

KMUTT
SUSTAINABILITY REPORT 2026

รายงานความยั่งยืน มจธ. ประจำปี 2569 | sustainable.kmutt.ac.th

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Message from The President



Dear Students, Colleagues, and Friends of KMUTT

It is with immense pride and excitement that I extend a warm welcome to you on our newly launched KMUTT website dedicated to sustainability. This platform not only reflects our unwavering commitment to environmental stewardship but also marks a pivotal step in our journey towards achieving the Sustainable Development Goals (SDGs) by 2030 with our visionary campaign, "KMUTT: A Sustainable University for SDGs 2030."

At KMUTT, we recognize the pressing need to integrate sustainability into the heart of our institutional framework. Our objective is to transform our campus into a model of sustainable development, visibly aligning with the SDGs in a manner that resonates with both our immediate community and visitors from afar. We are driven by the imperative to foster an educational environment that not only nurtures academic excellence but also instills a deep -seated responsibility towards global environmental challenges among our students and staff.

Our campaign, "KMUTT Sustainable University for SDGs 2030," is comprehensive, touching on all 17 SDGs. This ranges from tackling poverty and hunger (SDG 1 and SDG 2) to promoting well-being and gender equality (SDG 3 and SDG 5), from ensuring availability and sustainable management of water and sanitation (SDG 6) to providing affordable and clean energy (SDG 7).

Furthermore, our goals include fostering decent work and economic growth (SDG 8), driving industry innovation and infrastructure (SDG 9), reducing inequalities (SDG 10), and building sustainable cities and communities (SDG 11). We also focus on responsible consumption and production (SDG 12), climate action (SDG 13), life below water (SDG 14), life on land (SDG 15), promoting peace, justice, and strong institutions (SDG 16), and strengthening the means of implementation through global partnerships (SDG 17).

Our commitment extends beyond mere advocacy. KMUTT is set to be a beacon of sustainability leadership, integrating green principles into all facets of our operations from governance and infrastructure to teaching and research. We are determined to provide a role model in energy efficiency, environmental preservation, safety management systems, and sustainability education.

Moreover, we encourage every member of our community to be proactive change agents. By adopting the "SEP for SDGs" concept Sufficiency Economy Philosophy for Sustainable Development Goals we aim to empower our students and faculty to contribute meaningfully to societal and community betterment, ensuring a higher quality of life for all.

In our pursuit of sustainability, we understand the financial implications of green initiatives. Such projects often demand significant upfront investments; however, we firmly believe in the long-term benefits. These initiatives are not only crucial for environmental health but also offer extensive socio-economic returns that contribute to a sustainable future for all at KMUTT.

n conclusion, I would like to express my heartfelt gratitude to each member of the KMUTT community. Your daily contributions are vital to our collective efforts. Thank you for your dedication and for joining us in this noble endeavor to ensure that our future, and that of the generations to come, is not just possible but is prosperous and sustainable

Together, we will continue to advance and innovate, dedicating ourselves to fostering sustainability within our community and society at large.

Assoc. Prof. Dr.Suvit Saetia
President
King Mongkut's University of Techolggy Thonburi

Executive Foreword



Asst. Prof. Dr. Prasert Kanthamanon

Senior Vice President for Administrative Affairs
King Mongkut's University of Techolggy Thonburi

In the ever evolving landscape of higher education, sustainability is no longer a peripheral concern but a central pillar of our strategic vision. As Senior Vice President for Administrative Affairs, my role extends far beyond oversight it is about leading transformative initiatives that weave sustainability into the very fabric of KMUTT. Our mission to foster an eco-conscious campus requires a comprehensive and integrated approach: from advancing green technologies and optimizing resource efficiency to embedding the United Nations Sustainable Development Goals (SDGs) across both academic and operational spheres. By driving these initiatives, we not only strengthen our institutional ethos but also provide our students and the wider community with tangible examples of how sustainable living can be realized in practice. These commitments underscore our determination to position KMUTT at the forefront of environmental stewardship serving as a benchmark and inspiration for other institutions of higher learning.



Assoc.Prof.Dr. Yossapong Laoonual

Assistant to the President for Sustainability
King Mongkut's University of Techolggy Thonburi

My role as Assistant to the President for Sustainability is dedicated to strategically embedding sustainability across every facet of our university's operations and academic mission. This requires a critical reassessment of our environmental footprint, alongside the proactive development of policies that advance sustainability in education, research, and community engagement. Our initiatives embrace a holistic perspective, addressing not only environmental priorities but also the social and economic dimensions of sustainable development ensuring balanced, long-term growth. We actively engage students, faculty, and the broader community in meaningful dialogue and collaborative projects that confront pressing global challenges, including climate change, resource scarcity, and social inequality. By integrating these principles into the very ethos of KMUTT, we are shaping a new generation of leaders and innovators equipped to drive sustainable transformation in their future endeavors. Our commitment extends beyond building a green campus; it is about cultivating a sustainable society and fostering an environment where innovation in sustainability is championed and celebrated.

Our approach to sustainability



KMUTT's Approach to Sustainability: From Policy to Practice

At King Mongkut's University of Technology Thonburi (KMUTT), sustainability is not merely an initiative or a policy it is the core of our identity as an educational institution. It is a principle embedded in every aspect of our operations, teaching methodologies, and research endeavors. We are committed to being a tangible model, not only to uphold our responsibilities to society and the environment but also to inspire and lead in the landscape of sustainable development for higher education, both nationally and globally.

Leadership Through Action: The University as a Living Model

Our primary goal is to establish KMUTT as a true archetype of a sustainability-driven organization. We pursue this through a dual approach where two complementary strategies are implemented. Internally and physically, we are dedicated to transforming our campus into "Living Laboratory" where sustainable innovations are tested and applied in the real world. This ranges from optimization energy efficiency and implementing comprehensive waste management based on the principles of a Circular Economy, to preserving the campus ecosystem and biodiversity. All of these efforts are subject to a cycle of continuous assessment and improvement to meet the highest standards.

Externally and socially we leverage our leadership position to share knowledge and drive change in the broader community. We create platforms for knowledge exchange, conduct workshops, and build partnerships with other institutions and organizations to collectively elevate the standards of sustainable management in society. The core of KMUTT sustainability mission is human development. We integrate the Sufficiency Economy Philosophy (SEP) with hands-on learning to cultivate graduates as "Change Agents" equipped with future-ready skills and a strong sense of social responsibility. This mission is coupled with our commitment to the relentless improvement of our university's energy and environmental management systems, ensuring we are not merely participants but a driving force helping to shape the direction of global sustainability.

KMUTT's Approach to Sustainability is derived from the KMUTT Sustainable University Policy, which was adopted in 2018.

sustainable.kmutt.ac.th/policy

About KMUTT

Founded as Thonburi Technology Institute (TTI) on February 4, 1960, the institution evolved into King Mongkut's Institute of Technology Thonburi (KMITT) in 1974, and later, on March 7, 1998, became King Mongkut's University of Technology Thonburi (KMUTT) the first autonomous public university in Thailand. Located in the vibrant city of Bangkok, KMUTT has long been a hub of innovation and diversity, consistently welcoming a dynamic mix of local and international students supported by dedicated staff members from various backgrounds. This mix of global talent fuels KMUTT's vibrant academic environment.

KMUTT commitment to sustainability began in 2005 with the creation of the Center of Energy Environment Safety and Health, which laid the groundwork for sustainable systems and management. A major turning point came in 2010 when the university launched its Green University Development Policy, aiming to embed sustainability into every aspect of campus life energy, environment, and safety while inspiring its community to lead by example. In 2017, the Office of Sustainability was established to drive the Sustainable University for SDGs 2030 vision. This led to the successful execution of the KMUTT Sustainability Strategic Plan 2019–2024, which now serves as the solid foundation for our ongoing operational strategies as we accelerate toward the 17 UN Sustainable Development Goals (SDGs). The university's active initiatives continue to focus on core pillars: infrastructure, energy and climate action, waste management, water conservation, transportation, education and research, and safety.

Under the leadership of Assoc. Prof. Dr. Suvit Saetia, KMUTT reaffirmed its role as a leader in sustainability in 2018 by launching a renewed policy based on the SEP for SDGs concept. Today, in 2026, this concept has evolved further into interactive learning experiences, utilizing online simulators and modern platforms to promote continuous improvement in resource efficiency, environmental protection, and campus safety. KMUTT continues to champion sustainability and experiential learning, turning the campus into a living laboratory where students and staff develop innovative solutions for global challenges. Declared in 2017 as a Sustainable University for SDGs 2030, KMUTT actively contributes to Thailand's national agenda fostering sustainability leadership, community engagement, and global awareness among its members.

Get to know KMUTT more

kmutt.ac.th love.kmutt KMUTT

KMUTT at a glance

Campus

Energy Usage
1,608.82 ▲
kWh per capita

Water Usage
19.18 ▲
m^3 per capita

Total Waste
588 ▲
tonnes/yr

Recycled Waste
151 ▼
ton/year

Forest Vegetation Area
1.74
sq.kilometers

Sustainable transport users
>408K ▲
passengers

Number of Students and Staff
18,137 ▼
People Students 15,500 Staff 2,637

The arrows (▲ / ▼) represent the change in each indicator compared to the values recorded in 2025.



>576
Event releated to Sustainability
We organized events focused on environmental sustainability to cultivate KMUTT students and staff as leaders of change.

Education and Reseach

>2,600
Environment and Sustainability Courses

$22.1M
Sustainability efforts budget and research funds
KMUTT has allocated a budget to support activities and research in environmental sustainability, aimed at enhancing and extending learning to the community and society sustainably.

>1,400
Publications for Environment and Sustainability
All Publications, the average 3 year per 400 publications on environment and sustainability published that arrange by KMUTT.

Read more on page 54



KMUTT Nature Positive

Strategic Roadmap

To achieve its goal of Net Zero emissions and enhance campus biodiversity, KMUTT has implemented a comprehensive 7-Milestone roadmap designed to halt and reverse nature loss. This strategic framework aligns with the Global Goal for Nature and is executed through the following systematic phases

Nature Positive Commitment
Establishing the Policy on Biodiversity Promotion to ensure that university development activities prevent and mitigate negative impacts on environmental health and overall ecosystem integrity.

Biodiversity Working Group
Appointing a dedicated committee comprising executive leadership, academic experts, and operational staff to steer policy and drive on-ground implementation across all campuses.

Baseline Data Mapping & Gap Analysis
Conducting comprehensive spatial mapping to assess land use, green cover percentages, and water retention capacities across Bangmod, Bang Khun Thian, Ratchaburi, and the KX Building.

Baseline Surveys & Data Collection
Engaging the university community in citizen-science activities to collect primary ecological data, actively cataloging local flora and fauna to build a robust biodiversity database.

Target Setting & Action Planning
Establishing the Policy on Biodiversity Promotion to ensure that university development activities prevent and mitigate negative impacts on environmental health and overall ecosystem integrity.

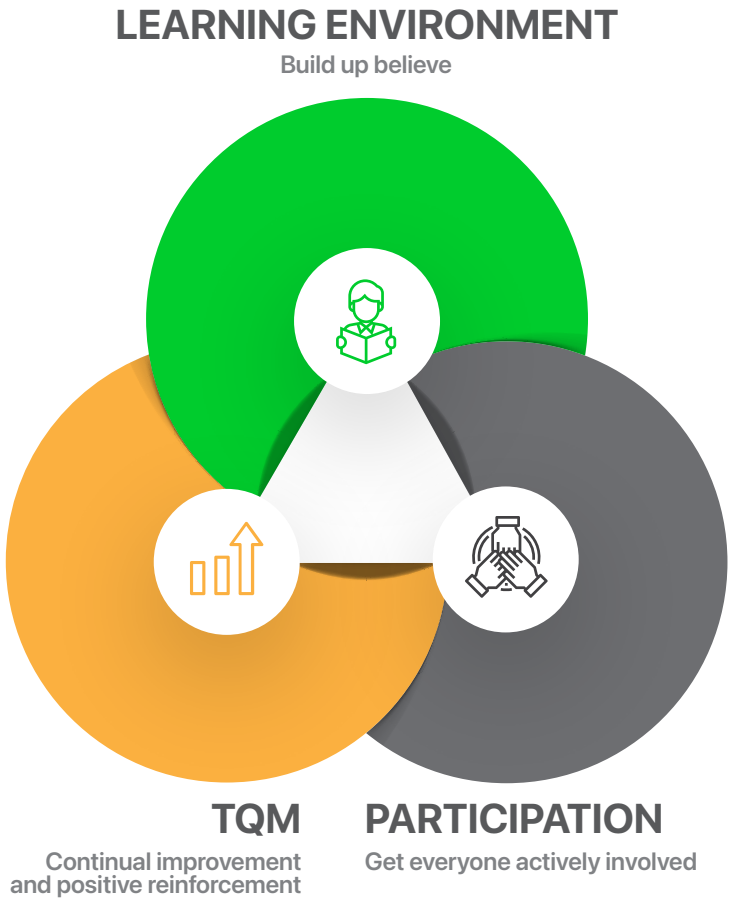
Actions for Nature
Establishing the Policy on Biodiversity Promotion to ensure that university development activities prevent and mitigate negative impacts on environmental health and overall ecosystem integrity.

Annual Reporting & Evaluation
Establishing the Policy on Biodiversity Promotion to ensure that university development activities prevent and mitigate negative impacts on environmental health and overall ecosystem integrity.

Read more on page 9



Strategy for Sustainability



Transform campus to be an integral learning spaces and living lab

- Strive for conductive environment to create living lab and to awareness foster innovation by our students and staff
- Educate our graduates to be 20 century learners
- Understand the impact of technology on the environment, as a preparation to become the change agents for the public
- Development of future "green tech" by students and staff

Learning space of the classroom as living lab provides conducive learning, participation and demonstrations. In-class learning draws on cases and examples to raise environmental and sustainable development awareness at every opportunity. Conducting research and doing innovation to be as environmentally and socially inclusive as possible.

KMUTT's strategy transforms our campus into a dynamic living lab, integrating educational spaces that foster innovation and environmental awareness. Our approach educates and empowers students and staff to develop cutting-edge green technologies and become proactive change agents, addressing the impacts of technology on our environment. This hands-on, research-driven environment nurtures 21st century learners to actively participate and demonstrate sustainable solutions in real-world scenarios.



KMUTT Nature Positive

To actively halt and reverse nature loss, King Mongkut's University of Technology Thonburi has developed a comprehensive 7-Milestone roadmap. As a committed member of the Nature Positive Universities Alliance, KMUTT aligns this framework with the Global Goal for Nature. The ultimate objective is to achieve Net Zero emissions by 2040 while systematically enhancing and restoring campus biodiversity across all operational sites.

Nature Positive Commitment & Policy Implementation

The foundation of the roadmap is the formal establishment of the Policy on the Promotion and Restoration of Biodiversity 2025. This policy explicitly mandates that all university development activities must prevent and mitigate negative impacts on environmental health. It enforces the designation of conservation zones such as forests, public parks, and natural water bodies to safeguard ecosystems. Furthermore, it strictly regulates the control of pollutants (wastewater, air, and noise) to ensure absolute compliance with environmental quality standards.

Establishment of the Biodiversity Working Group

To translate policy into action, KMUTT relies on a dedicated collaborative framework. This involves integrating biodiversity conservation into education, research, and community engagement. By supporting interdisciplinary collaboration with national and international organizations, the working group ensures systematic biodiversity management, fosters local awareness, and drives innovation in environmental protection.

Baseline Data Mapping & Spatial Analysis

A rigorous assessment of existing ecological assets was conducted through comprehensive mapping of land use, vegetation cover, and water retention capacities across all KMUTT campuses:

Bangmod Campus
248,302 m² total area, achieving 39.5% Green Cover and 27.9% Water Absorption.

Bang Khun Thian Campus
538,376 m² total area, achieving 32.3% Green Cover and 84.4% Water Absorption.

Ratchaburi Campus
1,787,200 m² total area, maintaining a massive 90.0% Forest Area and 98.6% Water Absorption.

KX Building (Urban Area)
3,056 m² total area, maintaining 35.0% Green Cover and 9.1% Water Absorption.

Baseline Surveys & Species Cataloging

To measure biodiversity accurately, KMUTT conducts ongoing ecological surveys to build a robust database of local flora and fauna. The campus currently serves as a sanctuary for diverse species

Campus Flora
Includes the Fish Poison Tree (Barringtonia asiatica), Red Mangrove (Rhizophora mucronata), Nipa Palm (Nypa fruticans), and Cannonball Mangrove (Xylocarpus granatum).

Campus Fauna
Habitats support the Smooth-coated Otter (Lutrogale perspicillata),Little Cormorant (Microcarbo niger), Meder's Mangrove Crab (Episesarma mederi), and the Great Egret (Ardea alba).

Target Setting & Action Planning (The 4Rs Framework)

KMUTT formulates actionable targets structured around the comprehensive 4Rs Framework:

Refrain (Avoidance)
The most critical step. KMUTT enforces a strict "Brownfield-First" policy (Zero Greenfield Conversion) to protect its baseline green areas. This includes avoiding negative impacts on nature in new construction, preserving mature trees, and ensuring zero chemical discharge.

Reduce (Minimization)
Slashing resource consumption across water, energy, and paper. This includes pushing for a 61% reduction in single-use plastics and transitioning to smart energy technologies.

Restore (Rehabilitation)
Actively rehabilitating degraded ecosystems, particularly the sensitive coastal environments and wetlands.

Renew (Transformation)
Changing mindsets through education, integrating the Sufficiency Economy Philosophy (SEP), and utilizing the campus as a "Living Lab" for community innovation.

Actions for Nature (On-ground Execution)

A rigorous assessment of existing ecological assets was conducted through comprehensive mapping of land use, vegetation cover, and water retention capacities across all KMUTT campuses:



Canal Bio-remediation
Implementing the advanced SBT MICA SAND wastewater treatment system nusing physical separation, anaerobic filters, and aeration to improve water quality before it enters local canals.



Mangrove Restoration
Expanding the coastal defense forest area by over 130 acres at the Bang Khun Thian Campus.



Zero Waste Campus
Establishing extensive recycling centers and organic waste composting to eliminate plastics that clog waterways.

Annual Reporting, Aerial Monitoring & Evaluation

To guarantee transparency and continuous improvement, KMUTT rigorously tracks its progress. Utilizing aerial monitoring and spatial mapping from 2022 to 2025, the university witnesses and documents the physical transformation of its campuses. By publishing annual evaluations of habitat expansion and carbon neutrality metrics, KMUTT ensures its operations remain firmly aligned with the UN Sustainable Development Goals (SDGs) 2030.

Read Mord KMUTT Biodiversity Report



Strategic Research

KMUTT is committed to creating high-quality research, development, and innovation that generate significant impact on both the economy and society. This commitment is built upon a foundation of research excellence. One of the key strategies under KMUTT's Research Strategic Plan is to promote collaborative and interdisciplinary research to address complex and current challenges.

The university's research strategy is divided into eight key thematic areas

Sustainable Bioeconomy
Biofuels and Biorefinery, Bioresource Management and Utilization, Food for The Future, Sustainable Agriculture, Conservation ecology

Digital Transformation
Data Science for Business, AI and Robotics, Education Technology, Digital Health, Fundamental research for digital transformation

Innovative materials, Manufacturing and Construction
Advanced Materials, Design and Manufacturing, Smart Construction

Smart Healthcare
Assistive Technology for the Aged, Disabled and Rehabilitation, Medical Diagnostics, Medical Treatment and Prevention, Logistics & Management

Sustainable Mobility
Next Generation Aerial Vehicle, Next Generation Vehicle, Rail System, Supply Chain Management, Transport Policy and Planning

Sustainable Energy and Environment
Earth System and Climate Change, Energy Efficiency, Energy System Integration, Energy and Environmental Policy, Sustainable Environmental Technology and Management

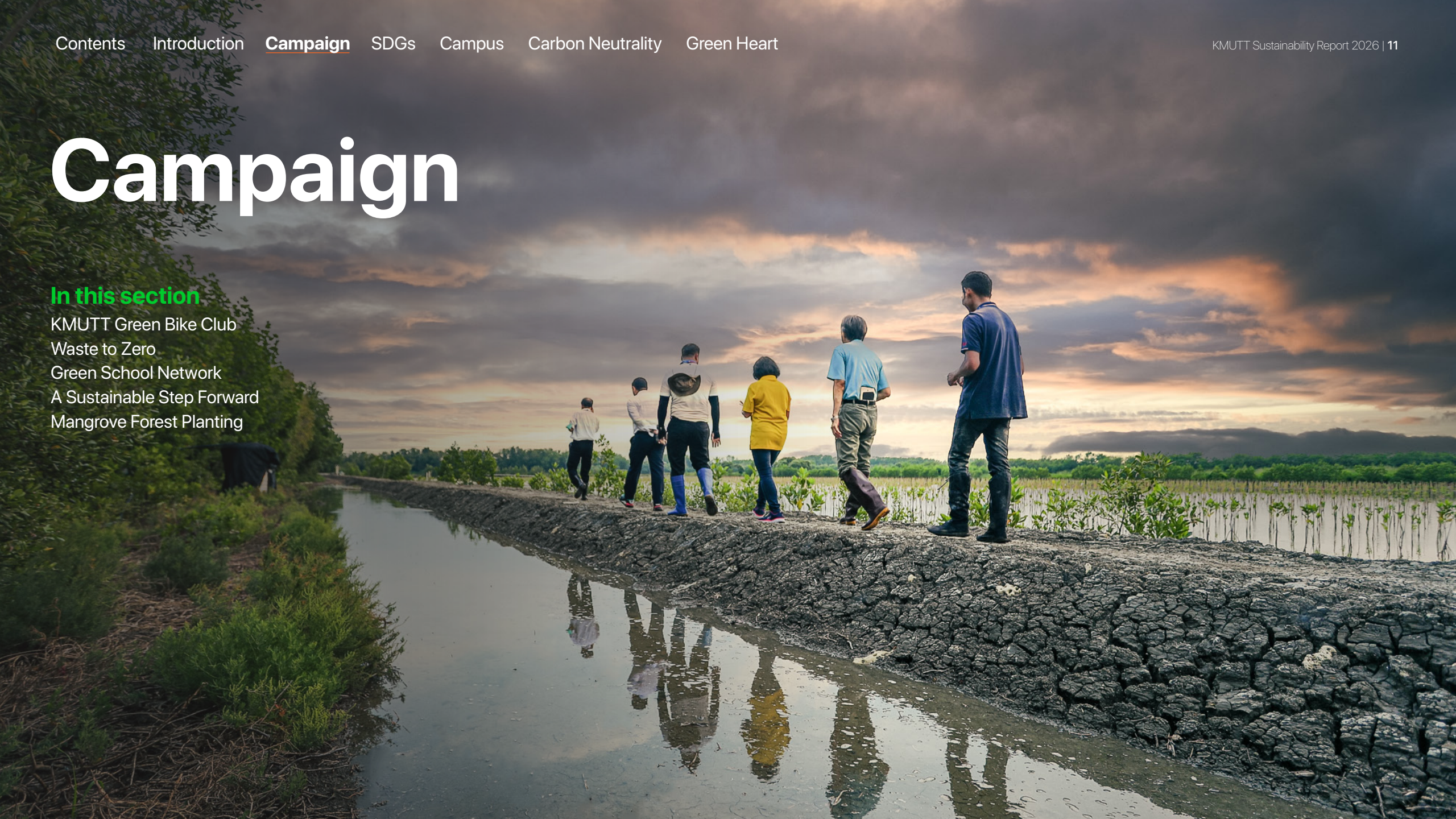
Creative and Learning Society
Art and Design Innovation, Community Development and Management, Future Learning, Future Society

Inclusive and Sustainability Research
Area-based and Fundamental Research, Capacity building and adaptation, Inclusive research and innovation, Sustainability and well-being community



https://www.kmutt.ac.th/en/research

Campaign



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KMUTT Green Bike Club

The KMUTT Green Bike Club originally started as an informal group in 2005, driven by individuals with a shared passion for cycling. Officially established in 2013, it has since grown into a robust community comprising over 6,400 student members and 750 staff members. The club warmly welcomes all members of the university community to participate in its initiatives and activities.

Integrating Cycling with Learning and Wellness

the club has elevated cycling beyond simple transportation and exercise. We actively focus on promoting student health and wellness by creatively integrating cycling into a variety of engaging activities, such as:

- Cycling for Field Trips: Providing an eco-friendly, out-of-classroom learning experience by riding bicycles to various study sites and real-world locations.
- Bike Rallies and Learning Stations: Organizing interactive, activity-based learning where students use bicycles to navigate between different educational checkpoints.
- Health Promotion Campaigns: Encouraging students and staff to stay physically active through cycling, which helps reduce stress and promotes overall physical and mental well-being.

Environmental Initiatives and Community Services

The club remains deeply committed to tackling environmental challenges and supporting the community. We run the Bike Share for Free Campaign, which features several key projects and services:

- KMUTT Green Bike and "Zombike": An upcycling initiative that breathes new life into old, donated bicycles by repairing them for active campus use.
- Recyclable Bike Accessories Center: A dedicated hub for recycling and repurposing used bicycle parts and accessories.
- Self-Service Bike Repair: Members have access to maintenance tools for do-it-yourself repairs, alongside free mechanical assistance and expert guidance provided by our team.

