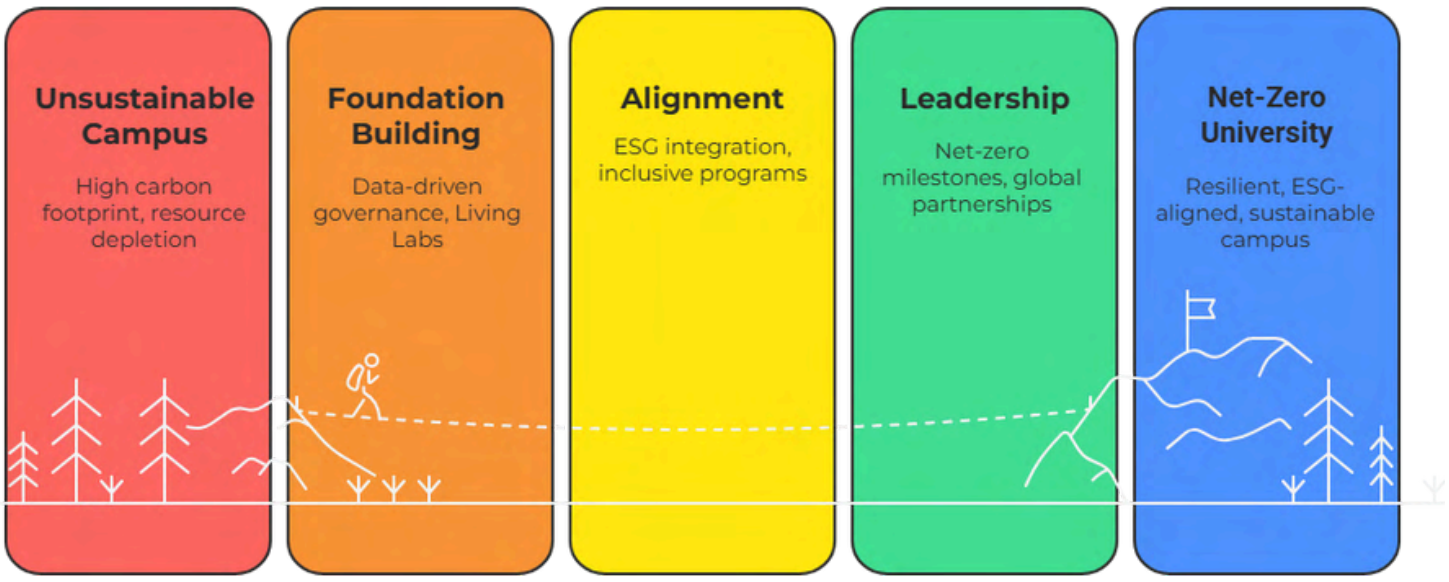
Way Forward

Transforming Sustainability into Impact

Guided by the UTM Sustainability Blueprint 2030, the university's next phase focuses on translating research excellence and campus innovation into measurable sustainability impact. Anchored by six Strategic Priority Areas Net Zero Carbon Campus, Ecosystem Resilience, Sustainable Production and Responsible Consumption, Health and Well-Being, SDG Localisation, and Networking & Partnership, UTM will accelerate its transition toward a Net Zero and ESG-aligned campus by 2030.

By integrating data-driven governance, Living Labs, and digital monitoring, UTM aims to achieve 100 % renewable energy, reduce water and waste through IoT-enabled systems, and strengthen carbon management across operations. The university will expand inclusive prosperity programs, empowering B40, OKU, and first-generation students, while promoting sustainability-centric curricula and global partnerships under the Quadruple Helix model.
Through Phase 1 (2023-2025) foundation building, Phase 2 (2026-2028) alignment, and Phase 3 (2029-2030) leadership milestones, UTM will consolidate its position as Malaysia's model Net-Zero University. The roadmap also embeds Environmental, Social and Governance (ESG) principles into finance, procurement, and decision-making ensuring every action drives real impact for People, Planet, and Prosperity.

UTM's way forward is clear: to innovate, inspire, and implement sustainability as the living DNA of the university transforming knowledge into action for a resilient future.



UTM sustainability transformation

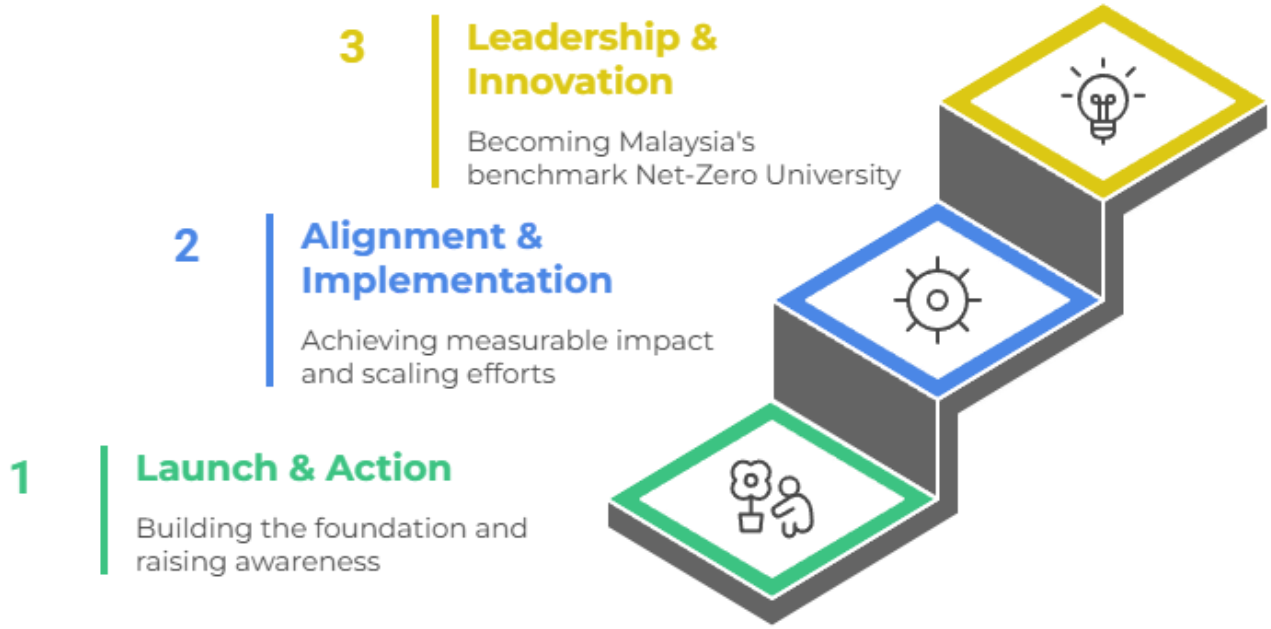
Way Forward

Transforming Sustainability into Impact

Way Forward

Transforming Sustainability into Impact

Implementation Phases (2023–2030)



UTM's journey is defined by collaboration, transparency, and measurable sustainability.

- Environmental – Carbon management, renewable energy, biodiversity conservation.
- Social – Inclusive prosperity for B40, OKU, and first-generation students.
- Governance – Transparent ESG metrics, ethical procurement, and global partnerships.

Through digital monitoring, inclusive prosperity, and ESG governance, UTM transforms knowledge into action — making sustainability the living DNA of the university for a resilient, inclusive, and sustainable future.

SUSTAINABILITY REPORT 2024

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SUSTAINABLE Campus
Kampus Lestari
UNIVERSITI TEKNOLOGI MALAYSIA