Ultimately, the KMUTT Green Bike Club is dedicated to using bicycles as a medium to drive community development, environmental conservation, and health promotion both within the KMUTT campus and in the surrounding communities.

Recent Achievements and Impact

To highlight the practical benefits of our initiatives on both health and the environment, the club continuously tracks the outcomes of cycling activities across the university. Every day, students and staff actively commute and engage in campus life utilizing both the university's shared bicycles and their own personal bikes.

Through this consistent, year-round engagement, our campus cycling community has generated the following overall impact:

Total Distance Covered
11,631.5 km

Health Impact (Calories Burned)
383,839.5 kcal

Fuel Consumption Saved
969.29 L

Carbon Emissions Reduced
2.83 tCO_2







Waste to Zero

KMUTT Waste Rally is a dynamic and environmentally conscious activity aimed at promoting recycling and sustainable living among students. This activity is structured to incentivize students by allowing them to exchange collected plastic bottles and electronic waste for activity hours, with an added component that rewards those who contribute more significantly.





Objective

The primary goal of the KMUTT Waste Rally is to enhance environmental awareness and encourage recycling habits among students. By linking the collection of recyclable materials to the reward of activity hours, the activity aims tomotivate students to actively participate in waste reduction.

Materials for Recycling

The focus of the collection is on plastic bottles and electronic waste. These materials are commonly used and often improperly disposed of, making them a significant focus for recycling Plastic bottles include water and beverage containers, while electronic waste covers items like old phones, laptops, batteries, and other small electronic devices.

Exchange System

Students who participate in the activity can exchange their collected recyclable materials for activity hours, which may be part of their academic or extracurricular requirements. This system provides a tangible benefit for engaging in environmental conservation.

Additional Incentives for Higher Contributions

An interesting aspect of the KMUTT Waste Rally is that students who contribute larger amounts of recyclable materials can achieve additional benefits. This might include more activity hours or other forms of recognition, encouraging students to collect and recycle more aggressively.

Educational Impact

Beyond the physical act of recycling, this activity serves as an educational platform. It teaches students about the importance of waste management and the environmental impact of materials like plastic and e-waste.

Implementation and Collaboration

Successful execution of this activity would require organized collection and sorting systems, as well as a method to track and allocate activity hours. Collaboration with environmental organizations and recycling centers could enhance the program's effectiveness and scope.

Community and Environmental Benefits

The KMUTT Waste Rally not only contributes to a cleaner and more sustainable campus but also instills a sense of environmental responsibility in students. The activity has the potential to create a ripple effect, inspiring similar initiatives in other institutions and communities.

This initiative reflects KMUTT's dedication to sustainability and its innovative approach in involving students in eco-friendly practices. By integrating environmental action with academic incentives, the Waste Rally creates a win-win situation for both the students and the planet.

Green School Network

King Mongkut's University of Technology Thonburi (KMUTT) has established a clear policy and commitment to becoming a green university that continuously advances toward sustainability. The university has developed integrated systems for energy, environmental, safety, and health management, ensuring that these practices are implemented across all departments. This effort serves as a model of good practice for students, staff, and surrounding communities to learn from and apply in their own contexts generating benefits at local, national, and global levels. KMUTT's key objective is to create a learning ecosystem that empowers students at all levels to apply their knowledge in community engagement and real-world problem solving, cultivating environmental awareness and responsible behavior. Through experiential activities, students are encouraged to build a Green Heart and become Change Agents who drive positive transformation in energy conservation, environmental protection, safety, and public health extending these values beyond the campus into broader society.

The Center for Energy, Environment, Safety and Health (EESH Center) has been assigned by the university to develop and implement an integrated management system that aligns with international standards. The aim is to ensure effective management of energy, environmental protection, safety, and occupational health across all university units creating a model of good practice that benefits KMUTT, the surrounding community, and society at large, while serving as an example for other organizations to follow. Each year, the EESH Center organizes various activities for both new and current students to enhance their understanding of KMUTT's sustainability policies and goals. These activities mark the starting point for nurturing student leaders with a "Green Heart" who will become Change Agents for a sustainable future.

In addition, the center leads the KMUTT Green School Network Project, which engages student volunteers as leaders in extending knowledge and awareness of energy conservation, environmental protection, safety, health consciousness, and climate action to schools and communities. Through collaboration with teachers and students, the project promotes sustainable behavioral change and environmental stewardship beyond the campus. KMUTT has continuously expanded its commitment through the KMUTT Green School Network, an ongoing initiative that has been organized annually since 2011 to cultivate youth leaders with a Green Heart and promote sustainability awareness within schools and communities across Thailand. Over more than a decade, the project has empowered hundreds of young volunteers and partner schools to apply sustainability knowledge in real contexts creating ripple effects that strengthen environmental stewardship at both local and national levels. This long-term effort reflects KMUTT's dedication to integrating education, community engagement, and sustainability for the benefit of society as a whole.

Objectives

1. To promote the dissemination of knowledge and understanding on energy conservation, environmental protection, safety, health awareness, and sustainable climate action to schools and communities through the active participation of teachers and students.
2. To expand the network of model Green Schools and nurture young environmental leaders, or "Green Heart Juniors," who embody the Green Heart spirit and cultivate seeds of sustainability within their schools.
3. To strengthen the network of KMUTT student leaders with a Green Heart Change Agents who apply and share their knowledge of energy conservation, environmental protection, and safety practices to create positive impacts within their communities and society at large.
4. To raise public awareness and encourage behavioral change toward eco-friendly consumption and responsible use of resources, fostering a culture of sustainability and mindful living.





IN 2026

The Green School Network currently consists of 21 member schools.

The list of participating schools is as follows

Naloung School	Rang Rachaphruek Nutmee Uthit School
Bo Kluea School	Thungkhru (Phuengsai Anuson) School
Darunsikkhalai School	Bangmod (Tanpao Wittayakarn) School
Samakkhi Bamrung School	Taweethapisek Bangkhunthian School
Santa Cruz Convent School	Pittayalongkorn Pittayakom School
Buranasuksa School	Wat Pracha Bamrung (Wat Luk Wua)
Khlong Rang Chak School	Ratburana (Muhammad Uthit) School
Wat Sarot School	Sarasas Suksawat School
Chaloem Phra Kiat School, Nan	Samakkhi Tham Islam School
Rattanacheena Uthit School	Watlaemfapha School
Chusinthong Pradit Anuson School	Khajonroj Wittaya School (Joining within 2027)

Project Achievements

Since 2011, the KMUTT Green School Network has continuously expanded to include 21 member schools, promoting collaboration and learning in energy conservation, environmental protection, safety, health awareness, and climate action. Each year, the project engages at least six participating schools and no fewer than 50 KMUTT students who serve as Green Heart leaders facilitating workshops, exhibitions, and hands-on activities that extend sustainability knowledge to teachers, students, and communities. Over time, more than 1,600 students have taken part in the program, gaining valuable experience in leadership, teamwork, communication, and social responsibility. The initiative has become a dynamic platform for connecting universities, schools, and communities empowering young people to act as Change Agents who inspire sustainable behavior and foster long-term positive impacts on society.



Activity Evaluation Method

The effectiveness of the KMUTT Green School Network is evaluated through both quantitative and qualitative assessments. Each year, data are collected on the number of participating schools (at least six per year) and student leaders (no fewer than 50 per year) as key performance indicators (KPIs). Feedback is obtained from teachers, students, and Green Heart leaders through surveys and interviews to measure learning outcomes, behavioral change, and satisfaction levels. In addition, the quality of school activities and the continuity of sustainability practices are reviewed by the EESH Center to ensure long-term impact. The evaluation results are used to improve program design, enhance student engagement, and strengthen the overall effectiveness of the network in promoting sustainability education.



Summary 2025

In 2025, King Mongkut's University of Technology Thonburi (KMUTT), through the EESH Center, continued to advance its Green University Policy by integrating mental health awareness into its sustainability outreach initiatives. Under the KMUTT Green School Network: "Building Mental Resilience Teaching Youth to Cope with Stress" project, KMUTT aimed to provide students and teachers in network schools with essential knowledge and life skills for managing stress effectively. **A total of 76 KMUTT Green Heart student leaders participated as facilitators and speakers, conducting workshops and interactive sessions for 75 school students and 12 teachers and staff from partner schools.** The program focused on helping participants understand the nature and causes of stress, differentiate between positive and negative stress, recognize emotional and physical warning signs, and practice simple relaxation and coping techniques.

The evaluation results showed that participants' satisfaction levels were rated as good overall, reflecting positive engagement and meaningful learning experiences. Moreover, valuable feedback and recommendations from attendees were collected to further enhance future program design. By combining environmental awareness with emotional resilience education, this initiative not only promoted mental well-being but also supported the development of young leaders with a Green Heart, capable of driving both social and environmental sustainability in their communities.

65 Years of KMUTT

A Sustainable Step Forward

The "65 Years of KMUTT – A Sustainable Step Forward" initiative was launched to celebrate the university's long-standing commitment to health, sustainability, and community well-being. The project symbolizes KMUTT's continuous journey toward becoming a green and healthy university, promoting not only academic excellence but also holistic development of body, mind, and society. Its primary objective is to encourage students and staff to adopt healthy lifestyles through simple, everyday actions such as walking while fostering a culture of sustainability, unity, and collective responsibility within the KMUTT community. The initiative serves as a reminder that individual wellness and environmental sustainability are deeply interconnected, and that every small step contributes to a greater shared impact. The project is expected to strengthen community engagement, enhance physical and mental well-being, and inspire lasting behavioral change toward sustainable living, aligning with KMUTT's vision of advancing as a model university for sustainable development.

422,500

Target number of steps per participant within 65 days

537

Total number of participants

105,306,824

Total accumulated steps from all participants









Mangrove Forest Planting

The KMUTT Mangrove Forest Planting Project is one of the university's flagship environmental initiatives, reflecting its strong commitment to ecological restoration and sustainability. This program supports the Nature Positive Universities Initiative, demonstrating KMUTT's active role in creating a positive impact on nature. The activity focuses on the restoration of mangrove ecosystems one of the most vital coastal habitats for carbon sequestration, shoreline protection, and biodiversity conservation. By engaging students, faculty, and staff in mangrove planting, KMUTT not only contributes to climate change mitigation but also enhances awareness of environmental responsibility within the university community.

The activity takes place in Phanthai Norasing Subdistrict, Mueang District, Samut Sakhon Province, a strategic location chosen for its ecological significance and potential for long-term restoration. The program is organized regularly on the last Wednesday of every month, ensuring continuous engagement and impact throughout the year. Each session allows participants to gain hands-on experience in mangrove planting, learn about the importance of these ecosystems, and understand the role of collective action in achieving sustainability goals.

Through this ongoing initiative, KMUTT demonstrates leadership in integrating education, research, and community engagement to promote environmental stewardship. The Mangrove Forest Planting Activity not only restores natural ecosystems but also instills in participants the values of care, collaboration, and responsibility embodying the spirit of "Creating a Sustainable Future with Love."



Mangrove Forest Planting



SDGs

In this section

KMUTT for SDGs
No Poverty
Zero Hunger
Good Health and Well-being
Quality Education
Gender Equality
Clean Water and Sanitation
Affordable and Clean Energy
Decent Work and Economic Growth
Industry, Innovation and Infrastructure
Reduced Inequalities
Sustainable Cities and Communities
Responsible Consumption and Production
Climate Action
Life Below Water
Life on Land
Peace, Justice and Strong Institutions
Partnerships for the Goals



Cultivating KMUTT's Path to Sustainability

King Mongkut's University of Technology Thonburi (KMUTT) is advancing towards becoming The Sustainable Entrepreneurial University, a force for positive change at local, national, and global levels. Guided by the Three Pillars of Sustainability People, Planet, and Prosperity KMUTT fosters a culture where:

People: Community members are engaged and actively participate in problem-solving and social responsibility.

Planet: Activities are environmentally conscious, protecting our shared world.

Prosperity: Initiatives add value, creating a positive impact for the nation, grounded in the principles of "Sufficiency Economy Philosophy."

Through collaboration across departments, KMUTT is strategically pursuing six sustainability goals, supporting and communicating these initiatives to integrate sustainable practices throughout the university. These goals include:

1. Achieving Carbon Neutrality by 2040: Reducing KMUTT's carbon footprint to zero.
2. Enhancing Student Engagement: Inspiring students to play an active role in sustainability efforts.
3. Developing Sustainability Change Agents: Cultivating "Green Heart" leaders who drive positive environmental change.
4. Research and Innovation Impact: Highlighting and sharing the tangible effects of KMUTT's research innovations.
5. Advancing SDG Impacts: Addressing social, environmental, and economic issues in line with the Sustainable Development Goals.
6. Fostering Community Partnerships: Creating opportunities for community-centered learning and problem-solving.

Each of KMUTT's sustainability targets influences key areas of impact:

People Dimension

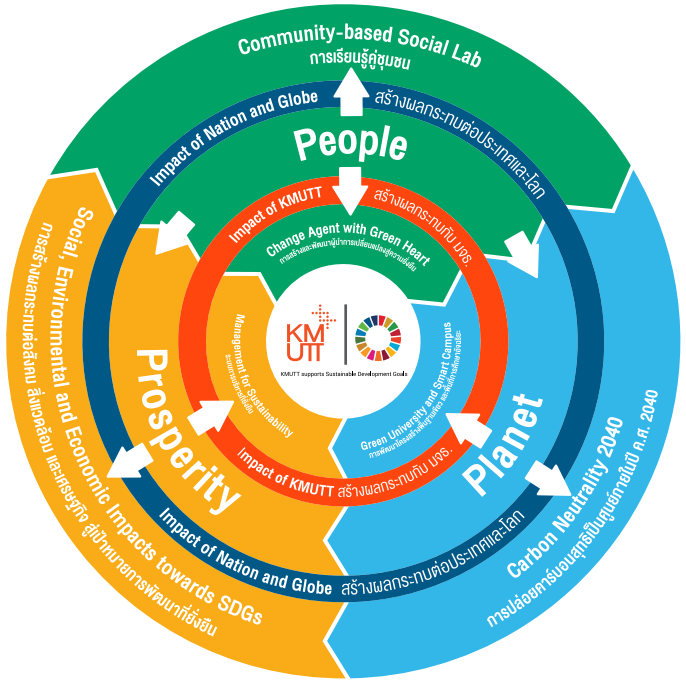
Impact of KMUTT: Creating and developing sustainability change agents with a "Green Heart" mindset.
Impact of Nation & Globe: Community-Based Social Lab.

Planet Dimension

Impact of KMUTT: Developing green infrastructure and a smart campus environment.
Impact of Nation & Globe: Achieving carbon neutrality by 2040 (KMUTT Carbon Neutrality 2040).

Prosperity Dimension

Impact of KMUTT: Advancing a sustainable management system.
Impact of Nation & Globe: Creating social, environmental, and economic impacts towards achieving the Sustainable Development Goals (SDGs).



	People	Planet	Prosperity
Nation & Globe	Encouraging the Community Engagement	Carbon Neutrality 2040	Demonstrating the Impact of Research and Innovation
KMUTT	Increasing the Student Engagement	Building Green Infrastructures & Environment	Creating a Sustainable Management System

KMUTT SUSTAINABLE UNIVERSITY FOR SUSTAINABLE DEVELOPMENT GOALS 2030

1 NO POVERTY

Goal 1

NO POVERTY

KMUTT promotes SDG 1: No Poverty through education, research, and community outreach, empowering underprivileged groups, fostering economic opportunities, and driving sustainable poverty reduction.





Financial Support for Undergraduate Students through the Royal Commemorative Scholarship Programme

KMUTT allocated funding for ten scholarships, each valued at THB 25,000, under its 2024 scholarship programme commemorating the 72nd birthday of His Majesty the King on 28 July 2024. The programme was established to assist undergraduate students whose financial circumstances presented obstacles to their education. It focused on students who lacked a reliable and sufficient source of funding for educational expenses, while also demonstrating good conduct, determination in their studies and a commitment to volunteering. The scholarships provided financial assistance to recipients facing difficulties in meeting the costs associated with university education.

The scholarship presentation ceremony took place on 14 March 2025 at the Prapha Prachaksupanit Meeting Room in the Office of the President. The Head of the Student Financial Aid Unit presented the programme report, while the President of KMUTT presided over the ceremony and awarded the scholarships. In his address, the President congratulated the recipients and encouraged them to maintain diligence, perseverance and discipline in their studies. He also emphasised ethical conduct, mutual understanding and helping others, encouraging recipients to pursue educational success and contribute to society and national development





Supporting Educational Opportunities through the Professor Somchai Chucheepsakul Scholarship

The "Professor Somchai Chucheepsakul and His Students" scholarship programme provided assistance to 32 undergraduate students in the 2024 academic year, with each recipient selected to receive THB 6,000. The programme supports students who lack financial resources or experience financial difficulties that obstruct their education. Established in 2014, it reflects the intention of Professor Somchai to pass educational opportunities from one generation to the next. Alongside his continuing contributions to research in the Department of Civil Engineering, the scholarship provides a means of supporting undergraduate students facing financial barriers to university study.



On 10 June 2025, the Student Financial Aid Unit at KMUTT accompanied scholarship recipients to meet Professor Somchai at the Department of Civil Engineering, Faculty of Engineering. University representatives attending the meeting included the Vice President for Student and Learner Development and the Head of the Student Financial Aid Unit. The recipients expressed their gratitude for the support and acknowledged its importance in relieving financial burdens. The meeting also recognised the encouragement that the scholarships provided for students to remain committed to their studies and develop their abilities.

kmutt.ac.th/sfa

sustainable.kmutt.ac.th/goals1

Suwannakut Family Scholarships Support Students Facing Financial Hardship

The Suwannakut family provided scholarships totalling THB 20,000 to two students at KMUTT in the 2025 academic year. The recipients were studying in the Department of Tool and Materials Engineering and the Department of Industrial Engineering, Faculty of Engineering. The scholarships were intended for students who demonstrated good conduct but lacked sufficient financial resources. By directing assistance towards these students, the family sought to support their opportunity to continue university education despite financial constraints.

The scholarships commemorated Suraphan Suwannakut, a retired lecturer from the Department of Tool and Materials Engineering. As part of the activity, the recipients met representatives of the Suwannakut family and expressed their appreciation for the contribution. The Student Financial Aid Unit acknowledged the family for providing educational support to students in need. The article highlighted both the financial relief provided by the scholarships and their role in encouraging recipients to remain motivated in their studies.

1 NO POVERTY

Goal 1

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Continuing Scholarships Help Financially Disadvantaged Students Pursue Graduation

Boonyium and Associates Co., Ltd. awarded five scholarships with a combined value of THB 100,000 to KMUTT students for the 2025 academic year. The scholarships were provided as grants with no binding obligations, with support continuing until recipients complete their degree programmes. The company identified its intended beneficiaries as students with good academic performance and strong determination who nevertheless lacked adequate financial resources. In addition to scholarship assistance, the company expressed its willingness to provide internship opportunities according to the university schedule, allowing students to gain experience alongside their education.

The presentation ceremony was held on 14 October 2025 at the Boonyium Meesuk Meeting Room in the KMUTT Library. Company executives presented the scholarships, while the Vice President for Student and Learner Development represented the university in expressing appreciation. Representatives of the Student Financial Aid Unit, staff and students also attended. The company stated that its support aimed to help recipients continue their studies through graduation. The article also noted the longstanding connection between the company and KMUTT through Boonyium Meesuk, who served as Chairman of the Institute Council from 1988 to 1998.

sustainable.kmutt.ac.th/goals1



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2 ZERO HUNGER

Goal 2

ZERO HUNGER

KMUTT promotes SDG 2: Zero Hunger through research, innovation, and community engagement in sustainable agriculture and food security. The university advances agri-tech solutions, supports smallholder farmers, and fosters sustainable food systems for local and global well-being.



sustainable.kmutt.ac.th/goals2



Training Farmers in Native Beekeeping and Agricultural Pollination

the Native Honeybee and Pollinator Research Centre, Bee Park, at KMUTT Ratchaburi organised training on raising native Thai honeybees and stingless bees. The programme focused on producing honey that meets Good Agricultural Practice (GAP) and Good Manufacturing Practice (GMP) standards, alongside using bees for pollination to support agricultural production. It provided farmers with knowledge about native beekeeping, honey quality and the agricultural applications of pollinators.

The training was delivered by the head of the research centre, a centre researcher and an experienced farmer from its network. Their participation brought together research expertise and farming experience to guide participants in developing beekeeping as an agricultural occupation. Following the training, the centre planned to continue monitoring honey quality and outcomes among participating farmers in its network. The article reports the delivery of training and planned follow-up, with improved honey standards and agricultural productivity identified as objectives of the programme.

Spirulux Caviar Transforms Spirulina By-Products into an Alternative Protein Product

Three KMUTT students developed "Spirulux Caviar," a plant-based alternative to fish caviar made from protein extracted from residual spirulina biomass. The raw material is a by-product of the industrial extraction of valuable substances from spirulina. Working under academic supervision, the team used ultrasound-assisted alkaline extraction to obtain protein, followed by reverse spherification to create caviar-like gel spheres. Repeated experimentation addressed challenges involving the unfamiliar flavour of algae protein and the texture required to resemble fish roe. The resulting product won a gold medal at the Thailand New Gen Inventors Award 2025, organised by the National Research Council of Thailand. The team described the product as containing essential amino acids and phycocyanin, a substance with antioxidant properties. Its development demonstrated a way to turn an industrial by-product into an alternative protein food. At the time of publication, the researchers were studying the feasibility of scaling production to an industrial level and seeking private-sector partners to support commercialisation and wider consumer access.





Campus Market Food Safety Inspections Combine Scientific Assessment with Practical Learning

KMUTT conducted food safety inspections at its campus market on the ground floor of the S2 parking building. The activity brought together the Department of Microbiology, Faculty of Science, the Benefits and Property Management Unit, and the Health Services Unit. It aimed to improve hygiene standards and strengthen consumer confidence through an examination of food preparation practices. Third-year microbiology students inspected raw materials, equipment and food handlers, with cooperation from vendors operating within the market.

The inspections formed part of practical learning in the Food Microbiology and Food Sanitation Laboratory course. Food samples selected during the activity were to undergo laboratory analysis, providing scientific information for assessing food safety under actual market conditions. Graduates of the first KMUTT Food Safety Leadership training programme also participated, applying their knowledge through field practice. The activity connected classroom and laboratory learning with food safety assessment in a university community setting, involving students, trained participants, university service units and local vendors.

2 ZERO HUNGER

Goal 2

ZERO HUNGER

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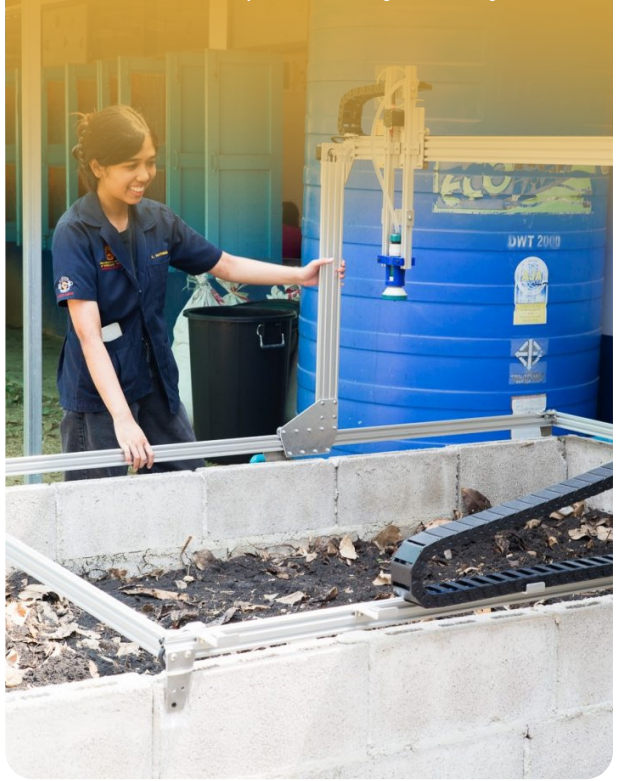


sustainable.kmutt.ac.th/goals2



Low-Pressure Superheated Steam Drying Reaches Commercial Food Production

KMUTT researchers developed low-pressure superheated steam drying technology to produce crispy fruit and vegetable products without using oil. The process operates without oxygen in the drying system and creates a puffed structure as moisture inside the produce rapidly turns into steam. It was developed to preserve the natural colour, aroma and flavour of individual ingredients while achieving a crispy texture. Following technology transfer to industry, the research resulted in "Pure D" dried-fruit products made from Thai ingredients without added sugar, oil or additives.

The development involved more than 20 years of research and produced over 25 academic publications. In 2017, the team began scaling the technology from laboratory equipment to industrial production with a private-sector partner. Initial factory trials required further investigation of heat transfer, steam flow, control systems and drying conditions. Approximately three additional years of testing and modification were needed to develop an industrially workable process. The resulting commercial application demonstrated the transfer of drying research into food manufacturing and the development of value-added products from Thai agricultural materials.

Dairy School Applies Data and Technology to Improve Farm Productivity

KMUTT developed the "Dairy School" initiative with farmers, cooperatives, extension personnel and university partners to address feeding costs, reproduction and farm management. The approach uses farms as practical learning environments and adapts support to individual conditions. KMUTT developed an automated data pipeline and dashboard to organise information on milk production, quality, cattle health and reproduction. At Samran Farm in Phetchaburi, feed adjustments using local ingredients increased daily milk production from 510 to 700 kilograms between February and July 2025, approximately 37%, despite milking cow numbers falling from 54 to 52. The initiative also introduced Early P-Check testing to detect pregnancy through milk from 45 days after artificial insemination. Training participants achieved 95% accuracy compared with ultrasound examinations. In August 2026, KMUTT and specialists from the University of Wisconsin–Madison visited farms in three provinces to examine different production conditions. Planned expansion through 72 extension officers to 840 farms includes targets to reduce costs by 12% and raise daily production to 13.5 –15 kilograms per cow. These expansion figures remain targets, while the Samran Farm results provide a documented example of improved productivity.





Advancing Knowledge of Food Safety and Authenticity in Modern Supply Chains

the Faculty of Science, KMUTT, organised a special lecture on advanced analytical approaches to food safety and authenticity in modern supply chains. Held at V Space in the Learning Exchange Building, the activity aimed to support the development of research and innovation relevant to economic, social and industrial needs. Professor Michele Suman, a specialist in food safety and quality research from Barilla G. & R. Fratelli S.p.A., Italy, delivered the lecture and shared experience from the food industry.

The session covered food authenticity and the application of advanced analytical technologies to examine food quality and safety throughout supply chains. It also addressed approaches to preventing food adulteration, identified in the article as an important international concern. Faculty members, researchers and students attended and exchanged academic perspectives with the speaker. The activity provided an opportunity to learn about analytical approaches and industrial experience that could inform further research. It concluded with the Deputy Dean for Research presenting a commemorative gift in appreciation of the contribution.





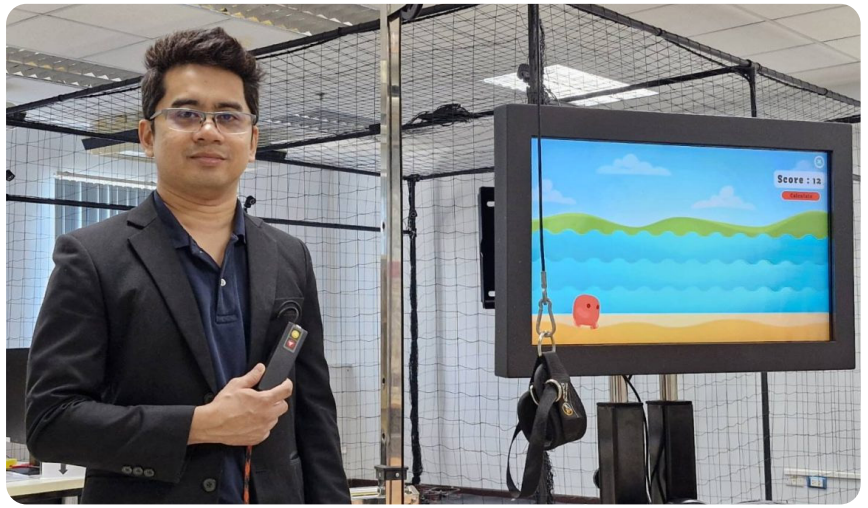
Super Village Health Volunteers Deliver Community-Based Healthcare in Remote Areas

KMUTT collaborated with Rangsit University, Chulalongkorn University, the Program Management Unit on Area Based Development and local healthcare partners to develop the "Super Village Health Volunteer" model in Omkoi District, Chiang Mai. The initiative addressed difficulties accessing healthcare in remote mountain communities, focusing particularly on first aid and maternal and child healthcare. Volunteers learned through practical workshops, observation in hospital emergency departments, mentoring from local health personnel and monthly practice. LINE groups enabled volunteers to share information and seek advice from mentors and researchers while working in their communities.

Between October 2023 and April 2024, 30 volunteers provided 1,268 instances of symptom-based care, with respiratory conditions accounting for almost half. They regularly monitored blood pressure and blood glucose levels for 96 at-risk residents and followed up with bedridden patients. The project reported community savings of approximately THB 400,000–900,000 through avoiding travel outside the area for basic services. Volunteers also initiated activities addressing salt reduction among older people, appropriate care for children with fever and rehabilitation for bedridden older adults. The article identified continuing challenges involving medical supplies, reporting requirements and compensation for additional responsibilities.

Combining Robotics, AI and Games in a Rehabilitation Prototype

KMUTT researchers and partner universities developed a robotic prototype combining physical rehabilitation equipment, artificial intelligence and simulation games for people with leg muscle weakness. Medical personnel at Bang Khun Thian Geriatric Hospital contributed information about patient needs to guide development. The equipment allows adjustments to resistance, load and positioning according to individual physical conditions. Users control game activities through leg movements, while the interface incorporates features intended for older people and the target patient groups, including suitable text sizes, button arrangements and clearly displayed scores. AI is incorporated to monitor activity, analyse usage behaviour and adjust game difficulty to individual users. The prototype received a recognition award from the National Research Council of Thailand in the Information Technology and Communication Arts category for fiscal year 2025. The researchers identified opportunities for further development in hospitals, rehabilitation centres, older-person communities and households. Planned work includes adapting the equipment and games for additional groups, such as people with paralysis or those recovering movement after surgery, and cooperating with public- and private-sector partners to support wider application.





Sante Sauce: Commercialising Fish Sauce with Reduced Sodium and Potassium

KMUTT researchers developed fish sauce with reduced sodium and potassium through more than 15 years of research beginning in 2009. The team adapted electrically driven membrane separation technology to remove these substances from concentrated fish sauce, achieving reductions of up to 40% compared with conventional products. The process does not replace sodium with potassium or rely on dilution. It was developed to provide an additional seasoning option for consumers who need to control their intake of these substances, including people with kidney disease, heart disease and hypertension.

The resulting product retained the characteristic colour, aroma and flavour of anchovy fish sauce, without added sugar, preservatives, colouring or monosodium glutamate. Because the process removes sodium and potassium rather than diluting the sauce, the researchers reported that its protein content and flavour remained concentrated. The research subsequently reached commercial production through Superior Products Innovation Co., Ltd., a KMUTT spin-off company. The company manufactures and markets the product under the "Sante Sauce" brand, turning the research into a commercially available seasoning with reduced sodium and potassium.

3 GOOD HEALTH AND WELL-BEING

Goal 3

GOOD HEALTH AND WELL-BEING

KMUTT advances SDG 3: Good Health and Well-Being by promoting mental and physical wellness, supporting staff and students through health programs, and engaging communities in preventive care and sustainable healthy living initiatives.





Patient-Specific Medical Devices Developed through AI and 3D Printing

KMUTT collaborated with Ramathibodi Hospital, Phramongkutklao Hospital, Rajavithi Hospital and technology developers through the Osscentric Medical Technology Innovation Sandbox. The platform connects doctors, engineers and researchers to develop patient-specific devices using medical imaging, AI, digital surgical planning and 3D printing. Its workflow covers identifying clinical needs, analysing CT or X-ray images, designing and manufacturing devices, and collecting outcome data. Applications described in the article include personalised vascular devices, spinal surgery models and guides, and planning tools for jaw reconstruction. For personalised vascular devices used in aneurysm treatment, the article reported data from 16 patient cases and an approximately 94% success rate. Domestic design and preparation were developed to address imported -device waiting times of up to two months and costs of approximately THB 400,000–500,000 in some cases. The collaboration also applied digital planning and surgical guides to complex spinal and jaw procedures. Further priorities included safety-standard testing, systematic collection of treatment outcomes, reimbursement arrangements and wider hospital adoption, with the aim of extending access beyond individual prototype cases.

A Smart Neck Pillow Detects Snoring and Provides Vibration Alerts

KMUTT researchers developed a smart neck-pillow prototype using embedded systems to detect snoring and provide vibration alerts. The project initially produced a conventional pillow with sound-detection sensors and an application for recording sleep information. Following discussions with a doctor from Bang Khun Thian Geriatric Hospital, the team redesigned it as a neck pillow suitable for use during travel as well as at home. The development focused on real-time snoring detection and an alert mechanism intended to address concerns associated with obstructive sleep apnoea. The prototype was tested with ten working-age male staff members at Bang Khun Thian Geriatric Hospital. The article reported accurate snoring detection and vibration alerts, with none of the participants reporting that the vibration disturbed their sleep. The project received an invention award from the National Research Council of Thailand for fiscal year 2025 and attracted interest when exhibited in Geneva. At publication, it remained a prototype. Plans included private-sector commercialisation with a target selling price of THB 2,000–3,000, patent applications, and further development of the application to provide more detailed sleep records.





Seventy-Six Older Adults Complete Health Promotion and Self-Care Training

The Continuing Education Centre at KMUTT organised a programme promoting health knowledge and self-care among older adults in cooperation with the Thung Khru District School for Older Persons. At the closing ceremony on 20 August 2025, certificates were presented to 76 participants who completed the training. The programme aimed to help older people understand their health and develop appropriate self-care practices. Its curriculum covered holistic health, exercise, brain-training games, music and art activities, Thai herbs, health conditions requiring attention, nutrition, medication use and emotional management.

Learning extended beyond physical and mental health to include communication, everyday technology, cybersecurity awareness and basic legal knowledge. These topics addressed safe technology use, respect for the rights of others and awareness of online deception. The programme received contributions from the Thung Khru District Office, healthcare providers, educational institutions, technology crime investigation personnel and units within KMUTT. Supported by the Bangkok Health Security Fund, it formed part of continuing cooperation to provide lifelong learning and address health-related needs among older people in the local community.

4 QUALITY EDUCATION

Goal 4

QUALITY EDUCATION

KMUTT advances SDG 4: Quality Education by promoting inclusive, equitable, and lifelong learning opportunities for all. The university ensures access to high-quality education, supports diverse learners, and fosters continuous skill development through innovation, outreach, and global collaboration.



sustainable.kmutt.ac.th/goals4



Industry Collaboration Provides Learning Opportunities and Scientific Resources for 200 Students

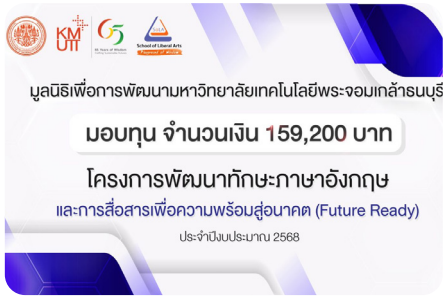
On 30 August 2025, the Faculty of Science, KMUTT, collaborated with Charoen Pokphand Foods Public Company Limited to organise "CPF Food Laboratory CSR & Sharing: Science to School." The activity involved 200 students from chemistry, microbiology, and food science and technology programmes. It connected students with industry representatives and alumni working in scientific businesses and laboratory services. Alumni shared professional experiences from roles in microbiological testing, physical and sensory testing, product applications, sales and business management, providing perspectives on career pathways after graduation.

Twelve partner companies participated through workshops and booths displaying their products and work. They also donated chemicals and scientific equipment to the Faculty of Science, with faculty executives and lecturers receiving the contributions to support teaching and learning. The activity combined career-oriented exchanges, workshops and access to scientific resources through cooperation between the university and industry. As part of the company's corporate social responsibility programme, it aimed to introduce students to practical experience from leading industrial laboratories and inspire their future professional development.

Thirty-Six Older Adults Complete the KMUTT Smart Senior Programme

The Continuing Education Centre at KMUTT completed the first "KMUTT Smart Senior" programme, with certificates presented to 36 participants at the closing ceremony on 21 May 2025. The programme focused on developing digital skills among older adults and supporting the practical use of technology in everyday life. Training covered basic artificial intelligence, smartphone photography and video editing, energy-saving applications and emergency response. These activities were intended to strengthen digital skills and confidence while addressing difficulties older people may encounter when using technology and accessing online services. The programme brought together the Thung Khru District Office, the Ratchaburi and Bang Khun Thian campuses, technology crime investigation personnel, Darunsikkhalai School for Innovative Learning and other university units. Its learning objectives included helping participants communicate, search for health information and conduct online transactions more conveniently. The President of KMUTT presided over the closing ceremony alongside district and university representatives. At publication, applications were open for a second cohort, with training scheduled from 2 July to 20 August 2025, continuing the programme's emphasis on lifelong learning for older adults.





Funding Supports Professional Language and Communication Development through Future Ready

On 10 September 2025, the Foundation for the Development of KMUTT provided THB 159,200 to support the "Future Ready" English language and communication skills development project at the School of Liberal Arts for fiscal year 2025. The funding supported a programme intended to develop professional communication skills in both Thai and English. Its focus was preparing students to communicate in employment-related situations and approach entry into the labour market with greater confidence.

The programme included opportunities to learn from external speakers and practise through workshops, mock job interviews and activities under the GCDC Club. These activities connected language development with practical communication tasks relevant to professional preparation. Mock interviews formed part of the practice opportunities, alongside learning exchanges with invited speakers. The contribution was provided to support the operation of the educational project, with its activities directed towards developing student communication skills and readiness for future employment.

4 QUALITY EDUCATION

Goal 4

QUALITY EDUCATION

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sustainable.kmutt.ac.th/goals4



Village Education Volunteers Identify Out-of-School Children and Support Flexible Learning

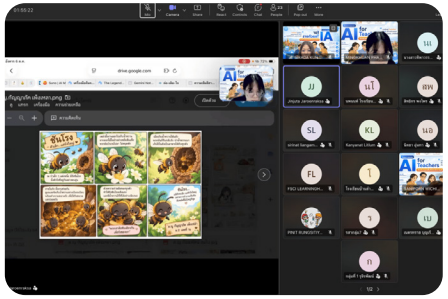
KMUTT Ratchaburi developed the Village Education Volunteer model to connect schools, families and communities in remote areas. Building on more than 20 years of educational work in Ratchaburi, the initiative recruited knowledgeable local residents to assist teachers and support children beyond the classroom. Initially piloted in five schools in Suan Phueng District, volunteers received training in learning management and the use of Thai-language teaching manuals for non-teachers. Their responsibilities included home visits, monitoring children at risk of leaving education and organising activities to strengthen basic learning skills.

Through door-to-door surveys involving local education and community networks, approximately 400 out-of-school children were identified across five districts within three months. The initiative supported the provincial Zero Dropout programme and flexible provision through the “One School, Three Models” approach, combining formal, non-formal and informal education. KMUTT Ratchaburi also worked with the local primary education authority to develop vocational competency curricula covering chicken and fish farming, vegetable cultivation and soap-making. Manuals were developed so other schools could adapt the curricula, while cooperation with partners supported the establishment of a provincial education assembly.



Student Science Volunteers Bring Hands-On Learning to Nearly 100 Young People

On 10 May 2026, the Faculty of Science, KMUTT, organised a continuing science outreach activity in cooperation with the Thung Khru Discovery Learning Library in Bangkok. Under the theme “The Wonders of Light and Colour,” the programme gave university students opportunities to serve as volunteer science teachers and organise learning activities for children and young people. Faculty members and student volunteers delivered morning and afternoon sessions, accommodating nearly 100 participants interested in exploring scientific phenomena through practical activities. The learning stations enabled participants to investigate light through creative experiments, with activities designed to encourage analytical thinking, systematic problem-solving and scientific enquiry beyond textbooks. University staff supported the delivery and observed the activities, while the library provided a community learning setting outside the university. Participants were also to receive online certificates for inclusion in their portfolios. The event continued cooperation between the Faculty of Science and the library, combining practical teaching experience for student volunteers with opportunities for young people to explore science through direct participation



AI for Teachers Supports the Application of AI in Classroom Learning

On 6 October 2026, the Faculty of Science, KMUTT, together with the Ratchaburi campus and the University Relations Office, organised an online follow-up activity under the “AI for Teachers” programme for teachers in Ratchaburi Province. The session focused on the second phase of the programme: applying learning with students. A lecturer from the bilingual Science and Mathematics Education programme led the activity, supported by educational development personnel who facilitated discussion and learning exchanges with participating teachers.

Teachers presented approaches to organising activities in which students could use AI to create different forms of work, including stories, games, worksheets, lesson-summary materials and product signs. The facilitators reviewed progress, provided suggestions and helped address problems associated with implementation. The activity therefore extended beyond an introduction to AI tools by supporting teachers as they considered and applied them in classroom learning. Its stated purpose was to strengthen teacher confidence in adapting AI technology to teaching, with feedback and continuing follow-up forming part of the programme.

5 GENDER EQUALITY

Goal 5

GENDER EQUALITY

KMUTT advances SDG 5: Gender Equality by promoting equal opportunities in education, research, and leadership. The university empowers women through inclusive policies, mentorship, and community programs that foster equity, safety, and career growth, enabling women and girls to reach their full potential.



sustainable.kmutt.ac.th/goals5



Women in Cybersecurity: KMUTT Students Win First Runner-Up at Women Thailand Cyber Top Talent 2024

Three students from the Computer Science English Programme at the KMUTT School of Information Technology, competing as team SamoonNaKarunn, won first runner-up at Women Thailand Cyber Top Talent 2024. Despite the competition title, the event took place on 23 January 2025 during Cybersec Asia × Thailand International Cyber Week 2025 at the Queen Sirikit National Convention Center. The team comprised two third-year students and one second-year student. KMUTT published the achievement on 5 March 2025.

Organised by the National Cyber Security Agency, Huawei Technologies (Thailand), and partner organisations, the competition was specifically open to women and people with a female gender identity. It provided a setting for participants to demonstrate their cybersecurity abilities and compete for national recognition. The first runner-up award was the reported outcome for the KMUTT team, recognising the technical performance of three women studying computer science and documenting their participation in a competition dedicated to women in cybersecurity.

Colorful Your Pride: Student Perspectives on Equality and Self-Expression

Published on 20 June 2025, "Colorful Your Pride" presented interviews with four KMUTT LGBTQ+ students about identity, acceptance, and the meaning of equality. Their experiences included participation in student leadership, university activities, creative work, and student representation. Across the interviews, the students described equality as the ability to live without being judged by gender or sexual orientation, access opportunities on equal terms, and express themselves without having to justify their identities. The feature also explored coming out, personal confidence, and the importance of respecting individual choices. Students explained that openness about identity should remain a personal decision and that acceptance involves recognising people beyond gender labels. One interviewee had served as deputy chair of a student council committee studying and recommending revisions to university student dress regulations. By publishing these perspectives,the article brought student experiences into the university discussion of gender equality, documenting how the interviewees understood inclusion in everyday life, relationships, and participation in the university community.





Pride Month Exhibition: Learning about Gender Diversity and Equal Rights

KMUTT Library presented the exhibition "Pride Month: In Every Color, There's Pride" from 30 May to 30 June 2025 at the Open Theatre on the first floor of the library building. The exhibition introduced the history of Pride Month and the movement for LGBTQ+ rights, alongside information about sexual orientation, gender identity, gender expression, and sex characteristics. Its content encouraged visitors to understand diversity beyond binary definitions of gender and recognise the right of individuals to express their identities.

The exhibition also addressed marriage equality and the legal recognition of diverse relationships, connecting these issues with fairness and equal treatment. Additional material explored LGBTQ+ representation in the media and the role of visibility in discussions of identity and acceptance. Through this exhibition, KMUTT Library made educational content on gender diversity and equality available within a university learning space. The reported activity was the delivery of the exhibition and its learning materials, covering historical, social, and legal dimensions of LGBTQ+ inclusion.

5 GENDER EQUALITY

Goal 5

GENDER EQUALITY

KMUTT advances SDG 5: Gender Equality by promoting equal opportunities in education, research, and leadership. The university empowers women through inclusive policies, mentorship, and community programs that foster equity, safety, and career growth, enabling women and girls to reach their full potential.



sustainable.kmutt.ac.th/goals5



KMUTT Women Secure the Top Two Places at Women Thailand Cyber Top Talent 2026

Two teams from the Computer Science English Programme at the KMUTT School of Information Technology won the top two places in the university-level Senior division of Women Thailand Cyber Top Talent 2026. Team ModJiw won the championship and THB 40,000, while team SamoonNaKarunn received first runner-up and THB 30,000. Each team consisted of three students. The final took place on 31 January 2026 at National Telecom Public Company Limited, and KMUTT published the results on 16 February 2026.

Organised by the National Cyber Security Agency and Huawei Technologies (Thailand), the competition aimed to identify skilled women for the cybersecurity workforce in Thailand. The overall event attracted more than 633 participants from 303 teams nationwide. Contestants completed a Capture the Flag competition lasting more than six hours, applying skills in web attacks, digital forensics, and cryptography. The championship and first runner-up awards were the concrete outcomes reported for the six KMUTT students, recognising their technical performance in a national competition focused on women in cybersecurity.

Speak by Your Clothes: Gender Identity and Freedom of Self-Expression

Published on 29 June 2025, "Speak by Your Clothes" explored clothing as a form of communication through which individuals express identity, personality, and personal choices. The feature connected these themes with Pride Month, LGBTQ+ visibility, and the freedom to express oneself without judgement. It included an interview with a fourth-year student in Educational Technology and Communications at the Faculty of Industrial Education and Technology, who shared experiences of self-expression and participationin activities within and beyond the university. The student explained that labels based on gender, age, occupation, or appearance cannot fully represent an individual. The discussion emphasised freely chosen clothing, acceptance of differences, and supportive environments where people feel comfortable expressing themselves. In its closing section, the article described KMUTT as a space for diverse identities and connected respect for difference and participation with SDG 5 and SDG 10. The feature communicated student perspectives on gender expression and belonging, presenting clothing as a starting point for discussion about identity, equal treatment, and inclusion in university life.





Promoting International Recognition Opportunities for Women Researchers

On 25 June 2025, RIPO KMUTT published an announcement inviting nominations for the 2026 L'Oréal–UNESCO For Women in Science International Awards in Life and Environmental Sciences. The programme recognises outstanding women researchers for scientific excellence in these fields. According to the announcement, an international jury would select five laureates, representing five world regions, with each receiving an award of EUR 100,000. The award ceremony was scheduled for June 2026 in Paris.

The announcement explained the nomination requirements, the online submission process, and the deadline of 4 July 2025. Candidates could not nominate t hemselves; nominations had to be submitted by eligible members of the scientific community or institutional representatives. RIPO KMUTT also provided contact information for enquiries. The documented university action was the dissemination of an international recognition opportunity for women researchers, making information about eligibility and submission accessible through a university research support channel. The article was a nomination announcement and did not report a KMUTT nominee, selection, or award recipient.

6 CLEAN WATER AND SANITATION

Goal 6

CLEAN WATER AND SANITATION

KMUTT advances SDG 6: Clean Water and Sanitation through innovative research, efficient water management, and sustainable sanitation systems. The university ensures access to clean water, promotes water conservation, and develops technologies for safe, sustainable water use on campus and in communities.



sustainable.kmutt.ac.th/goals6



Combining Ultraviolet Light and Chlorine to Treat Emerging Water Contaminants

Research reported by KMUTT on 7 November 2025 investigated the removal of pharmaceuticals and personal care products from water. These substances can remain after conventional wastewater treatment and enter natural water sources used for drinking-water production. The Environmental Engineering research team examined an advanced oxidation process combining ultraviolet light with chlorine, seeking an approach that could build on existing treatment infrastructure. Preliminary findings showed that the combined process removed the target contaminants more effectively than either ultraviolet light or chlorine used separately.

Alongside treatment development, the researchers refined high-performance liquid chromatography methods to measure contaminants at very low concentrations. They also developed tests comparing overall toxicity before and after treatment, addressing the possibility that degradation could produce other harmful substances. The research therefore examined both contaminant removal and the biological effects of treatment. Further work was planned to test reactor design and water-flow conditions closer to practical operation, accounting for characteristics such as turbidity and dissolved organic matter. Adjusting ultraviolet wavelengths was another proposed development to improve treatment efficiency.

Turning Coffee Waste into a Reusable Material for Wastewater Treatment

KMUTT researchers developed a photocatalytic material using spent coffee grounds to reduce caffeine contamination in water. Reported on 6 January 2025, the research combined carbon quantum dots derived from coffee waste with titanium dioxide, enabling the material to operate under visible light. Researchers from Environmental Engineering and Tool and Materials Engineering collaborated on the development. The resulting catalyst was coated onto fibreglass fabric, allowing wastewater to flow across the treatment surface instead of requiring catalyst particles to be added directly to the water. Laboratory tests showed an 80% reduction in caffeine after 12 hours of continuous treatment of water containing leftover brewed coffee. The treated water also became visibly clearer. The coated fabric could be washed and reused, retaining its caffeine-removal performance through five uses. These findings demonstrated both pollutant removal and material reusability under laboratory conditions. The researchers identified coffee producers and cafés as potential users, citing the relatively low material costs, simple system design, and ability to operate with sunlight as features supporting further development towards practical wastewater treatment.

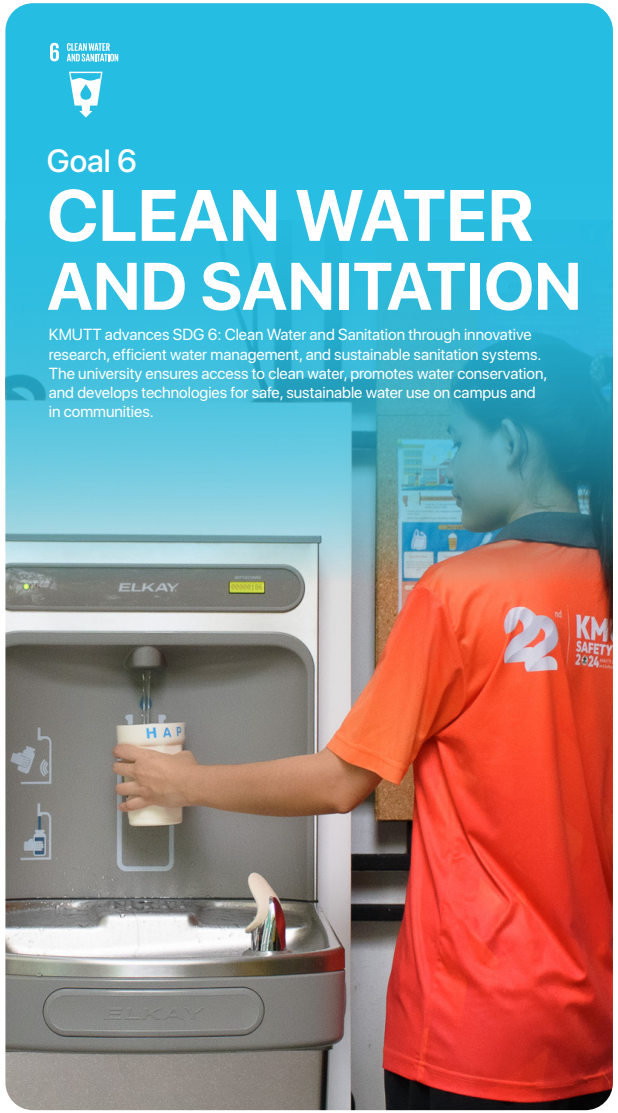




Developing Cooperation to Address Water Pollution in Samut Sakhon

On 27 October 2025, KMUTT joined provincial authorities, business representatives, and other government agencies at Samut Sakhon Provincial Hall to discuss air and water pollution. The meeting addressed environmental pressures in a province with more than 5,000 operating factories, many using conventional production technologies. Water quality in the Tha Chin River was a particular concern, with the discussion identifying both community wastewater and industrial contamination as sources of pollution requiring coordinated action.

KMUTT presented an approach linking university expertise with government and private-sector cooperation to improve industrial capacity and environmental management. The proposals incorporated Environmental, Social, and Governance principles and the Bio-Circular-Green Economy model, alongside local participation in addressing provincial challenges. For water management, the meeting provided an opportunity to connect concerns about wastewater and river pollution with the development of future plans and projects. The reported contribution was the presentation of a collaborative framework and participation in provincial planning discussions, establishing areas for further cooperation rather than reporting completed treatment facilities or measured improvements in river water quality.



sustainable.kmutt.ac.th/goals6



Developing an Automated Rainwater Collector for Highland Agriculture

Three students from the KMUTT International Civil Engineering Programme developed a rainwater-harvesting prototype using the Royal Agricultural Station Angkhang in Chiang Mai as a case study. Reported on 20 August 2026, the project addressed water shortages in steep terrain where substantial rainfall quickly runs downhill before it can be stored. The students developed a modular Collector-Container unit with an umbrella-like collection surface. Its motorised mechanism opens when humidity reaches a set level and closes as humidity falls, reducing the time the surface remains exposed to leaves, dust, and other debris.

The prototype had a collection area of approximately 4.06 square metres and a reported cost of THB 7,972 per unit. Calculations using average rainfall data estimated collection at approximately 284 litres per month per unit, a projection requiring field verification. Initial development demonstrated the opening and closing mechanism and humidity-based control. Further work identified by the team included improving structural stability, electrical protection, and durability, measuring actual water collection in the field, and exploring remote communication and solar power for operation in locations with limited access to electricity.

Bringing Together Expertise on Sustainable Wastewater Treatment

The KMUTT Development Foundation published details of a seminar on transforming wastewater treatment challenges into sustainable standards, scheduled for 8 August 2026. The programme offered participation at the Science Connect room in the Faculty of Science and online through Zoom. Its speakers represented the Pollution Control Department, the KMUTT Faculty of Science, an environmental technology company, and the hotel and commercial-building engineering sector. This brought regulatory, academic, and operational perspectives into the programme.

The announced panel included expertise in community wastewater management, environmental chemistry and technology, treatment services, and building engineering. A foundation committee member with an engineering business background was listed as moderator. The programme centred on wastewater treatment and the move towards more sustainable standards, with both an on-campus venue and an online participation channel. The source documented the seminar arrangements and participating specialists; it did not provide attendance figures, an evaluation of learning, or subsequent changes to treatment-system performance.





Transferring Water Management Research into Provincial Planning in Nakhon Pathom

On 12 March 2026, a KMUTT Faculty of Science research team presented progress on integrated water management at Nakhon Pathom Rajabhat University. The presentation covered scenarios for responding to the 2025 floods and the development of a provincial Decision Support System. The system was being developed to support flood forecasting and warning. This work formed part of a research project on systematic mechanisms for integrated water management, supported by the Program Management Unit on Area Based Development in cooperation with the Office of the National Water Resources.

The team also presented a draft long-term wastewater management master plan for Nakhon Pathom to the research working group and relevant agencies. This extended the discussion from flood preparedness to the management of wastewater across the province. Research knowledge, technical information, and policy recommendations were handed over to the provincial governor and the president of the Provincial Administrative Organisation. The reported outputs were progress on decision-support tools, a draft wastewater management plan, and the transfer of research information to provincial decision-makers for use in subsequent water management activities.

7 AFFORDABLE AND CLEAN ENERGY

Goal 7

AFFORDABLE AND CLEAN ENERGY

KMUTT advances SDG 7: Affordable and Clean Energy through research, education, and campus innovation. The university develops renewable energy technologies, integrates sustainable energy into its curriculum, and implements clean energy solutions on campus to promote a sustainable energy future.



sustainable.kmutt.ac.th/goals7



Integrating Solar Energy and Agriculture through Agri-PV Demonstration and Knowledge Exchange

KMUTT, the National Science and Technology Development Agency, and partner organisations held an Agri-PV workshop on 24 April 2025 at the KX Building, followed by a demonstration-site visit on 25 April at KMUTT Bang Khun Thian. Partners included Forschungszentrum Jülich in Germany and Rajamangala University of Technology Lanna. The programme examined how photovoltaic systems could operate alongside agricultural production, with topics covering system design, performance assessment, aquaculture beneath solar panels, and opportunities to produce food and energy within the same area. The site visit introduced participants to Agri-PV prototypes, pilot facilities, and energy research available for further development and technology transfer. Demonstrations included solar-powered algae cultivation, intelligent energy management for photovoltaic systems with battery storage, and the reuse of carbon dioxide to support precision agriculture. Participants also explored research on agricultural biomass utilisation. The reported activities combined technical presentations, prototype demonstrations, and business-development discussions, giving participants access to research expertise and practical examples of integrating solar electricity generation with agricultural operations.

Establishing Cooperation on Digital Energy Management with the Provincial Electricity Authority

On 19 August 2025, KMUTT and the Provincial Electricity Authority signed a memorandum of understanding on digital energy management for organisations. The agreement established cooperation to promote digital technologies for more effective energy management and energy use. It also covered research, development, and knowledge transfer between the university and the electricity sector, connecting academic expertise with practical energy-management needs. The cooperation aimed to integrate engineering, energy, and digital technology knowledge to develop prototype systems suitable for government agencies and private organisations. It also envisaged opportunities for students and researchers to participate in developing innovations supporting sustainable development. The signed agreement was the concrete institutional outcome reported in the article, providing a basis for subsequent joint work. Its intended direction was to strengthen organisational energy management and support the transition towards cleaner and more sustainableenergy systems, with prototype development and practical application identified as objectives of the partnership.





Providing Solar Panel Testing Services with a Class A+ Solar Simulator

On 27 June 2025, KMUTT announced the availability of solar panel testing services using a Class A+ solar simulator, with ISO/IEC 17025 certification reported in the announcement. The equipment could accommodate solar panels exceeding two metres in size. The service was offered through the CSSC solar cell testing centre at the Pilot Plant Development and Training Institute, KMUTT Bang Khun Thian.

The announcement introduced the equipment through a demonstration video and provided contact channels for organisations interested in requesting testing. Its documented contribution was the availability of university-based testing infrastructure for large solar panels. This gave prospective service users a route to access the equipment and arrange testing through the specialist centre. The announcement focused on testing capability and service access rather than reporting the number of panels tested or subsequent improvements in electricity generation.

7 AFFORDABLE AND CLEAN ENERGY

Goal 7

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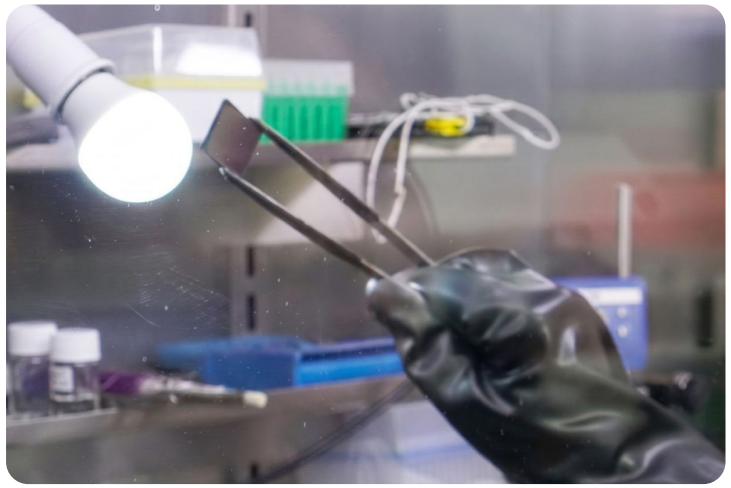

Advancing Flexible Perovskite Solar Cells through Surface Engineering

Research reported on 5 June 2026 described the development of flexible perovskite solar cells by the Interface and Surface Characterization Laboratory at the KMUTT Faculty of Science. The work used two-dimensional surface passivation to address microscopic defects that can interrupt electrical charge movement and reduce cell efficiency and durability. The research sought to improve both energy conversion and stability, contributing to the development of solar technology through domestic research expertise.

The team reported solar-cell efficiency reaching approximately 21%, following more than ten years of continued research. The work also received an NRCT Quality Achievement Award for the 2026 fiscal year. At the time of reporting, the technology remained at Technology Readiness Level 4, involving laboratory measurement and testing before further development towards real operating conditions. Potential applications discussed included building surfaces, curved structures, small electronic devices, and indoor-powered sensors. These remained development opportunities, while the reported achievements were laboratory performance, surface-engineering advances, and national recognition of the research.

LumiGreen: Combining Daylight and Automated Lighting to Reduce Building Energy Demand

The KMUTT LumiGreen student team developed a smart light-pipe system that directs natural daylight into buildings and supplements it with automatically controlled LED lighting. Reported on 7 July 2026, the system used indoor light sensors and a controller to adjust solar-powered LEDs as daylight conditions changed. Recycled PET plastic was used to produce components through 3D printing, while discarded aluminium cans formed reflective internal structures. The project won the Young Change World Change competition, supported by the Power Development Fund of the Energy Regulatory Commission.
The prototype cost approximately THB 15,000 per unit. Following a pilot installation within the university, the team estimated that a 16-square-metre room could save approximately 472 kilowatt-hours of electricity and THB 1,793 annually, with an associated reduction of around 213 kilograms of carbon dioxide equivalent per year. These figures were estimates rather than verified full-year savings. Further development identified by the advisers included testing recycled-material durability, heat accumulation, service life, and installation safety before wider application in schools, community buildings, and other facilities.





Using Local Biomass to Provide Reliable Drying Energy for Community Enterprises

KMUTT and Thaksin University jointly developed a biomass-powered heat exchanger to support community enterprises affected by frequent rainfall in southern Thailand. Reported on 14 July 2026, the technology used locally available wood and agricultural residues to generate heat for drying products. Its indirect heat-exchange design kept combustion exhaust separate from the heated drying air. The equipment could be connected to existing drying facilities, avoiding the need to replace the entire system, and supplied hot air at approximately 100–120°C.

The article reported results accumulated over four years of community use, including energy-cost reductions of up to 50% compared with gas or electricity. It also reported reduced drying times, more consistent product quality, and an almost complete reduction in spoilage losses during rainy periods. Average annual income gains of up to THB 300,000 per group were reported. The technology had been installed in at least six locations in Phatthalung and Satun, with some operating as shared community drying centres. The invention received a Very Good award in the sociology category of the national invention awards for the 2026 fiscal year.

8 DECENT WORK AND ECONOMIC GROWTH

Goal 8

DECENT WORK AND ECONOMIC GROWTH

KMUTT advances SDG 8: Decent Work and Economic Growth by fostering innovation, entrepreneurship, and lifelong learning. Through research, industry partnerships, and skill development, the university drives sustainable economic growth, supports decent employment, and prepares a skilled workforce for a dynamic global economy.



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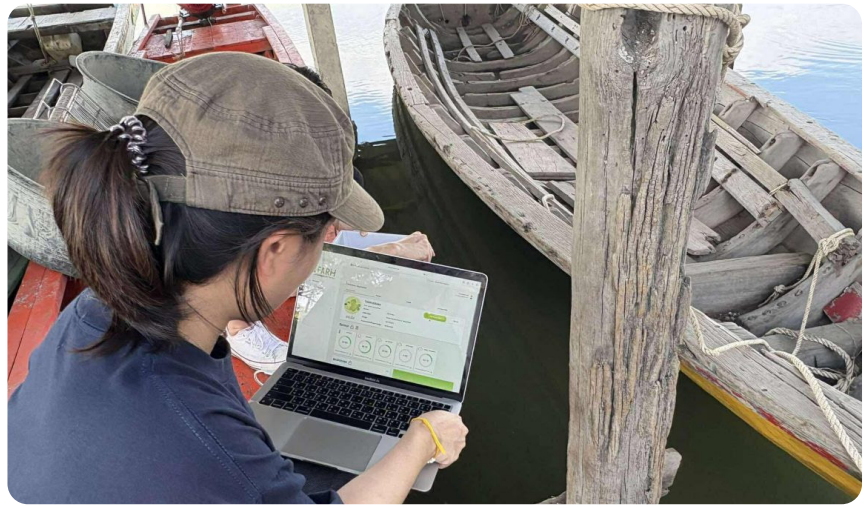
Strengthening Workforce Skills and Industry Experience through Cooperation with Ampol Food

On 15 August 2025, KMUTT and Ampol Food Processing signed an academic cooperation agreement to develop student capabilities and company personnel in response to technological and economic change. The partnership focused on cooperative education for engineering students, creating opportunities to gain experience in an industrial workplace using actual production technologies. The intended approach connected university knowledge with the practical skills required by the food and beverage industry, supporting student preparation for employment.

The agreement also included personnel development through the KMUTT Strategy and Competitiveness Centre, or STECO. Proposed areas of knowledge transfer included artificial intelligence, data analytics, digital supply-chain management, and modern management practices. STECO would work with the company to design training suited to organisational needs and personnel at different levels. The signed agreement established a framework combining workplace learning for students with workforce development for an industry partner. Its objectives were to strengthen professional capabilities, support innovation, and improve organisational competitiveness as businesses adapt to changing technologies and consumer expectations.

Applying IoT Technology to Reduce Work Demands on Older Fish Farmers

Four students from the KMUTT Institute of Field Robotics developed an Internet of Things system to assist older fish farmers with routine pond management. Reported on 11 December 2025, the system connected water-temperature, pH, and oxygen sensors with automated feeding and aeration equipment. Farmers could monitor pond conditions through the AI Farm platform and schedule tasks that otherwise required repeated visits or overnight work. Following field trials, the team added voice commands after finding that some older users experienced difficulty with complex dashboards. The team reported electricity savings of approximately THB 3,000–4,000 per month through aerator operation controlled by actual oxygen levels. The system also incorporated feeding calculations intended to reduce excess feed.
Its proposed business model offered a trial period covering one cultivation cycle, followed by rental or purchase options. The project won the championship, a royal trophy, and the Popular Vote award at JUMP Thailand Hackathon 2025. Further development towards commercial expansion remained dependent on improvements in reliability and additional investment.





Connecting Science Students with Employers through FSci Job Fair 2026

The KMUTT Faculty of Science organised "FSci Job Fair 2026: Career and Further Education Pathways for Students" on 23 February 2026 at the Science Learning Space. The event brought industry representatives into the university to meet students directly and introduce opportunities in the working world. Its objectives included strengthening connections between education and industry and supporting the preparation of graduates for employment in domestic and international labour markets.

Activities included company exhibition booths, further-study guidance, and opportunities to meet Faculty of Science alumni. Students spoke directly with company representatives, while alumni shared professional experiences and guidance on different career pathways. Further-study booths introduced options for students seeking additional specialist knowledge and skills. The event therefore brought employment information, professional experience, and educational guidance together in one setting. The reported outcome was direct engagement between students, employers, and alumni, providing students with access to information and personal perspectives to support decisions about employment and continued study.

8 DECENT WORK AND ECONOMIC GROWTH

Goal 8

DECENT WORK AND ECONOMIC GROWTH

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sustainable.kmutt.ac.th/goals8



Long: Developing a Tourism Application to Connect Travellers with Local Businesses

Students from KMUTT SMART LAB developed "Long," an artificial-intelligence-assisted application designed to help travellers discover community destinations and small local businesses. Reported on 8 May 2026, the application used a swipe-based interface to identify user preferences and generate personalised travel routes. The team gathered and checked local information through direct enquiries, addressing the limited online visibility of smaller attractions and shops. The application also incorporated route adjustments in response to changing conditions, such as rain or accidents.

The platform was designed to encourage visits and local spending through GPS-based photo check-ins and reward coins redeemable for discounts at participating shops. Its initial business approach avoided charging small businesses while they became familiar with the system. Pilot use had begun in Chiang Mai, including Mon Jam and Mae Kampong, as well as Bangkok and Phuket. The project received second runner-up in the Tourism and Creative Economy category at the Thailand New Gen Inventors Award 2026. Further data collection and development were planned before wider expansion; measured increases in community income were not reported.

Supporting SME Business Development through Freeze-Drying Technology

An article published on 3 August 2026 described how the KMUTT Pilot Plant Development and Training Institute supported entrepreneurs through food-processing research, technical advice, training, and product development. Freeze-drying was a major service area, helping businesses develop products that retained characteristics of freshly prepared food while offering longer storage and easier transport. Support extended from initial ideas and prototype testing to production troubleshooting, funding applications, and advice on standards and business development. A reported example was Krua Lung Thaem, a seafood restaurant that began seeking KMUTT advice in 2021 while adapting its business following the COVID-19 disruption. Continued collaboration developed freeze-dried sauces, chilli pastes, and crab-based dishes and supported the transition from prototypes to industrial production meeting Thai FDA and GMP requirements. By the time of reporting, the business had established a production facility beside its restaurant to support export-oriented production and manufacturing for other brands. This case documented business diversification and production expansion arising from sustained university–enterprise collaboration, with technical development helping an existing restaurant establish an additional manufacturing operation.





Developing EV Conversion Skills for Participants from 23 SMEs

The Office of National Higher Education Science Research and Innovation Policy Council and the KMUTT Faculty of Industrial Education and Technology launched a practical training programme on electric-vehicle conversion. Reported on 5 August 2026, the programme selected participants from 23 SMEs, including garage owners, workshop supervisors, engineers, and technicians. Six training days were scheduled between 1 and 16 August 2026 at KMUTT Bang Mod, combining theoretical instruction with practical work. The curriculum covered EV engineering fundamentals, vehicle architecture, drivetrain analysis and design, hands-on assembly, system analysis, safety testing, legal requirements, and a capstone project. It addressed the interconnected knowledge needed for conversion work, including high- and low-voltage electrical systems, CAN bus controls, and thermal management. The programme aimed to help existing automotive businesses develop capabilities relevant to the transition towards electric vehicles. Its stated objectives extended beyond certification to the application of knowledge in business development and the formation of cooperation networks among SMEs, supporting future improvements in the quality and safety of EV conversion in Thailand.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Goal 9

INDUSTRY, INNOVATION AND INFRASTRUCTURE

KMUTT advances SDG 9: Industry, Innovation, and Infrastructure through its Knowledge Exchange for Innovation (KX) building, a hub connecting academia and industry. By fostering research, entrepreneurship, and sustainable industrial development, KMUTT drives innovation and strengthens resilient, inclusive growth.



sustainable.kmutt.ac.th/goals9



Developing Heat-Resistant Aluminium Alloys for Advanced Manufacturing

Research reported on 6 June 2025 described a new aluminium alloy developed by KMUTT researchers in collaboration with a researcher from the National Metal and Materials Technology Center. The work combined aluminium with nickel and scandium to improve strength and resistance to elevated temperatures. Nickel formed reinforcing aluminium–nickel structures, while scandium produced nanoscale particles within the material. This approach addressed a limitation of conventional aluminium alloys, which can lose strength when exposed to high temperatures during operation or manufacturing.

Following more than ten years of research, the team reported laboratory achievements, publications in international research journals, and patent protection. Potential applications included heat-exposed engineering components, welded automotive structures, and large castings for electric vehicles. The researchers also identified opportunities to support lightweight vehicle manufacturing through gigacasting. At the time of reporting, further long-term testing, production scale-up, and collaboration with industrial partners were still required. The documented contribution was therefore the development and protection of materials knowledge, providing a foundation for subsequent industrial testing and application.

Improving Microchannel Heat Sinks for Future Data Centre Cooling

Three fourth-year Mechanical Engineering students at KMUTT, working with academic advisers, developed an open microchannel heat sink for cooling high-performance computing equipment. Reported on 5 September 2025, the design introduced curved, grooved sidewalls to increase the surface available for heat exchange with refrigerant. The work addressed heat accumulation in applications such as processors, artificial-intelligence chips, and data centres, where effective cooling is necessary to maintain computing performance. The team reported cooling performance up to 120% better than the previous design. The research used R-513A refrigerant and examined heat transfer associated with its transition from liquid to vapour. The invention received a gold medal at a 2025 international invention and innovation competition organised by the National Research Council of Thailand. At the time of publication, a patent application was in progress, and the team planned further development with industry to test conditions closer to practical operation. Application to processors and more demanding computing systems remained a subsequent development objective.





Connecting SMEs with Technology Expertise and Innovation Support through KX and SCB

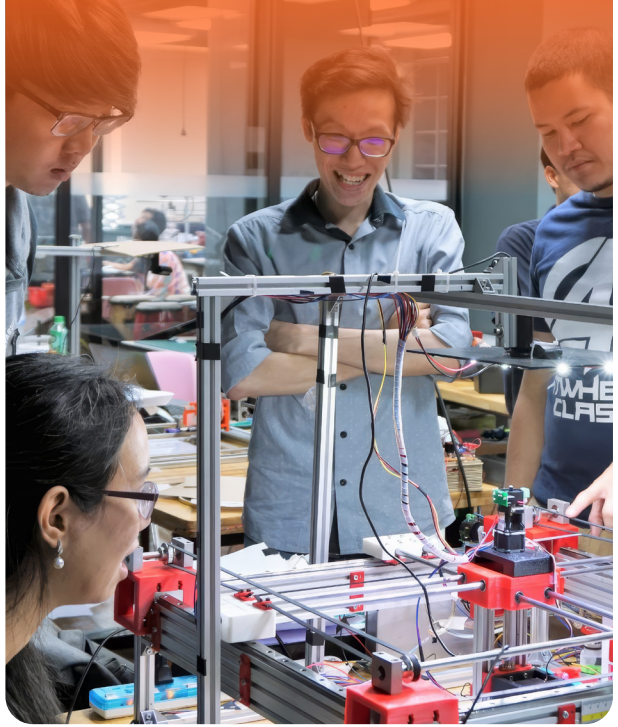
On 30 October 2025, KMUTT Knowledge Xchange and Siam Commercial Bank organised "SCB KX: SMEs Navigator to Tech-Driven Growth" at the KX Building. The event welcomed more than 300 participants from academia, industry, and SMEs across Thailand. It introduced a learning and business-development approach intended to help entrepreneurs select and apply technologies suited to their operational challenges, connecting technology expertise with business and financial perspectives. The programme was structured around knowledge sharing, practical support through a Business Clinic, exchanges of business case studies, and cooperation between KX and SCB. Expert presentations and panel discussions explored how accessible technologies and innovation could support business growth. An SMEs Fund Matching Hub also provided opportunities to connect with funding sources, support organisations, and potential business partners for research and development initiatives. The reported activities established channels for learning, consultation, and partnership formation. These were intended to help enterprises begin or advance innovation projects and develop them towards commercial application.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Goal 9

INDUSTRY, INNOVATION AND INFRASTRUCTURE

KMUTT advances SDG 9: Industry, Innovation, and Infrastructure through its Knowledge Exchange for Innovation (KX) building, a hub connecting academia and industry. By fostering research, entrepreneurship, and sustainable industrial development, KMUTT drives innovation and strengthens resilient, inclusive growth.



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CARVER: Developing Autonomous Transport for Seafood Processing Facilities

The KMUTT Institute of Field Robotics and Brainworks Imagineering developed CARVER, an autonomous mobile robot designed for transporting materials inside seafood processing facilities. Reported on 23 February 2026, the prototype used LiDAR-based navigation to move without magnetic guidance strips or QR codes. It was designed to carry loads of up to 500 kilograms, addressing operations that otherwise involved workers moving heavy material carts. Its construction incorporated food-grade stainless steel, surfaces designed to limit water accumulation, safety scanners, and emergency-stop controls.

Development included dust- and water-protection testing, movement and navigation assessments at the Department of Science Service, and trials in seafood factories in Chumphon and Samut Sakhon. The factory trials placed the robot alongside workers and actual production lines, allowing the researchers to collect operational information and make adjustments. Further work included improving wheel traction on particularly wet floors and integration with factory-management systems. Progress towards commercialisation remained the next stage, with the prototype and its testing providing the documented foundation for more flexible automated transport in food manufacturing.

Using Digital Logistics to Reduce Sugarcane Delivery Time from 48 to 8 Hours

An article published on 20 August 2026 reported the continuing development of sugarcane logistics systems through cooperation between KMUTT LOGEX and Mitr Phol. The collaboration began at the Mitr Phu Khiao sugar factory in Chaiyaphum in 2013 and subsequently expanded to eight factories within the group. The system connected GPS, sensor, and operational information to give farmers, harvesting teams, transport operators, and factory personnel access to shared information about harvesting and incoming deliveries. A principal reported outcome was the reduction in average cut-to-crush time from approximately 48 hours to 8 hours, helping preserve cane weight and sugar content before processing. The information also supported truck scheduling, crushing-capacity planning, and coordination of raw-material arrivals. Researchers developed a control system compatible with basic sugarcane harvesters, reporting a reduction in vehicle acquisition costs of approximately THB 6 million per unit compared with the referenced imported-system option. Ongoing development included mobile access and proposed applications of big data and artificial intelligence to strengthen analysis, forecasting, and production planning.





EV Guard: Developing Biomaterial-Based Cleaning Sheets for EV Charging Equipment

KMUTT researchers collaborated with EV ALL from South Korea to develop EV Guard, a cleaning sheet intended for electric-vehicle charging connectors. Reported on 25 February 2026, the product built on earlier research into kapok-based materials with flame-resistant, absorbent, and antistatic properties. The researchers combined three functional layers using a biopolymer adhesive, creating a single sheet designed to address dust, moisture, and static electricity associated with charging-equipment maintenance. The design assigned different functions to its layers, including charge control, moisture absorption and retention, and reduced static accumulation. The article described the material as reusable and biodegradable. Collaboration with EV ALL also included studying markets and user behaviour in South Korea to guide development towards practical requirements. The reported output was the cleaning-sheet innovation and its university–industry development partnership. Further plans included exploring additional electrical-protection functions and opportunities for use within charging infrastructure. These remained development objectives rather than reported evidence of reduced electrical incidents or extended equipment life in operating charging stations.

10 REDUCED INEQUALITIES

Goal 10

REDUCED INEQUALITIES

KMUTT advances SDG 10: Reduced Inequalities by promoting inclusive education, diversity, and equal access to opportunities. Through scholarships, digital empowerment, and social innovation, the university supports underrepresented groups and fosters equity both within Thailand and across global communities.



sustainable.kmutt.ac.th/goals10



Expanding Vocational Training for Persons with Disabilities through HigherEd for PWD

On 5 March 2025, KMUTT, the Ministry of Social Development and Human Security, and five partner universities presented the results of the first phase of HigherEd for PWD. The project expanded a vocational training and internship model that KMUTT had developed since 2014. Partner universities adapted the approach to local employment needs, working with employers to design suitable courses. The first year extended training opportunities to 300 persons with disabilities nationwide, compared with approximately 50 participants per cohort under the earlier KMUTT programme.

The model combined six months of vocational training, workplace preparation, life skills, and practical experience. Its six-stage framework covered employer consultation, participant selection, training and internships, employment support, mentoring, and impact evaluation. KMUTT supported partner institutions in applying these elements flexibly within their regional contexts. The reported outcome was increased access to training and the transfer of an established support model across the university network. The figure of 300 represented training participation, rather than a confirmed number of people subsequently employed.



Hack Hed Dee: Designing Workplace Innovations with Persons with Disabilities

KMUTT and partners from government, industry, and disability organisations launched the Hack Hed Dee hackathon on 29 August 2025. Supported by the Fund for Empowerment of Persons with Disabilities, the initiative invited ideas and technology prototypes intended to support the participation of persons with disabilities in organisational workplaces. The competition attracted 336 applicant teams comprising 1,622 people. Its opening programme included discussions involving employers, researchers, and a representative with a disability, bringing practical employment experiences into the innovation process. The competition structure provided for 20 teams to progress to workshops and six finalist teams to develop and test prototypes. Each finalist team would be joined by a person with a disability and an industry representative, with two mentors supporting development. This approach placed intended users and employers within the design process rather than limiting their involvement to reviewing finished products. At the time of reporting, the documented achievements were the launch, applicant participation, and establishment of the development framework. Prototype testing and the final competition remained subsequent stages.



Tam Ruedu: Supporting Community Enterprise Development by Persons with Disabilities

An article published on 2 December 2025 described the development of "Tam Ruedu," a local product brand created through cooperation between KMUTT, persons with disabilities, and the Khao Mai Pla Man Learning Centre in Samut Songkhram. Ten participants joined a six-month entrepreneurship course running from 1 May to 31 October 2025. The course addressed barriers faced by people who preferred self-employment or experienced difficulties travelling or relocating to urban workplaces, using local resources as the basis for home-based economic activities. Training combined at least 600 hours of theoretical and practical learning, including product development, marketing, branding, online communication, and life skills. Participants worked with university staff and community partners to develop products using local ingredients, including Suaeda plants, rice, and sea salt. Examples included personal-care products, salt scrubs, riceberry germ powder, and chilli paste. Reported outputs included the formation of a producer group, development of its own brand, and creation of a product range. These provided a foundation for participants to pursue enterprise activities within their community.

10 REDUCED INEQUALITIES

Goal 10

REDUCED INEQUALITIES

KMUTT advances SDG 10: Reduced Inequalities by promoting inclusive education, diversity, and equal access to opportunities. Through scholarships, digital empowerment, and social innovation, the university supports underrepresented groups and fosters equity both within Thailand and across global communities.



sustainable.kmutt.ac.th/goals10



Creating Skills and Enterprise Opportunities through Ceramics Training

Published on 16 March 2026, an article described a ceramics course delivered in 2025 under the twelfth KMUTT vocational training and internship programme for persons with disabilities. The six-month course combined craft skills with an approach described by the instructors as art therapy, adapting teaching to participants with different disabilities. It encouraged learners to develop distinctive styles alongside practical production abilities. One participant from Sukhothai, who had no previous ceramics experience, progressed from basic exercises to creating a sculpture selected as a regional representative in a disability -focused competition.

The participant received THB 5,000 in prize money and THB 12,000 in additional support. She planned to produce items for sale near Sukhothai Historical Park and share her experience with future learners. The programme also established an online ceramics brand with ten members, introducing product photography, marketing, and pricing based on production time and complexity. A shared fund allocated part of sales income towards future business expenses. These reported outcomes combined individual recognition with a group enterprise structure supporting continued learning and commercial activity.

Developing a Prosthetic Hand to Support Everyday Activities

KMUTT students exhibited a prosthetic hand for people with below-elbow limb loss at the Job and Market Fair for Persons with Disabilities, held from 31 August to 1 September 2026 in Bangkok. The multidisciplinary team brought together knowledge from robotics and automation, computer engineering, materials science, and medical instrumentation. The hand incorporated 17 movable joints and medical-grade silicone covering, with a design intended to approximate aspects of human hand movement and appearance. Development addressed limitations associated with the cost and mechanical fragility of existing prosthetic devices. The team adapted the ORCA v1 open-source design, modifying its underlying structure for the project. Intended everyday functions included grasping a water bottle, toothbrush, and other common objects, supporting the objective of greater independence in daily activities. The reported outputs were the developed hand and its public exhibition at an event focused on disability employment and livelihoods. The article presented the design and intended functions without reporting clinical outcomes, a commercial selling price, or a quantified increase in user independence.





Supporting Myanmar Scholarship Students from Admission to Completion

At the EMPM Forum 2026 in Jakarta on 21–22 October 2026, KMUTT presented its support model for students participating in the EU Mobility Programme for Myanmar. An article published on 26 October reported that all eight scholarship-supported students hosted by KMUTT in the first phase completed their studies, representing a 100% completion rate. The group included undergraduate and postgraduate students across Engineering, Bioresources and Technology, and Liberal Arts. The presentation addressed support for learners whose educational pathways had been disrupted. The model involved preparation beginning 60 days before arrival, a single coordination point, advance arrangements for advisers and laboratories, peer buddies, and attention to mental wellbeing. A three-party support system connected international affairs staff, faculty advisers, and student development and wellbeing services. Academic preparation and a sixth-week review enabled early assistance before mid-term examinations. The approach also encouraged increasing independence, with students supported towards peer-mentoring and leadership roles. The reported completion outcome applied specifically to the eight students in this programme phase, alongside the coordinated support mechanisms presented at the forum.

11 SUSTAINABLE CITIES AND COMMUNITIES

Goal 11

SUSTAINABLE CITIES AND COMMUNITIES

KMUTT advances SDG 11: Sustainable Cities and Communities by promoting inclusive urban development, resilient infrastructure, and sustainable mobility. Through innovation, research, and community engagement, the university fosters safer, greener, and more livable cities for present and future generations.



sustainable.kmutt.ac.th/goals11



Supporting Cultural Heritage and Community Engagement in Thung Khru

KMUTT participated in a multicultural and interfaith community festival held from 31 January to 2 February 2025 at the Chaloem Phrakiat Sports Centre in Thung Khru, Bangkok. The University Relations Office, EESH Centre, and Green Heart student leaders organised an exhibition booth presenting knowledge about energy conservation, environmental protection, and safety. Recreational activities accompanied the educational displays, bringing university staff and students into direct engagement with local residents.

The wider festival brought together government agencies, businesses, educational institutions, religious organisations, civil society, and community groups. Its objectives included preserving local traditions and ways of life, sharing the cultural identity of Thung Khru, strengthening relationships within a multicultural community, and supporting local tourism. Within this collective effort, KMUTT contributed educational activities under its approach of learning alongside communities. The reported contribution was participation in a shared community event, connecting environmental and safety knowledge with a public setting dedicated to cultural expression and relationships among local groups.

Building Advanced Engineering Research Capacity for Sustainable Megacities

An article published on 22 July 2025 introduced a three-year KMUTT research programme on advanced construction technologies and innovations for future megacities. The programme received THB 18 million in support, comprising THB 15 million from the National Research Council of Thailand and THB 3 million from the Department of Civil Engineering. Its objectives combined the development of highly skilled researchers with new knowledge for addressing complex urban infrastructure, environmental, and disaster-management challenges. Research was organised around four areas: advanced materials and construction, artificial intelligence and digital management, disaster preparedness, and smart mobility. Proposed work included environmentally responsible construction materials, materials for 3D printing, digital approaches to water and waste management, structural assessment, and monitoring systems for historic sites. Transport research covered rail, water transport, urban logistics, and recommendations concerning underground station safety. At the time of reporting, the funding and research framework were established, while the programme's technical outputs remained under development. The initiative positioned specialist training and interdisciplinary research as foundations for subsequent improvements in urban planning, construction, and management.





Na Ae Market: Connecting Cultural Heritage with Community Development

An article published on 10 October 2025 described cooperation between KMUTT and a Karen community in Ban Kha, Ratchaburi, to develop Na Ae cultural market. Building on cultural documentation begun in 2021, the research involved residents in recording their own traditions, places, and knowledge. Twenty community members from four villages learned techniques including community mapping, GPS use, and photography. This participatory process helped create information that could support cultural activities and locally led development. One tangible outcome was a market developed on a four-rai community public site. Researchers, community leaders, artists, and local craftspeople collaborated on its design, and residents constructed the bamboo buildings themselves. The market provided space for local products, organic produce, food, music, craft demonstrations, and cultural exchange. Related development included naturally dyed textiles and biodegradable packaging. The project connected the documentation of cultural knowledge with a physical place where residents could present and practise it. Community participation extended from gathering information to building and using the market, maintaining a direct role for residents in its development.

11 SUSTAINABLE CITIES AND COMMUNITIES

Goal 11

SUSTAINABLE CITIES AND COMMUNITIES

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Developing Underground Cavity Survey Methods for Safer Urban Roads

Research reported on 30 November 2025 described collaboration between KMUTT and Ehime University in Japan on underground cavity surveying and risk assessment. The work addressed cavities that can develop beneath roads when damaged underground utilities allow surrounding soil to be washed away. The team used GMS3 technology, combining ground-penetrating radar with mobile mapping, to gather information about road surfaces and subsurface conditions. A survey covering more than 338 kilometres in Bangkok and surrounding areas identified 313 suspected cavity locations.

KMUTT researchers also developed assessment criteria suited to Thai concrete roads through laboratory testing and finite-element modelling. The approach considered cavity diameter and depth beneath the road surface, accounting for differences from the asphalt-road conditions underlying Japanese criteria. The article reported work on Thailand's first underground cavity survey standard, intended to support consistent surveying and risk assessment among responsible agencies. These outputs provided technical information for prioritising further investigation and maintenance. Development of wider cavity-risk mapping remained a subsequent objective, supporting a shift towards identifying vulnerabilities before serious road damage occurs.

Rooted Currents: Integrating Climate Resilience, Heritage, and Everyday Urban Life

Twelve fourth-year students from the KMUTT School of Architecture and Design developed "Rooted Currents," an urban design proposal responding to conditions in Guangzhou, China. Reported on 8 December 2025, the project won the Climate Resilience Urban Design Excellence Award at Designing Resilience Globally 2025. Working with their academic adviser, the students combined environmental, cultural, economic, and transport considerations in a proposal centred on relationships between people, heritage, and water. The design used three linked strategies. "Sustained Living" proposed walkable, 15-minute neighbourhoods connecting housing, education, healthcare, and green space. "Embraced Heritage" incorporated adaptive reuse, storytelling routes, and seasonal activities to keep historic places connected with contemporary life. "Protected Cycles" proposed blue-green infrastructure, including water-retention areas, rain gardens, and restored wetlands. These elements were designed to help public spaces accommodate water while serving everyday community needs. The reported outcome was the completed urban design proposal and its international recognition. The project presented an integrated approach to urban resilience; construction or measured changes in flood risk were not reported.





Augmented Craft: Combining Rattan Craftsmanship with Digital Design

"Augmented Craft," reported on 16 February 2026, was an experimental steam-bent rattan pavilion displayed outside the Creative Economy Agency at the Grand Postal Building during Bangkok Design Week 2026. The project brought together Studio Igor Pantic, the KMUTT School of Architecture and Design, the Faculty of Engineering, and the Institute of Field Robotics. It received The Best of Bangkok Design Week 2026 recognition, selected by the European Product Design Award, demonstrating a completed application of traditional material skills within a digitally supported architectural project. The pavilion was designed using a three-dimensional model in Rhino. During fabrication, HoloLens headsets overlaid digital guidance onto the physical workspace, allowing craftspeople to follow the intended curves while steam-bending rattan components. Craft skills remained central to bending and assembly, with augmented reality supporting communication between the architectural design and its production. The reported outputs were the constructed pavilion, its public presentation, and design recognition. The experiment demonstrated a method for applying rattan craftsmanship to complex architectural forms while retaining hands-on knowledge within the fabrication process.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Goal 12

RESPONSIBLE CONSUMPTION AND PRODUCTION

KMUTT advances SDG 12: Responsible Consumption and Production by integrating sustainability into education, research, and campus operations. The university promotes waste reduction, green innovation, and resource efficiency while fostering responsible consumption and sustainable practices within and beyond its community.



sustainable.kmutt.ac.th/goals12



Developing Cassava-Starch Bioplastics for Commercial Packaging

Research reported on 6 January 2025 described biodegradable packaging materials developed by KMUTT in collaboration with Thai Progress Packaging. The team converted cassava starch into thermoplastic starch composites, addressing difficulties involving brittleness, moisture sensitivity, industrial forming, and cost. Formulations incorporated additional materials to improve properties for different applications. The work covered both bioplastic pellets and sheets suitable for thermoforming, with potential products including trays, containers, cutlery, and bags.

Following three years of research, the article reported Technology Readiness Level 9, with a petty patent application in progress. The researchers reported a pellet production cost of approximately THB 100–130 per kilogram, compared with the referenced imported-material price of THB 150 per kilogram. Development included testing and comparison with conventional packaging and control of formulations and processing conditions at laboratory and industrial scales. These results addressed practical barriers to using cassava-based materials in packaging, while creating opportunities to incorporate domestic natural resources and residual materials into product development.

Converting Rice Husks into High-Purity Biosilica

KMUTT research reported on 10 April 2025 developed a biological process for extracting biosilica from rice husks. The method used microbial fermentation to break down organic material, followed by washing and controlled-temperature firing. It sought to reduce reliance on concentrated chemicals used in conventional extraction while converting an agricultural residue into an industrial raw material. The resulting biosilica reached a reported purity of 96–97%, with potential applications in industries such as cosmetics, pharmaceuticals, and rubber. At pilot scale, the researchers reported production costs averaging approximately THB 100 per kilogram. The researcher also reported a carbon footprint approximately one-thirtieth that of the conventional process used for comparison. At the time of publication, the work was entering technology transfer to private companies and community enterprises. The production approach could use equipment such as fermentation vessels and furnaces already available in some facilities. The documented outputs therefore combined a pilot-scale extraction process, material-quality results, and a pathway for transferring rice-husk utilisation technology to prospective producers.





Introducing Waste Prevention and Separation at KMUTT First Date 2025

KMUTT organised its new-student orientation and First Date activities on 20 July 2025, combining an introduction to university life with practical measures encouraging responsible consumption. Participants were encouraged to bring personal drinking cups, avoid foam containers and single-use plastic packaging, and use reusable alternatives. These measures addressed waste generation during a large university gathering while introducing environmental practices to incoming students. Waste-management volunteers were stationed at disposal points to explain how to separate and discard materials correctly. This placed guidance alongside the activity itself, allowing students to encounter waste separation as part of their first university experiences. The event connected student-led organisation with support from university units and the broader Green Heart approach to environmental participation. The reported contribution was the integration of waste-prevention messaging, reusable-container practices, and assisted waste separation into student orientation. The article did not quantify waste avoided, so its evidence concerns the measures delivered and opportunities for practical learning.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Goal 12

RESPONSIBLE CONSUMPTION AND PRODUCTION

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Establishing the RETURN-NA Community Waste Learning Centre in Phetchaburi

On 2 September 2025, KMUTT, Phetchaburi Municipality, and the Phra Nakhon Khiri community formalised cooperation for the RETURN-NA waste-management learning centre and received its building and equipment. The centre emerged from a wider coastal waste-management project supported since 2018. It was established as a learning resource for communities, schools, municipal personnel, and other organisations interested in waste prevention, reuse, recycling, and value creation. Zero Waste was the guiding objective of the model.

Community members had learned to transform discarded materials into products, including wreaths from egg trays, flowers from plastic straws, and brooms from plastic bottles. The centre provided a location for sharing this knowledge and displaying products, connecting technical support from KMUTT with community participation and municipal oversight. Planned activities included training, visits, and product sales, with community income intended to support further local activities. The reported achievements were the establishment and handover of the learning facility, the cooperation agreement, and examples of products already developed. Long-term operation and further development were to be led by the municipality.

Developing Waste-to-Wealth Business Ideas through Student Participation

KMUTT Green Heart students reached the final ten teams from more than 70 university teams in the Waste to Wealth: Business Model Pitching Contest 2025. Their participation on 7 November 2025 was reported in an article published on 14 November. The competition formed part of the AIS × GC Green University initiative and invited students to present business approaches that could turn discarded materials into useful resources and economic value. The KMUTT team presented an environmental business plan addressing the relationship between waste utilisation and business sustainability. The wider event also featured entrepreneurs sharing experiences of developing businesses from residual materials, connecting student proposals with examples from practice. The documented result was national-level finalist selection and presentation of the proposed business model. The activity provided a setting for students to apply creative thinking to resource recovery and communicate the commercial potential of waste utilisation. The article did not report realised sales, profits, or a final championship result.





Improving Resource Efficiency across the Cassava Value Chain

An article published on 10 July 2026 described the Sustainable Cassava Value Chain approach developed through Eco Waste, a collaboration between KMUTT and BIOTEC under NSTDA. Building on more than four decades of research, the work expanded from wastewater treatment into resource efficiency across starch production. Activities included production benchmarking, machinery improvements, biogas recovery from wastewater and cassava residues, technical consultation, and industry personnel development. These connected waste management with the recovery of resources and energy for factory operations. The article reported cumulative support for more than 60 cassava starch factories, with average production efficiency exceeding 90%. Reported outcomes included total production -cost reductions of 5–10% per year and reductions in fossil-fuel use of 20–30%. More than 1,500 industry personnel had received training through university –industry learning activities. These were results accumulated through long-term cooperation, rather than achievements attributed solely to 2026. Continuing work included resource-use and carbon-footprint assessment with industry partners, alongside knowledge transfer to neighbouring countries on cassava processing, waste management, and higher-value utilisation.

13 CLIMATE ACTION

Goal 13

CLIMATE ACTION

KMUTT advances SDG 13: Climate Action through education, research, and sustainable campus initiatives. The university integrates climate studies into learning, develops low-carbon technologies, promotes renewable energy and green infrastructure, and engages communities to strengthen climate resilience and environmental stewardship.



sustainable.kmutt.ac.th/goals13



Assessing Climate Change Readiness across Thai Industries

Research publicised on 10 March 2025 examined the readiness of Thai businesses to manage climate change risks. The study collected information from 200 listed companies across eight industry groups during 2022–2024, with support from the Asahi Glass Foundation. It investigated both climate change adaptation and mitigation, developing a statistical assessment framework to distinguish different levels of organisational readiness. Findings indicated that awareness of climate change did not consistently translate into systematic risk management or operational preparedness. The research identified stronger readiness among large organisations and sectors such as oil and gas and automotive manufacturing, while other sectors faced constraints involving resources, investment priorities, and perceptions of additional workload. Financial institutions were also becoming more engaged with climate risk. Further research was underway on applying machine learning to climate-risk disclosures and examining the relationship between reported commitments and business activities. Recommendations included clearer policy coordination, a combination of incentives and requirements, stronger organisational leadership, and climate education. The reported outputs were research findings and an assessment framework, rather than measured reductions in company emissions.



Advancing Algae Research for Industrial Carbon Dioxide Capture

On 20 February 2025, KMUTT hosted a review of first-year deliverables for a research project applying synthetic biology to develop algae strains with improved capacity to capture industrial carbon dioxide. Supported by PMU-B, the project brought together KMUTT, NSTDA, Kasetsart University, Khon Kaen University, Naresuan University, and Mahidol University. Researchers presented the project objectives, research framework, and implementation plans, connecting biological research with the development of technologies intended to support national greenhouse-gas reduction goals. The meeting also addressed how private-sector participation could support further research and highly skilled personnel development. Discussions covered consortium management, activities, prospective industry partners, membership arrangements, and benefits for participating companies. A private-sector contribution equivalent to 10% of the project value was discussed as a target. The reported activity was the first-year research review and planning of the collaboration framework. The article did not provide quantified carbon-capture results, so the project's contribution at this stage concerned coordinated research development and preparation for future engagement with industry.



Building Industrial Carbon Management Skills through Practical Training

KMUTT, the Thailand Institute of Scientific and Technological Research, and partner organisations held a workshop on industrial carbon assessment and reduction on 28 April 2025 in Rayong. Participants included representatives from industry, research institutions, and government agencies. The programme introduced organisational carbon-footprint assessment, including assessment principles, procedures, and data collection. It also covered potential reduction measures involving energy use, waste management, and other organisational activities. Practical sessions introduced the KMUTT Carbon Management Platform, with demonstrations of digital data collection, online metering, and real-time analysis. Participants explored tools for gathering additional organisational information and received advice from specialists representing research, university, and industry organisations. The workshop connected carbon-accounting knowledge with demonstrations of systems intended to support its practical application. The reported contribution was the delivery of training, platform demonstrations, and industry-specific consultation. Further sessions were planned for Chachoengsao and Chonburi in May 2025, extending the intended training programme across industrial areas of the Eastern Economic Corridor. The article did not quantify emissions reductions resulting from participation.

13 CLIMATE ACTION

Goal 13

CLIMATE ACTION

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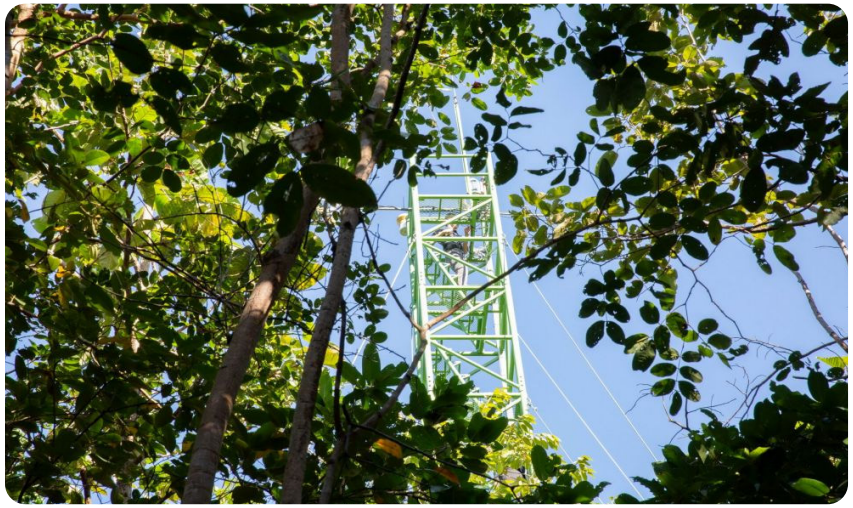
Establishing Cooperation on Biochar and Agricultural Residue Management

On 4 July 2025, KMUTT and Enable Earth signed a three-year memorandum of understanding covering academic support and innovation in environmental management and biochar. The cooperation focused on Wiang Pa Pao district in Chiang Rai, where agricultural residue management was linked with concerns about open burning and PM2.5 pollution. The proposed approach involved transferring knowledge and technologies to help farmers turn materials such as rice straw, stubble, and other crop residues into biochar.

The partnership intended to connect residue utilisation with soil improvement and opportunities to develop commercially useful products. KMUTT units involved in the cooperation included expertise in pilot-plant development, energy, environmental studies, and community engagement. The agreement established a framework linking university knowledge, private-sector development, and community participation. Its longer-term objective was to develop the Wiang Pa Pao initiative into a model that could be extended to other areas. At the time of reporting, the signed agreement was the concrete institutional output; quantities of biochar produced, avoided burning, and verified greenhouse-gas reductions were not reported.

Connecting Long-Term Carbon Monitoring with Forest Research and Learning

An article published on 25 December 2025 described the continued development of the carbon monitoring research station at KMUTT Ratchaburi. Building on more than ten years of research, the station used a 20-metre tower equipped with eddy covariance technology to monitor exchanges involving carbon and water, alongside temperature and humidity. Field observations also covered tree growth, plant litter, and greenhouse-gas emissions from the forest floor, supporting investigation of carbon uptake and release in the local dry dipterocarp forest. The station included a drought experiment simulating a 50% reduction in rainfall to study responses of trees and the ecosystem. It also served undergraduate and postgraduate research involving monitoring technologies, satellite information, and data analysis. Cooperation with Asian research networks supported information exchange. Provincial support encouraged development of a community learning centre presenting carbon measurement, forest knowledge, and scientific activities. The reported contribution combined an established monitoring facility and long-term research information with its continuing development as a learning resource. Potential applications to carbon-credit measurement were discussed as opportunities for further development.





Developing Electric Boats and Low-Carbon Tourism along Bang Mot Canal

Research reported on 15 May 2026 described cooperation between KMUTT and Bang Mot Canal residents to convert existing combustion-engine boats into electric boats for community tourism. An operational prototype accommodated approximately 8–10 passengers, with technical support from the KMUTT Mobility and Vehicle Technology Research Center. Development also included adapting an existing Bangkok Metropolitan Administration boat. A prototype launch activity took place on 21 April 2026, connecting the technology with local canal travel and tourism. The article reported energy-cost reductions of approximately 60–70%, with an estimated investment payback period of around three years. These figures concerned operating costs and projected financial recovery, rather than a measured percentage reduction in greenhouse-gas emissions. Related work included the development of a community learning centre for boat conversion and maintenance, and the design of 12 low-carbon tourism routes, divided equally between Thung Khru and Bang Khun Thian.
The documented outputs combined an operating electric-boat prototype with route design and knowledge-transfer plans, linking transport development with community tourism and local technical skills.

14 LIFE BELOW WATER

Goal 14

LIFE BELOW WATER

KMUTT advances SDG 14: Life Below Water through research, innovation, and collaboration in marine conservation. The university develops sustainable fisheries management, combats marine pollution, and promotes coastal sustainability, ensuring the protection and responsible use of oceans and marine resources for future generations.



sustainable.kmutt.ac.th/goals14



Applying Artificial Intelligence to Soft-Shell Crab Farming

Research reported on 13 February 2025 described a soft-shell crab detection and harvesting prototype developed by five second-year students from the KMUTT Institute of Field Robotics. The system combined infrared imaging, artificial intelligence, and mechanical handling to identify recently moulted crabs and bring their baskets to workers. It was designed around existing farming arrangements, addressing the narrow harvesting window before a crab's shell hardens and reducing reliance on repeated manual inspection.

The team developed a half-scale prototype and tested it using a simulated pond at FIBO. The article reported 95% accuracy in distinguishing moulted crabs through the prototype system, with a prototype construction cost of approximately THB 40,000. Image comparison was also incorporated to identify crabs showing no movement, supporting earlier inspection and removal. The article reported Popular Vote and honourable mention recognition from the Ford Innovator Scholarship 2024 competition. These were prototype-development and competition outcomes; commercial-scale operation and quantified improvements in farm production were not established in the report.

Strengthening Atmospheric and Ocean Modelling for Coastal Conservation

The KMUTT Department of Mathematics organised "Show & Share Atmospheric and Ocean Models to Drive Conservation of Thailand's Coastal" on 4–5 June 2025. Supported through the Reinventing University programme, the workshop brought together researchers and specialists to exchange knowledge relevant to coastal environmental challenges. Its focus connected scientific modelling with concerns including climate change, sea-level rise, and pressures from human activities, alongside the development of research expertise. The programme included international guest lectures and exchanges covering climate and environmental science, coastal engineering, integrated coastal management, and coastal ecology. Researchers also presented progress on the atmospheric and ocean modelling research-group project. During the event, KMUTT and Sakon Nakhon Rajabhat University signed an academic cooperation agreement. The reported outputs were the delivery of specialist knowledge exchange, presentation of research progress, and establishment of an institutional partnership. The activities also supported preparation for future research proposals and collaboration, providing a foundation for further work on models and knowledge intended to inform coastal conservation.





Studying Coastal Ecology with Fishing Communities around Rayong Bay

KMUTT academics and postgraduate students conducted interdisciplinary fieldwork with fishing communities around Rayong Bay on 9–10 December 2025. The activity connected Environmental Social Sciences in the School of Liberal Arts, the Faculty of Science, and KMUTT Social Lab. It examined relationships between coastal ecosystems, fishing practices, local knowledge, and environmental change in an area affected by industrial pressures and oil-spill incidents. Community members participated in developing knowledge about their surroundings and livelihoods. Activities included conversations with fishers, seasonal mapping of aquatic resources, observation, and field-data collection. Students practised qualitative research methods while connecting ecological information with social and cultural interpretation. The article identified learning outcomes involving spatial and ecological understanding, interdisciplinary thinking, sensitivity to community experiences, and participatory knowledge creation. The reported contribution was a shared field-learning process that brought scientific perspectives together with fishing-community knowledge. Its outcomes concerned research and learning capabilities and the documentation of local experience, rather than a measured recovery of marine habitats or fish populations.

14 LIFE BELOW WATER

Goal 14

LIFE BELOW WATER

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Propagating Mangrove Seedlings and Learning about Coastal Ecosystems

On 25 February 2026, the KMUTT EESH Centre and the Physical Resources Management Office at KMUTT Bang Khun Thian organised a mangrove activity under the Nature Positive Universities approach. Students, personnel, and members of the university community participated at Plot 4 of the KMUTT site in Phanthai Norasing, Samut Sakhon. The activity combined practical participation with an opportunity to observe and study the surrounding ecosystem.

Participants propagated 400 mangrove seedlings and joined an ecosystem learning walk. The activity was intended to support conservation, restoration, and awareness of the relationship between natural resources and environmental change. Its concrete reported output was the propagation of seedlings alongside participation in coastal ecosystem learning. The article connected the activity with marine and coastal conservation and broader university sustainability objectives. It did not report subsequent planting coverage, seedling survival, or carbon uptake, so the figure of 400 represents seedlings propagated during the activity rather than a verified area of restored mangrove forest.

Establishing Research Cooperation for Marine and Coastal Resource Conservation

On 26 August 2026, KMUTT and the Department of Marine and Coastal Resources signed a memorandum of understanding on research, development, and academic cooperation. The agreement brought together university research expertise and the capabilities of the government agency responsible for marine and coastal resources. Its objectives covered the development of technologies and innovations and the application of research to conservation, restoration, and resource management.

The cooperation framework included joint research and development, exchanges of knowledge and experience, and participation by academic personnel. It also provided for collaborative projects and activities intended to connect scientific knowledge with practical conservation needs. Representatives from the department's mangrove research institute and the KMUTT Pilot Plant Development and Training Institute witnessed the agreement. The reported institutional outcome was the signed framework for collaboration, establishing a basis for subsequent research and knowledge exchange. The article outlined planned areas of cooperation without reporting completed restoration projects, specific technologies deployed, or quantified ecological i mprovements resulting from the agreement.





SIRINAPHA: Using Satellite Information to Support Small-Scale Fishers

KMUTT engineering students developed SIRINAPHA: Baan-Pla Link, a satellite-data and artificial-intelligence platform for small-scale fishers. Reported on 6 October 2026, the system assessed fishing suitability using factors including sea-surface temperature, chlorophyll, depth, lunar phase, and season. Following field engagement with fishers, the team delivered information through LINE, providing suggested locations alongside weather, wind, and wave information. Functions also included route planning, fuel-cost calculation, and catch recording. A pilot across six areas of Samut Sakhon involved 30 fishers and 12 boats. The team reported that 10 boats, or approximately 83% of the pilot fleet, increased their catches compared with their previous records; this was not an 83% increase in catch volume. Reported fuel-use reductions were approximately 18–30%. The project received first runner-up recognition and THB 100,000 in development funding from the Hug Mae Hackathon. Further testing across different locations, seasons, and sea conditions remained necessary as the team developed the platform beyond its initial pilot.

Goal 15

LIFE ON LAND

KMUTT advances SDG 15: Life on Land through research, education, and community engagement focused on forest conservation, land restoration, and biodiversity protection. The university promotes sustainable land management, combats desertification, and supports ecosystem resilience to ensure harmony between people and nature.



sustainable.kmutt.ac.th/goals15



Learning Nature Conservation through ENVI-SCI #3

The KMUTT Faculty of Science Student Club organised the third Nature and Environmental Conservation Camp, ENVI-SCI #3, on 15–16 March 2025 at the Sai Yok Integrated Rural Development Centre in Kanchanaburi. The camp brought together lecturers and undergraduate students from different year levels for practical learning about natural resources and environmental management. Its objectives included encouraging conservation, increasing green space, and helping students understand how to live responsibly alongside nature.

Activities combined instruction with fieldwork involving agricultural plot management, solar energy, biomass utilisation, and fertiliser production. Students also learned tree planting and maintenance techniques, including covering soil with organic material. These activities connected resource management with practical care for land and vegetation. The reported outputs were the delivery of the camp and participation in hands-on learning. The article documented the topics and activities undertaken, without quantifying additional forest area, tree survival, or carbon reductions. Its contribution centred on conservation education and opportunities for students to practise environmental management outside the classroom.

Using Field Research to Inform Fishing Cat Conservation

Research publicised on 10 April 2025 described KMUTT work on fishing cats in Thai wetlands, combining camera traps, faecal sampling, genetic analysis, and interviews with local residents. At Khao Sam Roi Yot, researchers analysed images from 50 camera-trap locations. More than half of the individuals photographed in 2024 had not appeared in images collected three years earlier, providing information about changes within the monitored population. Genetic analysis also identified inbreeding, highlighting a concern for its long-term persistence.

The research extended to other areas where fishing cats had previously been reported. Around Songkhla Lake, fieldwork in 2024 identified signs of fishing cat activity at 19 locations, supporting further investigation of the area. The article also described conservation cooperation involving more secure poultry enclosures, local participation, and monitoring by responsible agencies. The reported contribution was an expanding evidence base on distribution, population change, and threats. These findings informed priorities for further research and conservation, while preserving the distinction between observations gathered in earlier years and their publication in 2025.





Combining Forest Ecology Learning with Tree Planting at KMUTT Ratchaburi

On 7 July 2025, the Dry Dipterocarp Forest Learning Centre at KMUTT Ratchaburi organised activities for Residential College pre-course students. The programme introduced forest ecology, the benefits of forests, and their role in carbon storage. An introductory lecture was followed by a nature-trail walk, allowing students to observe plant species and other organisms within the forest. This connected classroom explanations with direct experience of the local ecosystem. Practical activities included inoculating Dipterocarpus obtusifolius seedlings with mushroom fungi, with the seedlings intended for planting and distribution to communities. The activity introduced a way to connect forest-tree cultivation with the potential use of edible forest resources. Participants also planted 157 Supannikar trees as part of the programme. The reported outputs were the learning activities, seedling inoculation, and tree planting undertaken that day. These provided opportunities to participate in vegetation management and learn about relationships within forest ecosystems; subsequent mushroom yields, tree survival, and carbon storage were not quantified.

15 LIFE ON LAND

Goal 15

LIFE ON LAND

KMUTT advances SDG 15: Life on Land through research, education, and community engagement focused on forest conservation, land restoration, and biodiversity protection. The university promotes sustainable land management, combats desertification, and supports ecosystem resilience to ensure harmony between people and nature.



sustainable.kmutt.ac.th/goals15



Sharing Biodiversity Learning through a Forest-Based Green Classroom

On 15 December 2025, KMUTT Ratchaburi hosted a best-practice sharing activity combining a dry dipterocarp forest nature trail with cycling around the campus. The session formed part of the Sustainable University Network of Thailand meetings held on 14–16 December. Participants from different institutions explored biodiversity through direct observation of plants, animals, and relationships among organisms. The activity was described in an article published on 24 December 2025.

The programme used the campus forest as an outdoor learning resource, introducing participants to the characteristics of dry dipterocarp vegetation and the coexistence of living organisms. Cycling extended the visit to other green spaces and learning areas around the university, while presenting an example of travel without fuel-powered vehicles. The reported contribution was the delivery of an experiential learning session within a university sustainability network. It brought biodiversity observation and campus exploration into a shared activity, allowing participants to encounter the local environment directly rather than relying solely on presentations.

Supporting Forest and Wildlife Management through Student Volunteering

The KMUTT Mod Pa RC student club organised "KMUTT Soul of the Wilds" on 13–15 March 2026 at KMUTT Ratchaburi and the Ratchaburi Nature and Wildlife Education Centre in Suan Phueng. Fifty-two students from Bang Mod, Bang Khun Thian, and Ratchaburi participated. University personnel, local specialists, and staff associated with the Huai Ana Reservoir Royal Initiative Project supported the camp and provided guidance throughout its activities.

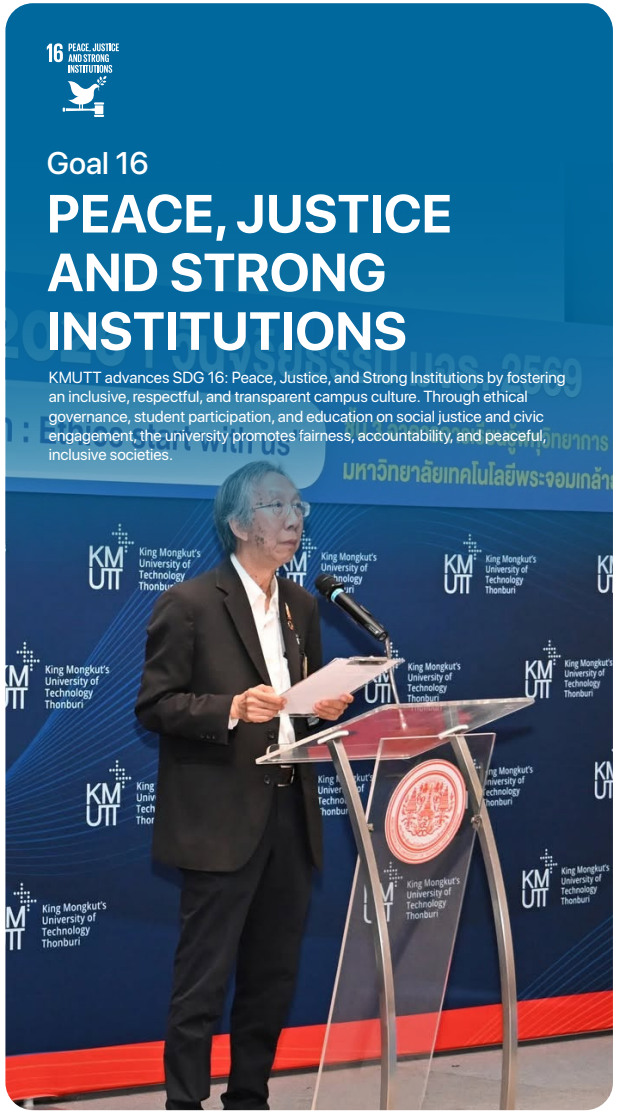
Students worked together to create firebreaks and artificial mineral licks, undertaking tasks intended to support forest-fire prevention and wildlife management. The programme combined these practical activities with learning from staff responsible for the area. The article also identified opportunities to develop communication, teamwork, and problem-solving through shared fieldwork. Its concrete reported outputs were participation by students from three campuses and the completion of conservation-related tasks. The camp connected student volunteering with local forest-management activities, while the source did not quantify reductions in wildfire damage or changes in wildlife populations following the work.





Documenting Natural Mangrove Recovery beyond Protected Areas

Research reported on 21 September 2026 examined mangrove landscape change in Khura Buri and parts of Takua Pa, Phang Nga, from 1966 to 2025. Led by a KMUTT JGSEE researcher with international collaborators, the study combined historical aerial photographs, satellite imagery, and measurements of more than 4,400 trees. It identified 2,917 hectares of mangrove gain between 1987 and 2025, with more than 90% of that recovery occurring naturally. These figures described observed landscape changes, not an area planted by the university. Naturally regenerated forests showed tree-species diversity comparable with natural stands, while planted stands differed in their species composition and diversity. The study also found that Xylocarpus granatum, approximately one-tenth of recorded trees, contributed about 26% of total basal area, demonstrating the structural importance of large surviving trees. Published in Communications Earth & Environment, the findings supported evaluating restoration through diversity and forest structure alongside tree survival. They also provided evidence relevant to considering conservation measures outside formally protected areas.



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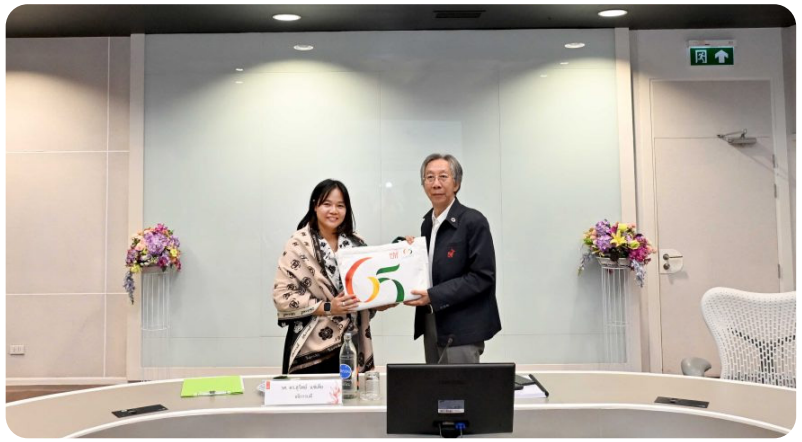

Strengthening Knowledge of Internal Control for University Governance

On 20 January 2025, KMUTT organised a lecture on internal control frameworks, inviting a specialist from the Comptroller General's Department to explain relevant principles, approaches, and practices. The activity focused on the role of internal control in supporting effective, transparent, and accountable university operations. It connected administrative controls with the university's responsibilities in education, research, and academic services, including the management of budgets, projects, and institutional resources.

The lecture emphasised that internal control requires shared understanding and cooperation across the university, involving executives, academic staff, personnel, and students. It presented standardised working practices and risk prevention as important elements of institutional governance. The reported contribution was the delivery of specialist knowledge intended to support subsequent review and improvement of university systems. The article documented the educational activity and its objectives, without reporting completed changes to control procedures, audit findings, or a measured reduction in operational risks. Its focus was building understanding of the responsibilities and mechanisms underpinning accountable management.

Engaging Students in Integrity and Transparency Assessment

On 22 May 2025, the KMUTT ITA coordination team held an educational session for students at KMUTT Ratchaburi on the Integrity and Transparency Assessment of public organisations. Approximately 40 students participated at the campus library. The session explained the relevance of ITA to students and university operations, helping participants understand their role as stakeholders in evaluating institutional services and transparency. Activities included questions and discussion, opportunities to provide suggestions, and an invitation to complete the External Integrity and Transparency Assessment, or EIT. Students shared their perceptions of university support and expressed interest in continued improvement.

The activity extended ITA engagement to the Ratchaburi campus and created a channel for student feedback alongside information about the assessment process. The reported outputs were participation, knowledge sharing, and the collection of stakeholder views. These comments were intended to inform further development of university operations; the article did not report a resulting assessment score or specific administrative changes already implemented in response.





Establishing a Knowledge Hub for Cybercrime Prevention and Digital Forensics

On 29 September 2025, KMUTT and the Cyber Crime Investigation Bureau formally launched a knowledge hub covering cybersecurity, cybercrime prevention, and digital forensics. The initiative connected academic research and education with practical investigative expertise. Launch activities included workshops using lessons from cybercrime cases and practical incident-response approaches, bringing university specialists and cyber police together in a shared learning setting. The hub's three-year roadmap covered joint working arrangements, prototype curricula, an innovation centre, and subsequent expansion of training and professional development. Proposed learning formats included short courses, microcredentials, and credit accumulation. The initiative built on the Cyber Warrior Hackathon 2025, which had involved more than 700 participants and innovations from over 30 teams. These figures referred to the preceding hackathon, rather than attendance at the hub launch. The reported outputs were the formal launch, workshops, and development roadmap. Wider training delivery, international cooperation, and professional certification remained objectives for subsequent stages of the initiative.



sustainable.kmutt.ac.th/goals16



Publishing the No Gift Policy for Fiscal Year 2026

On 19 December 2025, KMUTT published its No Gift Policy for fiscal year 2026. The announcement directed university executives and personnel to refrain from accepting gifts and benefits connected with the performance of their duties from external parties and people contacting the university. It formed part of the university's stated commitment to ethical conduct, integrity, and governance in institutional operations.

The policy addressed situations in which gifts could influence official discretion or decision-making, leading to preferential treatment or conflicts of interest. Its stated objectives included preventing corruption and supporting honest working practices across the institution. The published announcement made the policy and downloadable notice available through the university website, providing a formal reference for communicating the requirement. The documented output was the policy declaration for the specified fiscal year. The article did not report compliance -monitoring results, gift-refusal records, or measured changes in misconduct, so it provides evidence of an established institutional policy and its public communication.

Promoting Shared Responsibility through KMUTT Ethics Day 2026

KMUTT held Ethics Day 2026 on 27 April 2026, bringing together university leaders, academic staff, personnel, and students around the theme that ethical practice begins with individual responsibility. Participants joined a declaration supporting effective and sustainable governance. The programme included a specialist talk on governance in higher education and the presentation of commitment statements to unit leaders for communication within their organisations.

The event also recognised six university units for their contributions to integrity and transparency assessment activities. An "Ethics in Action" discussion explored ethical responsibilities through perspectives from academic management, research, finance, alumni, campus food-service operators, and student leadership. Members of the university community were also invited to sign the declaration online. The reported outputs combined public commitment, internal recognition, and discussion involving different university stakeholders. These activities provided opportunities to communicate ethical expectations and relate them to everyday roles. The article did not quantify subsequent behavioural changes or improvements in transparency scores resulting from the event.





Gathering Stakeholder Evidence to Improve Electronic Trade Procedures

On 6 October 2026, National Telecom and the KMUTT Logistics Excellence Centre organised a consultation on regulations affecting electronic trade facilitation for agricultural and agro-industrial goods. Participants included government agencies responsible for agriculture, standards, trade, and customs, alongside business associations, logistics organisations, and companies. The meeting formed part of a study examining improvements to the legal and regulatory arrangements supporting the THAI National Single Window, or NSW. Following an overview of import–export processes and relevant regulations, participants discussed operational difficulties in focus groups. A central finding was duplication arising from overlapping rules, procedures, and administrative practices. Businesses identified these issues as priorities for improvement. The consultation therefore produced stakeholder information on barriers affecting electronic trade processes and potential areas for reform. The collected evidence was to be analysed and prioritised for legal recommendations, policy proposals, and input to the THAI NSW development action plan for 2028–2032. These were intended uses of the consultation findings; the article did not report completed legislative amendments or measured reductions in processing times.

17 PARTNERSHIPS FOR THE GOALS

Goal 17

PARTNERSHIPS FOR THE GOALS

KMUTT advances SDG 17: Partnerships for the Goals by fostering strong collaborations across local, national, and global levels. Through partnerships with government, industry, academia, and NGOs, the university drives research, innovation, and knowledge sharing to strengthen collective action toward sustainable development.



sustainable.kmutt.ac.th/goals17



Sharing Sustainable Campus Practices through SUN Thailand

KMUTT participated in the first travelling meeting of the Sustainable University Network of Thailand for 2025 on 10–11 May 2025, hosted by Thaksin University at its Phatthalung campus. The meeting brought university representatives together to discuss approaches to advancing the Sustainable Development Goals in higher education. Key topics included net-zero campus development and support for community economies through the application of university knowledge within local contexts.

The programme combined discussions with visits to sustainability-management activities and community-linked initiatives. Participants explored examples involving the 17 SDGs, waste management, and sustainability practices within the Faculty of Engineering. A specialist presentation also introduced the university network's Net Zero Campus initiative. The reported contribution was participation in an inter-university exchange connecting institutional management with practical examples from another university and its surrounding communities. The meeting provided a setting for sharing approaches and discussing future action, while the article did not report a new joint project or quantified environmental outcomes resulting from KMUTT participation.

Connecting University Learning with Community Environmental Action

On 6 November 2025, the KMUTT EESH Centre and Green Heart student volunteers contributed to "Sustainability in Everyday Life," organised by the Environmental Social Sciences master's programme in the School of Liberal Arts. Their participation formed part of the SDGs Series campaign on volunteering and sustainable communities. Activities combined experience sharing, exhibitions, and practical participation, bringing together academic learning, university sustainability support, and student-led environmental action.

EESH staff and students discussed experiences from the Green Hero Kids initiative, presented waste-separation information, and organised an art workshop using natural colours. Green Heart volunteers also collected litter and discarded krathongs along Bang Mot Canal in front of the FIBO building. The activity recorded 58 kilograms of waste collected, providing a concrete output alongside its educational components. The event connected different university groups through a shared programme intended to strengthen engagement with neighbouring communities. Its reported results were the activities delivered and waste removed; wider changes in community behaviour or canal water quality were not measured in the article.





Hosting National University Cooperation on Sustainability at KMUTT Ratchaburi

KMUTT Ratchaburi hosted the third SUN Thailand travelling meeting and the fourth network committee meeting of 2025 on 14–16 December 2025.
The programme explored how a Residential College approach could connect education, shared living, and sustainability. Universities from across Thailand joined workshops and exchanges addressing carbon neutrality and the development of students and personnel as sustainability change agents. Provincial leadership and business representatives also contributed perspectives on local development and organisational sustainability. Sessions covered sustainable agriculture and tourism within an ethnically diverse province, ESG practices, and educational access through a discussion on preventing student dropout. Best-practice exchanges introduced university learning approaches and research facilities, while community visits explored Karen cultural practices, silver craftsmanship, and other local cultural resources. The reported outputs included workshops, network governance discussions, presentations, and site-based exchanges. Together, these activities connected university cooperation with provincial, business, and community perspectives. The event documented a programme of shared learning and coordination, providing opportunities for institutions to consider sustainability practices within different organisational and local settings.

17 PARTNERSHIPS FOR THE GOALS

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sustainable.kmutt.ac.th/goals17



Participating in Asian and National Sustainable Campus Networks

KMUTT executives, personnel, researchers, and students participated in the Asian Sustainable Campus Network Conference and the tenth SUN Thailand Annual Conference on 2–3 February 2026 at Chulalongkorn University. The programme brought together university sustainability networks and international organisations. Plenary speakers included representatives of the United Nations in Thailand and UN ESCAP, connecting higher-education discussions with wider regional and international sustainability priorities.

Representatives of sustainable campus networks from Japan, China, and South Korea contributed to a panel discussion alongside the Thai network. The conference also included presentations and posters covering engagement and behaviour change, sustainable campus management, and research and innovation for sustainability. These sessions provided opportunities to encounter approaches from different institutions and national contexts. The reported KMUTT contribution was participation by a delegation spanning leadership, operational, research, and student roles. The article documented involvement in an international knowledge-exchange platform, without identifying a separate agreement or attributing specific new institutional outcomes to the conference.

Strengthening Research Management Capacity through Thailand–Lao Cooperation

On 26 May 2026, the KMUTT Science Technology and Innovation Policy Institute, the Thailand International Cooperation Agency, and the Lao Department of Higher Education held a seminar and closing ceremony for the Research Management and Capacity Building programme in Vientiane. The programme formed part of the 2023–2025 Thailand–Lao cooperation plan in education. Its purpose was to develop research and innovation management capabilities within Lao higher education.

Across two training cohorts, the programme trained 39 administrators and researchers from the Lao Ministry of Education and Sports and four universities. Six selected participants also joined an intensive fellowship involving further training, policy-research proposal development, presentations, and feedback from Thai and Lao specialists. They received certificates at the closing event, which brought together approximately 60 attendees, including representatives and participants from both cohorts. The documented outputs combined completed training, fellowship activities, and proposal development. A reunion also enabled participants to exchange experiences and maintain connections for subsequent research and science, technology, and innovation policy cooperation.





Connecting Thai and Japanese Students through the Bangkok Sustainability Program

The KMUTT Graduate School of Management and Innovation organised the Bangkok Sustainability Program 2026 from 23 August to 5 September 2026. Students from The University of Tokyo and Iwate University joined KMUTT students in a two-week programme using Thailand as a setting for practical sustainability learning. Study visits to businesses, communities, and other sites connected sustainability concepts with economic, social, and environmental issues encountered outside the classroom. The programme covered the SDGs, carbon neutrality, and sustainable business through visits, workshops, cultural exchange, and teamwork. In the final stage, students analysed their experiences, developed ideas, and presented their work in a Final Presentation. The article identified analytical thinking, communication, teamwork, and adaptation to multicultural settings as learning outcomes of the programme. Its concrete outputs were the completed learning activities and student presentations, alongside interaction between participants from the three universities. The programme also established student connections that the article described as a foundation for further academic cooperation and sustainability-related learning between Thailand and Japan.

Campus

In this section

Green Infrastructure
Energy and Climate Change
Waste
Water
Transportation
Education and Research
Health and Safety

Green Infrastructure and Setting

Focus on master plan and main infrastructure including policy and strategic plan to make sustainable university with development of green building & sustainable innovation, global and national partnerships on sustainable university network, student clubs, website and statistical analysis.

Situated amidst the urban sprawl of Bangkok, King Mongkut's University of Technology Thonburi (KMUTT) emerges as a shining exemplar of sustainable green infrastructure. The university's architectural ethos prioritizes eco-friendliness and efficiency, resulting in buildings that seamlessly meld cutting-edge design with green technologies. Solar panels, efficient water management systems, and passive cooling designs underline KMUTT's commitment to reducing its environmental footprint, all while ensuring that its infrastructure stands robustly for generations to come.

Beyond the walls of its buildings, KMUTT has meticulously cultivated a green setting that resonates with sustainability. The campus is adorned with verdant gardens, tranquil water bodies, and expansive green spaces that act as ecological sanctuaries. These areas not only enhance the campus's biodiversity but also serve as serene spots for students and staff to reflect, rejuvenate, and engage with nature firsthand.

KMUTT's holistic approach to sustainable development goes beyond mere infrastructural advancements. By intertwining green infrastructure with a lush, sustainable setting, the university instills in its community a profound respect for the environment. It's a testament to KMUTT's vision that sustainability is not just an institutional goal but a way of life, ensuring that each student graduates with a deep-seated understanding of their role in safeguarding our planet's future.

Targets

Sustainable University Policy launched and fully implemented by 2021

KMUTT officially launched its Sustainable University Policy in 2021, serving as a comprehensive framework to integrate sustainability into every aspect of the university's operations. The policy outlines commitments to environmental stewardship, social responsibility, and governance excellence. It guides decision-making processes related to energy use, waste management, curriculum development, research priorities, and community engagement. Full implementation of this policy ensures that sustainability becomes a core principle across all faculties and departments, fostering a culture of responsibility and continuous improvement.

Certified 4 major buildings as a Green building in KMUTT

KMUTT has committed to achieving Green Building Certification for four of its major campus facilities, aligning with international sustainability standards. These certified buildings are designed and managed to optimize energy and water efficiency, reduce waste, and ensure a comfortable indoor environment. The certification process also promotes the use of sustainable construction materials and eco-friendly architectural design. This initiative demonstrates KMUTT's leadership in sustainable infrastructure and serves as a living laboratory for students and researchers.

University master plan All Campus to obtain 30% Green area by 2022

The university's Master Plan for Green Space Development aims to ensure that at least 30% of total campus area across all KMUTT locations is dedicated to green spaces. These areas include parks, gardens, green roofs, and ecological zones that enhance biodiversity and environmental quality. The initiative supports carbon sequestration, improves air quality, and provides a healthier, more relaxing environment for students and staff. This target reflects KMUTT's vision of transforming its campuses into sustainable, nature-friendly learning environments.

Sustainable Innovation Building launched at KMUTT

The Sustainable Innovation Building serves as a hub for research, innovation, and collaboration in sustainable technologies. It is designed to foster creativity among students, researchers, and entrepreneurs, providing advanced facilities for testing and developing solutions that address global sustainability challenges. The building itself reflects KMUTT's commitment to sustainability, featuring green design principles, renewable energy systems, and smart energy management. It stands as a symbol of KMUTT's dedication to driving innovation toward a sustainable future.

Global and national partnership members on sustainability network

KMUTT actively participates in global and national sustainability networks, collaborating with universities, research institutions, and organizations to exchange knowledge, share best practices, and implement joint sustainability projects. These partnerships strengthen the university's impact by connecting its research and innovation to global challenges such as climate change, energy transition, and sustainable urban development. Through these alliances, KMUTT contributes to policy dialogues, capacity building, and international cooperation in sustainable development.

Smart Campus initiation for sustainability by 2025

KMUTT is transforming its campuses into Smart and Sustainable Campuses by 2024, integrating digital technologies and data-driven systems to improve efficiency and reduce environmental impact. This includes smart energy monitoring, automated lighting and air-conditioning systems, real-time waste management tracking, and green mobility solutions. The Smart Campus initiative enhances sustainability performance while improving the overall quality of life for the KMUTT community. It exemplifies how technology and sustainability can work hand in hand to build a future-ready university.

progress

6 joining five global and national partnership members

- SUN (Sustainable Universities Network of Thailand)
- ASCN (ASIAN Sustainable Campus Network)
- ISCN (International Sustainable Campus Network)
- AUN-HPN (ASEAN University Network Health Promotion Network)
- Nature Positive Universities Network
- YEA-UNEP (Youth Education & Advocacy - United Nation Environment Program)

4 KMUTT's major buildings are certified in green building standards

- LX and UX buildings are certified TGBI for green building assessment.
- LX, UX, KX and BRI buildings are certified by Thailand Energy Ministry in green building implementation.

89.02% of university area is green area in 2025

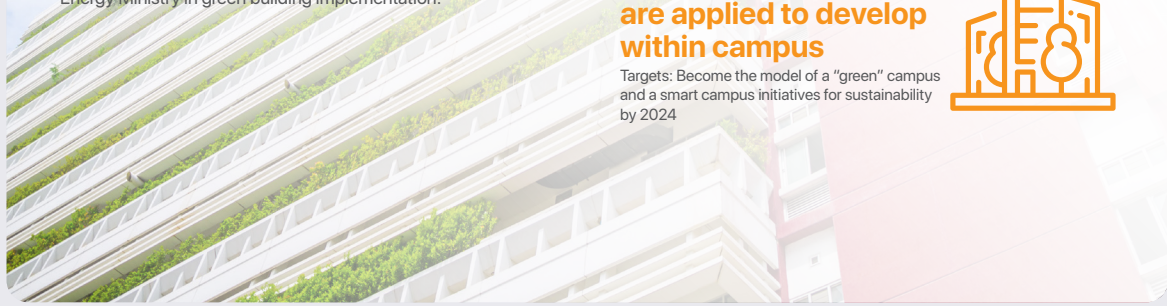
Targets: University Master Plan All Campus to obtain 30% green area by 2022

All Building at KMUTT launched a Sustainable Innovation Building

Targets: A Competition in sustainable innovation on both national and global level

In 2025, smart energy and smart building concepts are applied to develop within campus

Targets: Become the model of a "green" campus and a smart campus initiatives for sustainability by 2024



Green Infrastructure and Setting

Green Building

Learning Exchange (LX)

The LX Building at King Mongkut's University of Technology Thonburi (KMUTT) is a multidisciplinary learning facility designed with a strong emphasis on energy conservation and sustainability. It incorporates innovations such as rooftop Solar Cell panels to generate renewable electricity, reducing energy consumption by approximately 42%.
The building also employs efficient energy and water management systems, including sensors to save electricity and water, as well as natural ventilation systems that improve air circulation while minimizing reliance on air conditioning. Certified at the highest TREES Platinum standard in Thailand, LX serves as a model Green Building with plans for KMUTT to expand these energy-saving and sustainable design principles to other buildings and projects across campus, promoting renewable energy use and environmental sustainability broadly.



Active Mobility & Eco-Lifestyle Infrastructure

Smart Pedestrian & Cycling Ecosystem

KMUTT promotes a low-carbon campus through its comprehensive "Active Mobility & Eco-Lifestyle Infrastructure." To encourage walking and reduce carbon emissions, the university launched a gamified walking campaign utilizing the SAANSOOK application. Students and staff can track their daily steps and accumulate them to redeem eco-friendly rewards.
This digital initiative is seamlessly complemented by a convenient campus bicycle borrowing service. Together, these smart infrastructures foster a healthy, environmentally conscious community while significantly reducing reliance on motorized transport.

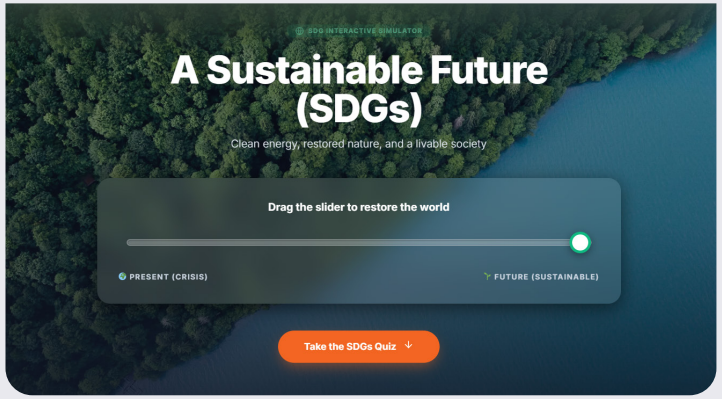


Digital Infrastructure

SEP for SDGs Online Simulator

KMUTT has pioneered the "SEP for SDGs Online Simulator," a cutting -edge digital infrastructure that integrates Thailand's Sufficiency Economy Philosophy (SEP) with global Sustainable Development Goals (SDGs). This interactive platform transforms the campus into a virtual living lab, allowing students and researchers to simulate, analyze, and optimize environmental policies, resource allocation, and green urban planning.
By leveraging smart technology, KMUTT enhances accessibility to sustainability education and drives technology-mediated climate action.

sustainable.kmutt.ac.th/Knowledge/sepforsdgs



Energy and Climate Change

Focus To be affordable and clean energy for smart university by 2024 which related to SDG 7, SDG 13 and SDG 15, by active contribution in energy reduction, implementation of energy efficient appliances,renewable energy usage, climate change and green area expansion.

King Mongkut's University of Technology Thonburi (KMUTT), positioned within the urban contours of Bangkok, is more than just an academic institution; it's a hub of sustainable energy innovationand climate change mitigation. The university, with its forward-thinking agenda, is deeply invested in researching and developing cutting-edge energy solutions. From harnessing renewable sources like solar and wind to optimizing energy storage technologies, KMUTT's commitment is evident in its eco-friendly campus infrastructure and curriculum that prioritizes sustainable energy concepts.

Alongside its energy initiatives, KMUTT recognizes the pressing challenges of climate change and ardently champions sustainable responses to this global concern. The university has undertakencomprehensive studies on climate change impacts, especially focusing on its immediate community and Thailand at large. KMUTT also promotes adaptive strategies, integrating them into urban planning and architectural designs, ensuring resilience against potential climatic adversities. The institution's endeavors in this field aim to inspire a generation of students and researchers to be at the forefront ofclimate action.

KMUTT's commitment to sustainable energy and climate change response fosters a practical learning environment, equipping students to become change agents for a greener future. This focus underscores the essential link between harnessing sustainable energy and effectively addressing climate change, highlighting the university's role in shaping a resilient future.

progress

23.35%
Reduction on energy usage (capita/year) compared to 2003 baseline
Targets: 20% reduction on energy usage (capita/year) by 2026 compared to 2003 baseline

1.92%
Renewable energy usage of total final energy consumption of electric
Targets: 10% Electrical Energy usage is from renewable sources by 2026

69.19%
Smart building implementation
Targets: 100% Smart building implementation on campus by 2030

94.50%
of appliances are energy-efficient appliances
Targets: 100% energy-efficient appliances usage in KMUTT by 2026

337.12 kW
capacity of solar rooftop are installed
Targets: Installing 2 MW capacity of solar rooftop installations by 2026

89.02%
of green area set up in KMUTT
Targets: 20% of green area in all campus by 2040

KMUTT Footprint Per Year is 14,581.14 tCO_2

29,220,724.61
Electricity Usage Per Year

Transportation Per Year

0	201.74	201.22

Our low carbon vision "Our vision for the next decade is to become a world-leading university which will produce the next generation of global leaders in technology with a sound understanding of the principles of sustainable development and in particular the need for us to reduce our Carbon Dioxide emissions andthose of other greenhouse gases."

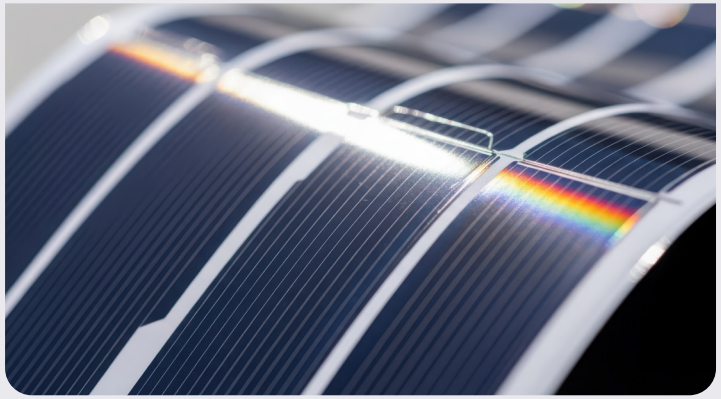
Energy and Climate Change

Research

Flexible Solar Cell Innovation: Two-Dimensional Surface Passivation for Efficiency and Stability in Perovskite Technology

Asst. Prof. Dr. Nopporn Rujisamphan, Faculty of Science, KMUTT

This research focuses on developing flexible Perovskite Solar Cells, a lightweight alternative that overcomes the limitations of traditional silicon solar panels. The core innovation is "Surface Passivation," a two-dimensional surface treatment that repairs nanoscale defects, enhancing electrical charge mobility and reducing energy loss. Utilizing a low-temperature production process, these versatile cells achieve up to 21% efficiency and can generate power from both outdoor sunlight and indoor LED lighting. Highlighting Thailand's potential in future clean energy, this breakthrough received the NRCT Quality Achievement Award 2026.



Energy-Saving Initiative

1 h Delay Policy at the Office of the President

To promote practical energy conservation and climate action, KMUTT implemented an ongoing behavioral change initiative at the Office of the President (N2). By delaying the morning activation of the air conditioning s ystem by one hour, the university achieved remarkable results. Comparing data from April 2026 to the previous year, this simple yet effective policy reduced electricity consumption by 23%, saving 11,148.50 kWh and cutting costs by 56,634.38 THB in a single month. It also decreased greenhouse gas emissions by 5.29 tonCO2eq. KMUTT continues to sustain this impactful operation to reinforce its long-term carbon neutrality goals.



Capacity Building

Campus-Wide Energy & Climate Training

KMUTT believes that true sustainability begins with its people. To foster a robust energy-saving culture and climate awareness, the university conducts comprehensive capacity-building programs tailored for all campus members. These initiatives proactively engage students, academic staff, and crucial operational personnel including security guards, cleaning staff, and landscape workers. By equipping every level of the workforce with practical energy conservation guidelines and eco-friendly operational practices, KMUTT ensures that climate action is a shared responsibility integrated into daily campus operations.



Waste

Focus on both municipal solid waste (MSW) and toxic waste or hazardous waste and e-waste within university including recycling program, paper and plastic usage reduction, no single use plastic usage, organic and organic waste treatment, toxic waste treatment and sewage disposal,waste reduction, waste reuse / recycling and waste utilization

KMUTT stands as a pillar of environmental responsibility, particularly in the realm of waste sustainability. As a leading academic institution, KMUTT doesn't merely educate its students about sustainability; it actively practices and showcases waste management techniques that are both innovative and efficient. From promoting the principles of the 3Rs Reduce, Reuse and Recycle to implementing state of the art waste segregation and processing systems, KMUTT is diligently working towards minimizing its waste footprint and maximizing resourceefficiency.

Beyond the conventional waste management practices, KMUTT is investing in research to transform waste into valuable resources. Projects focused on converting organic waste into bioenergy, repurposing non-biodegradable materials, and developing sustainable packaging solutions are some of the many initiatives taken up by the institution. This not only exemplifies the university's commitment to circular economy principles but also offers students hands-on experience, preparing them to be the next generation of green innovators.

KMUTT extends its waste sustainability efforts beyond campus by organizing awareness campaigns, workshops, and community programs. These initiatives not only foster a greener campus but also inspire sustainable practices throughout the community, addressing pressing environmental challenges effectively.

Policy/Guideline

No foam-food packaging policy
Bans all foam food containers on campus. Vendors use biodegradable or paper-based packaging to reduce non-degradable waste and pollution.

No Single Use Plastics
Eliminates plastic bags, cups, and straws. Encourages reusable containers and eco-friendly alternatives to reduce plastic waste.

E-meeting policyand Two side-paper usage
Promotes digital meetings and double-sided printing to minimize paper use and support green office operations.

Electronic waste management
Sets up e-waste collection points to safely dispose of old electronics and recover recyclable materials.

Chemical management system set up and implementation
Implements strict control over the purchase, storage, and disposal of chemicals to ensure safety and prevent contamination.

Municipal waste management system set up and implementation
Organizes campus-wide waste separation and recycling, reducing landfill waste and improving collection efficiency.

Hazardous waste management system set up and implementation
Manages laboratory and hazardous waste following national safety standards to prevent environmental pollution.

Organic waste utilization to make fertilizer from vegetable and food waste
Turns food and plant waste into compost or fertilizer, promoting circular resource use within the campus.

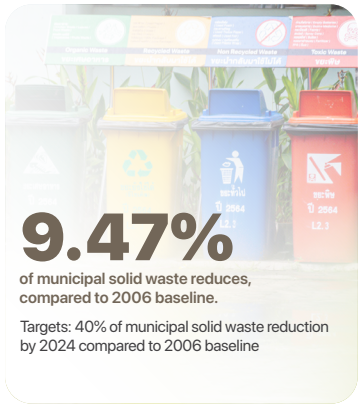
Waste water Quality monitoring
Monitors treated water every 1–2 months to ensure safe reuse and compliance with environmental standards.

Learning space or biogas production from food waste
Uses cafeteria food waste to produce biogas for learning and renewable energy demonstration.

No single use plastic policy
Eliminates disposable plastics such as cups, straws, and bags. Promotes reusable or eco-friendly alternatives to reduce plastic waste.

Electronic waste to recycled
Recycles e-waste to recover metals and plastics, reducing hazardous waste and supporting a circular economy.

2025 progress



9.47%
of municipal solid waste reduces, compared to 2006 baseline.
Targets: 40% of municipal solid waste reduction by 2024 compared to 2006 baseline



19.05%
of municipal solid waste are reused and recycled.
Targets: 70% of municipal solid waste are reused/ recycled by 2030



28.18%
of food waste are completed to biogas and fertilizer.
Targets: 100% of food Waste are transformed to energy by 2030



46.58%
of hazardous waste reduces, compared to 2007 baseline.
Targets: 70% of hazardous waste reduction by 2030 compared to 2007 baseline



54.29%
of municipal solid waste are reused and recycled.
Targets: 40% of hazardous waste are reused/ recycled by 2030



54.56%
of hazardous waste are prepared for onsite waste treatment to reduce waste management cost.
Targets: 20% of hazardous waste onsite treatment by 2030

Waste

Research

Green Biosilica Extraction: Upcycling Agricultural Waste into High-Value Materials

Asst. Prof. Dr. Siriluk Chiarakorn, School of Energy, Environment and Materials, KMUTT

To tackle agricultural waste and promote a circular economy, KMUTT researchers developed an eco-friendly biological process to extract high-purity biosilica from rice husks. This innovative biotechnology eliminates the need for toxic chemicals and high-temperature burning. The process significantly reduces the carbon footprint by 30 times compared to traditional methods while providing a low-cost, high-value raw material for the cosmetic and pharmaceutical industries. This breakthrough successfully transforms abundant agricultural residues into sustainable resources, effectively minimizing environmental impact and supporting national zero-waste goals.



Waste Reduction Policy

Path to a Paperless Campus & Green IT

KMUTT is actively pursuing its goal to become a paperless campus, achieving a 50.14% reduction in paper usage in 2025 compared to its 2016 baseline. Through the Green IT Initiation and digital platforms, the university saves over 776,312 sheets of paper annually. Key initiatives include the E-Meeting Document System, Blockchain Academic Records, and the MODLINK application, which provides digital IDs, online document requests, and electronic payments to replace paper receipts. These smart digital ecosystems significantly minimize resource consumption, keeping the university on track toward its target of an 80% paper reduction by 2026.



Hazardous & E-Waste Management

Safe Disposal of Toxic and Electronic Waste

KMUTT is highly committed to the safe management of chemical substances and electronic waste (E-waste). Handling nearly 12 tons of hazardous laboratory waste annually, the university successfully treats 100% of its toxic waste according to standard practices. Furthermore, KMUTT actively participates in Thailand's WEEE Project, led by the Pollution Control Department (PCD). The university encourages students and staff to return discarded electronic devices for secure recycling. This comprehensive system prevents hazardous heavy metals from contaminating the environment, reinforcing KMUTT's dedication to a safe and sustainable campus.



Water

Focus on water conservation program, water recycling program implementation, water efficient appliance usage and tap water usage reduction.

King Mongkut's University of Technology Thonburi (KMUTT) is at the forefront of water sustainability in Bangkok, Thailand. The university integrates water conservation across its operational, academic, and outreach activities, employing strategies like efficient water use, rainwater harvesting, and wastewater treatment. These systems transform the campus into a model of sustainable water management, showcasing how to optimize water resources effectively.

Academically, KMUTT weaves water sustainability into its curriculum and research, fostering a deep understanding of water-related challenges. Students and faculty explore innovative water treatment technologies and sustainable management practices, contributing valuable insights and solutions that have the potential to influence global water conservation efforts.

Beyond its campus, KMUTT actively promotes water sustainability through community engagement. Workshops, collaborative projects, and public programs extend its reach, educating the wider community on sustainable water use. KMUTT not only acts as an educational hub but also as a catalyst for wider societal change, advocating for the careful stewardship of water resources now and for future generations.

Policy

Water usage conservation policy

To address the growing concern over freshwater scarcity and sustainability, KMUTT has implemented a university-wide water usage conservation policy aimed at reducing unnecessary water consumption. This policy encourages behavioral change through awareness campaigns, signage, and water-saving education initiatives targeted at students, faculty, and staff. Departments are instructed to monitor water use and identify high-consumption areas to improve efficiency. In addition, the policy supports the adoption of water-saving technologies such as motion-sensor faucets, low-flow plumbing fixtures, and efficient irrigation systems. Periodic water audits are also conducted to track progress and identify potential leaks or inefficiencies. These collective actions contribute to lowering the university's overall water footprint while fostering a conservation-minded campus culture.

Water reservoir usage program

KMUTT has strategically established and managed water reservoirs on campus to collect rainwater and store it for non-potable uses. This approach not only reduces dependency on municipal water supplies but also increases resilience to seasonal water shortages and climate-related drought events. The collected water is primarily used for campus landscaping, building cooling towers, and street cleaning operations. Reservoirs are maintained to ensure water quality and ecosystem health, with sediment control and regular inspections. This program also functions as a learning model for students and researchers in the fields of hydrology, sustainability, and urban planning. By treating rainwater as a valuable resource, KMUTT is setting an example of sustainable urban water management within a university setting.

Water recycling program

In support of circular water use, KMUTT operates a water recycling program that captures greywater and laboratory wastewater, treats it through an on-campus system, and reuses it for suitable applications. This includes irrigation, toilet flushing, and occasionally cleaning, significantly reducing the demand for fresh water and cutting down on wastewater discharge to the environment. The recycled water is treated using technologies such as sedimentation, filtration, and UV sterilization, ensuring it meets appropriate safety and quality standards. The university also integrates this system into research and education by allowing students and engineers to monitor, test, and optimize the water recycling process, turning infrastructure into a living laboratory.

In progress

Clean ponds @KMUTT Bangmod

KMUTT Bangmod campus has initiated a clean pond restoration project aimed at improving water quality, biodiversity, and ecological balance. Over time, campus ponds can accumulate organic sludge, debris, and pollutants, which degrade water quality and affect aquatic life. The restoration process includes removing sediment, introducing natural filtration plants, and improving circulation to create a healthier aquatic environment. These ponds not only serve as stormwater retention basins but also support environmental education and aesthetic enhancement of the green space. Educational signage, student-led monitoring projects, and use of the ponds in ecological courses transform the space into an outdoor classroom. This initiative underscores the university's commitment to water ecosystem health and green infrastructure.

Water Efficient Appliances

To reduce indoor water consumption, KMUTT is actively upgrading all outdated fixtures with high-efficiency alternatives. This includes the installation of water-saving faucets, dual-flush toilets, low-flow showerheads, and energy-efficient dishwashers and washing machines in residence halls and laboratories. These appliances are designed to reduce water use by up to 30–50% compared to conventional models. The initiative not only contributes to reduced water demand and utility costs but also aligns with broader sustainability goals related to energy savings and greenhouse gas reduction. KMUTT also incorporates these upgrades into sustainability awareness campaigns to ensure behavioral alignment from end users, thereby maximizing impact across campus operations.

Wetland @KMUTT Bangkhunthien

At KMUTT's Bangkhunthien campus, a constructed wetland is under development to naturally treat wastewater and enhance the landscape. The wetland uses aquatic vegetation, microorganisms, and soil to filter and degrade contaminants, providing an environmentally friendly method for wastewater management. It is designed to handle effluent from student residences and research facilities, removing nutrients, sediments, and pathogens in the process. Beyond its water treatment function, the wetland supports a microhabitat for local flora and fauna and offers research opportunities for students in environmental sciences, engineering, and biology. Once fully operational, the site will also serve as a model for low-energy, decentralized water treatment systems that can be replicated in other academic and rural settings, contributing to knowledge transfer and sustainable infrastructure innovation.

progress

19.55%

of pipe water usage reduction compared to 2003 baseline according to water conservation measure and eco sensor water saving appliances

Targets: 50% of pipe water usage reduction by 2030 compared to 2003 baseline

80%

of water recycle usage in campus

Targets: 25% of recycled water usage in campus by 2024

37.78%

of rain water conservation for usage in campus

Targets: 35% of rain water conservation for usage in campus by 2025

Drinking Water Quality in KMUTT is

100%

in acceptable standard range of Drinking water standard and meets safety drinking water.

100%

of water efficient appliances usage in campus by 2024

120

The sampling locations for water quality monitoring im KMUTT all Campus

100%

Wastewater Quality from all building in KMUTT are within Industrial wastewater standard



Safe Drinking Water

According to water conservation which related to health & safety issues in drinking water. KMUTT Water Conservation Policy is committed to achieve safe drinking water and clean wastewater in campus by 2020. Safe Drinking water program has been set up to support this policy and KMUTT Water Conservation Program since 2007. Safe Drinking water program in KMUTT focus on Drinking water quality which sampling from all drinking water filling stations including canteen, cafeteria, food center, minimart and restaurant services in our campuses. These have been done monthly on drinking water quality testing according to standard of drinking water by using Central laboratory services and KMUTT Food Safety Center, Faculty of Sciences. Moreover, Personal mug campaign has been initiates since 2013 with 171 Drinking water bottle filling stations within our university.

Water

Research

Advanced Water Treatment: Tackling Emerging PPCP Contaminants

Asst. Prof. Dr. Suraphong Rattanakul,
Department of Environmental Engineering, KMUTT

To address the growing environmental concerns of Pharmaceuticals and Personal Care Products (PPCPs) contaminating natural water sources and drinking water systems, KMUTT researchers have developed an Advanced Oxidation Process (AOP). By effectively combining Ultraviolet (UV) light with chlorine, this innovative treatment generates free radicals that destroy the complex molecular structures of PPCPs contaminants that traditional wastewater systems cannot degrade. The research also includes precise chemical analysis and biological toxicity testing to ensure absolute water safety. This proactive approach aims to upgrade national water management standards and protect public health from invisible emerging contaminants.



Activity

Canal Cleanup Initiative

KMUTT implements a structured community-based learning initiative that integrates environmental education with civic engagement. Through this program, students actively participate in volunteer-led activities, such as cleaning local canals surrounding the university. These practical experiences are complemented by educational sessions highlighting the environmental impacts of improper waste disposal on public health and aquatic ecosystems. By embedding experiential learning within a real-world context, KMUTT cultivates environmentally literate graduates equipped with problem-solving skills, preparing them to contribute meaningfully to local and global sustainable development.



Monitoring

Wastewater Monitoring

Guided by the KMUTT Water Conservation Policy, the university is committed to preventing waterway pollution and ensuring public health. To maintain clean water standards, KMUTT operates separate wastewater treatment plants across all campus buildings. Effluent quality is monitored monthly, with samples rigorously tested by the Central Laboratory Services at the Department of Environmental Engineering. Key parameters including pH, BOD, COD, TDS, and heavy metals are analyzed to ensure strict compliance with national industrial wastewater standards. This consistent evaluation safeguards long-term ecological health while promoting responsible water usage among the campus community.



Transportation

By 2025, KMUTT envisions a holistic approach to sustainable mobility, ensuring accessibility and eco-friendly options for every individual on campus. This initiative not only emphasizes the environmental benefits but also fosters inclusivity and efficiency, paving the way for a harmonious blend of technological advancements with ecological responsibility.

King Mongkut's University of Technology Thonburi has become a leader in sustainable transportation within academia, actively integrating sustainability and efficient mobility. Recognizing the growing global focus on environmental responsibility, KMUTT has developed transportation solutions that support the daily needs of its community while minimizing carbon emissions and enhancing energy efficiency.

KMUTT views transportation as more than just a utility it's a vital component of a broader commitment to community and environmental health. The university promotes public transport use, bicycle-sharing, and pedestrian-friendly pathways to reduce its ecological footprint. These initiatives are part of a broader infrastructure and policy framework that prioritizes eco-friendly transit solutions, aiming to lessen traffic congestion and cultivate a more sustainable campus environment.

As a hub of research and innovation, KMUTT is also advancing sustainable transportation through academic initiatives. By engaging students and faculty in research that explores and refines new transportation technologies and strategies, KMUTT is paving the way for future advancements in this field. These collaborative efforts are setting the stage for a future where transportation aligns seamlessly with environmental stewardship, establishing KMUTT as a pioneer in shaping sustainable mobility for tomorrow.

Policy

Walk & Bike Society Policy

KMUTT encourages a pedestrian- and cyclist-friendly campus through its walk & bike society policy. By investing in bike lanes, shaded pedestrian paths, and secure bike parking, the university supports low-emission, healthy commuting options. Awareness campaigns and community challenges are organized to promote active mobility. This policy helps reduce carbon emissions, traffic congestion, and enhances physical and mental well-being of students and staff.

Car Pool Campaign

To lower greenhouse gas emissions and improve transportation efficiency, KMUTT promotes a carpool campaign targeting daily commuters. The program uses digital coordination tools and internal outreach to connect students and staff with similar routes. Designated parking areas and recognition rewards are part of the incentives. This not only saves fuel and reduces costs but also fosters a sense of environmental responsibility and cooperation within the university community.

Bike Share Campaign

KMUTT's bike-sharing campaign enables short-distance, sustainable travel within and between campuses. Students and staff can easily rent bicycles via a self-service system with multiple return points. This service reduces reliance on motorcycles and cars, decreases pollution, and supports a healthier lifestyle. The program also serves as a practical example of smart, sustainable campus mobility for other institutions.

EV Charger Installation and Operation

The university has installed multiple EV charging stations in strategic campus locations to support the growth of electric mobility. These stations are available for both university-owned and personal electric vehicles, helping reduce fossil fuel consumption. KMUTT also monitors energy use and promotes responsible charging behavior. The initiative contributes to long-term emission reductions and supports Thailand's broader transition toward clean energy.

In progress

E-Mobility Demonstration Site and Learning Space

KMUTT is developing an interactive demonstration area that showcases electric mobility technologies including electric scooters, bikes, and compact EVs. The space will be integrated with learning modules for engineering and sustainability students, fostering innovation and hands-on learning. Workshops and public exhibitions will further engage the broader community. It serves as a knowledge hub that bridges academic research with real-world sustainable solutions.

Car-Free Area Promotion

As part of its sustainable campus vision, KMUTT is gradually introducing car-free zones to reduce traffic, noise, and air pollution. These areas prioritize walkability and bike access, with improved landscaping and green public spaces. Awareness signage and periodic "car-free days" support behavioral change. This policy not only benefits environmental health but also improves safety and the quality of campus life for all users.

progress

100%

for clean energy shuttle van/ shuttle bus usage by 2025

57%

of pedestrian is green covered way to serve walking campus by 2024

22%

of e-vehicle usage in KMUTT by 2024 compared to 2010 baseline

52%

increase in bicycle usage, with more than 8,950 people joining the KMUTT Green Bike Club."

Targets: 50% of bicycle usage increasing to serve walk & bike society by 2025 compared to 2010 baseline

15.63%

decrease in car parking area at KMUTT

Target: 20% reduction by 2024 (compared to 2018 baseline)

Introducing

The Mobility & Vehicle Technology Research Center (MOVE)

From the past operations of the automotive research cluster, it has been observed that various agencies from both the public and private sectors, domestically and internationally, have shown significant interest in the transformation of modern automotive technology and the growth of the electric vehicle industry in Thailand. This is evident through collaborative efforts between the university and external organizations, including research projects, academic services, and the signing of Memorandums of Understanding (MOUs). Additionally, there has been an ongoing exchange of personnel and the organization of seminars to disseminate knowledge to faculty members, researchers, students, and the public.

Therefore, to promote continuous integration between faculty, researchers, and students from various departments and to keep pace with the changes in automotive technology, King Mongkut's University of Technology Thonburi (KMUTT) has established the Mobility & Vehicle Technology Research Center (MOVE). This center builds upon the automotive research cluster and operates under the Research and Technology Service Center (RTSC). The MOVE Research Center focuses on integrated collaboration among faculty, researchers, and students from various units, sharing research space and equipment to create innovative research in modern automotive technology that can be commercialized.

move.kmutt.ac.th



Road Safety

At KMUTT, road safety is a top priority, and the university has taken proactive steps to enhance travel safety on campus. Clear road markings have been implemented to guide both drivers and pedestrians, ensuring smooth and organized traffic flow. In addition, highly visible traffic signs and symbols have been strategically placed to provide clear instructions and warnings. KMUTT also enforces a strict policy requiring all motorcycle riders to wear helmets while driving on campus. This focus on safety ensures that everyone on campus can navigate the roads with confidence, reducing the risk of accidents and creating a safer environment for all.

Transportation

Research

EV Guard: Enhancing Safety in EV Charging Infrastructure

Asst. Prof. Dr. Thidarat Bunsri, Faculty of Science, KMUTT

To enhance the safety and efficiency of the growing electric vehicle (EV) ecosystem, KMUTT researchers partnered with South Korea's EV ALL to develop "EV Guard." This innovative, three-layer cleaning pad is crafted from natural biomaterials, including fire-resistant kapok and bamboo fibers, bound by biopolymer glue. Designed specifically for EV charging heads, it effectively eliminates dust and moisture, significantly reducing the risks of short circuits and static electricity. This biodegradable innovation reinforces KMUTT's commitment to advancing secure, sustainable, and zero-emission transportation infrastructure.



Activity

Community Cycling

To promote sustainable active mobility, KMUTT organizes "Walk and Bike" campaigns that extend well beyond the campus borders. By seamlessly integrating digital engagement tools like the SAANSOOK step-tracking application with physical cycling events, students, staff, and local residents actively explore nearby neighborhoods. These events highlight the area's cultural and environmental context. Furthermore, KMUTT hosts collaborative bicycle maintenance workshops to share repair and safety knowledge. These combined efforts foster a robust cycling and walking network, strengthening community relations while accelerating the shift toward a low-carbon lifestyle.



Green Mobility

EV Charging Stations

KMUTT actively drives the transition to Zero Emission Vehicles (ZEV) by operating a fleet of electric shuttle buses that connect academic zones, research centers, and service areas. To support this green mobility ecosystem, the university provides accessible EV charging stations for all students and staff, heavily incentivizing the shift away from fossil-fuel vehicles. These vital infrastructure developments significantly reduce campus noise pollution and greenhouse gas emissions. Through these comprehensive clean transportation policies, KMUTT firmly positions itself as a national model for sustainable commuting, making substantial progress toward its goal of Carbon Neutrality by 2040.



Education and Research

Focus on courses and subjects related to sustainability, research fund dedicated to sustainability research, learning space and learning garden related to sustainability, events related to sustainability and sustainability report

King Mongkut's University of Technology Thonburi (KMUTT) stands out as a leader in sustainable education and research, embedding sustainability deeply into its academic framework. KMUTT's curriculum is designed to equip students with a deep understanding of global challenges, fostering critical thinking and proactive problem-solving with a focus on environmental and human well-being.

KMUTT extends its sustainability efforts beyond the classroom through multidisciplinary research that drives innovation. Projects range from developing energy-efficient technologies to exploring sustainable agriculture and urban planning solutions, creating a collaborative environment where students and faculty tackle real-world problems together. This integration of theory and practical research prepares students to become impactful change-makers.

What sets KMUTT apart is its commitment to a holistic, sustainable academic ecosystem. The university emphasizes ethical considerations, community engagement, and lifelong learning, ensuring that every academic and research initiative evaluates its broader societal and environmental impact. By doing so, KMUTT not only educates but also leads by example, setting a gold standard in how educational institutions can promote sustainability, thereby shaping a greener future.

Targets

of courses and subjects in KMUTT are related to sustainability by 2024

KMUTT aims to ensure that a significant proportion of its academic curriculum integrates sustainability concepts by 2024. This includes incorporating environmental, social, and governance (ESG) principles across disciplines, from engineering to social sciences. The goal is to equip students with critical thinking and problem-solving skills necessary for sustainable development. Curriculum committees work closely with sustainability experts to revise content, develop new interdisciplinary subjects, and adopt experiential learning models. These efforts help foster a new generation of graduates ready to lead in a more sustainable world.

Learning Exchange Building for Sustainability Learning launched by 2022

The Learning Exchange (LX) Building was developed as a dynamic hub for sustainability learning and collaboration. Designed with green architecture and energy-efficient systems, the facility hosts exhibitions, student innovation showcases, and public seminars focused on the Sustainable Development Goals (SDGs). It serves not only as a physical space but also a symbolic center for interdisciplinary knowledge exchange. By bringing together academia, industry, and community actors, the LX Building plays a central role in driving KMUTT's educational and outreach missions for sustainable development.

of total research fund dedicated to sustainability research by 2024

KMUTT has set a target to allocate a meaningful share of its total research funding toward sustainability-related projects by 2024. This commitment supports studies on renewable energy, waste reduction, sustainable materials, and climate resilience, among others. Funding mechanisms prioritize projects with high impact potential and collaborative opportunities. This initiative encourages both faculty and graduate students to align their research with global and national sustainability challenges, thereby amplifying the university's contribution to science-based solutions.

Learning space on sustainability related set up in KMUTT by 2024

In support of hands-on learning and interdisciplinary exploration, KMUTT is establishing dedicated sustainability learning spaces across the campus by 2024. These spaces include indoor and outdoor classrooms, demonstration zones for green technology, and living labs for community-focused research. The goal is to provide students with real-world exposure to environmental systems and sustainable innovation. Designed to be interactive and inclusive, these spaces help bridge theory with practice and foster a deeper understanding of ecological interdependence.

events related to sustainability are organized per year by 2024

To promote environmental awareness and behavioral change, KMUTT plans to organize a wide range of sustainability-related events annually by 2024. These include seminars, green innovation competitions, Earth Day campaigns, and SDG-focused exhibitions. Events are coordinated by multiple departments and student groups to ensure broad engagement. They also provide platforms for students, faculty, and external partners to showcase ideas, share best practices, and initiate collaborations that extend KMUTT's impact beyond the campus.

2025 progress

92.23%

of courses and subjects in KMUTT are related to sustainability concepts

53.83%

of research fund are dedicated to environmental and sustainablility research

576 Events

Related to sustainability are organized.

At KMUTT, we are dedicated to developing respected academic programs that not only enhance our students' lives but also align with sustainable practices and environmental stewardship. Our growth strategy is deeply embedded in our commitment to social responsibility and ecological sustainability, ensuring that we offer education that respects and preserves our planet for future generations.

IN 2026

Learning Exchange building for sustainability learning is now in the process of equipment installation

75%

6 Learning Space

venues which are related to sustainability are set up in KMUTT including Science Learning Space, Green Society, Learning Garden, Student Hub,Learning Exchange in KMUTT Bangmod, Student Hub in KMUTT Bangkhunthien and X Cite pace at KX



Education and Research

Research

First Underground Cavity Exploration Standard in Thailand

Prof. Dr. Warat Kongkitkul, Department of Civil Engineering, KMUTT

To transition urban infrastructure management from reactive to predictive maintenance, researchers from KMUTT's Department of Civil Engineering collaborated with Ehime University, Japan, to develop Thailand's first underground cavity exploration standard. Utilizing the advanced GPR Mobile Mapping System 3D (GMS3), the team can accurately detect sub-surface cavities at high speeds without disrupting traffic. The research establishes new risk assessment criteria specifically tailored to Thailand's concrete road structures. This international collaboration enables authorities to proactively prevent dangerous sinkholes, significantly enhancing the safety and sustainability of the nation's public infrastructure.

Activity

Presidential Dialogue and Educational Fair: Pioneering KMUTT's Transformation into a Lifelong Learning University

KMUTT hosts the "Presidential Dialogue and Educational Fair" at the Learning Exchange Building to continually advance its vision of transforming into a "Lifelong Learning University." This initiative is driven by three core systems: OneKMUTT, Learning Journey, and Credit Bank. The ongoing platform features keynote addresses from international experts covering lifelong learning and micro-credentials, followed by collaborative roundtable discussions among global university leaders and government agencies. Simultaneously, the Education Fair connects students with representatives from leading universities across Asia, Australia, Europe, and the United States, actively expanding educational opportunities and fostering a sustainable future in higher education.

Learning Space

Living Lab

The GREEN Living Lab at KMUTT serves as a dynamic, hands-on learning space that empowers students to actively engage in sustainability through real-world experiences. The space seamlessly integrates academic learning with practical action, involving students in impactful activities such as rene wable energy workshops, waste and water management projects, ecosystem restoration, and safety training. Through these immersive experiences, students apply multidisciplinary knowledge and collaborate to solve complex environmental and social challenges. The Lab significantly strengthens sustainability education across the campus, inspiring students to become responsible global citizens equipped to drive positive change in their communities.







Health and Safety

Focus on five areas of safety including life safety, road safety,workplace safety, laboratory & workshop safety and food safety

In the rapidly evolving landscape of technology and societal shifts, King Mongkut's University of Technology Thonburi (KMUTT) in Bangkok distinguishes itself with a dedicated focus on sustainable health and safety. KMUTT's holistic approach nurtures a campus environment that harmonizes advanced facilities with sustainable practices, ensuring that the well-being of its community is aligned with environmental stewardship.

KMUTT extends its commitment to health beyond physical measures through mental well-being initiatives, including counseling, workshops, and mindfulness programs.
The university's design promotes green spaces and recreational areas, enhancing mental tranquility and physical health. Innovatively, KMUTT also incorporates sustainable materials and technologies within its infrastructure to uphold safety standards while minimizing environmental impact.

The essence of KMUTT's strategy is integrating sustainable health and safety within its educational framework.
The university offers courses and workshops that cultivate an understanding of global health issues, the importance of safety across professions, and the role of sustainable solutions. This educational approach equips students to view health and safety through a sustainability lens, preparing them for a future where these elements coexist seamlessly, promoting a safer, healthier, and more environmentally conscious world.

Targets

KMUTT Safety Policy

KMUTT's Safety Policy serves as the foundation for creating a safe and healthy learning and working environment across the university. It defines safety responsibilities, sets preventive measures, and ensures that all operations academic, laboratory, and community follow risk management principles. The policy encourages a safety-first culture among staff and students through clear communication, regular training, and continuous improvement.

Life Safety Pocket Guide

The Life Safety Pocket Guide provides essential information on personal safety, emergency response, and risk prevention for everyone on campus. It covers first aid, evacuation procedures, and emergency contacts, ensuring that students and staff know how to respond effectively to critical situations. Compact and practical, the guide promotes daily awareness and readiness to protect lives and reduce harm.

Workplace Safety: Building Safety

The Workplace Safety Policy focuses on maintaining safe buildings and facilities within KMUTT. It includes guidelines on fire prevention, structural integrity, and accessibility standards. Regular inspections and maintenance ensure that classrooms, offices, and laboratories meet safety requirements, while promoting a secure and comfortable environment for all university members and visitors.

Road Safety

The Road Safety Policy encourages responsible commuting practices for motorcycle and bicycle users. It provides procedures for safe riding, protective gear use, and traffic awareness. Through campaigns like "Safety Ride" and "Share the Road," KMUTT fosters a culture of mutual respect among drivers, cyclists, and pedestrians to prevent accidents and enhance campus mobility safety.

Laboratory & Workshop Safety

This policy outlines standards for managing chemical, biological, electrical, mechanical, and radioactive hazards in laboratories and workshops. It ensures that experiments and engineering works are conducted under strict safety supervision. Training sessions and proper labeling systems help prevent accidents, protect users, and maintain compliance with both national and university -level safety regulations.

Food Safety

The Food Safety Policy ensures hygienic, sustainable, and health-conscious food practices across campus. It includes procedures for safe food handling, promotion of "Clean Food–Good Taste," and encouragement of eco-friendly habits such as reducing foam containers. Through these initiatives, KMUTT promotes public health, environmental care, and responsible consumption among its community.

progress

In 2026

Zero accident in KMUTT compared to 2015 baseline

93.10%

of food on each shop at cafeteria are healthy food

100%

completely wearing helmet for motorcycle and bike

This achievement reflects the strong collaboration and commitment of the KMUTT community, where everyone worked together to ensure the success of the 100% helmet-wearing initiative. Through collective efforts, awareness campaigns, and a shared dedication to safety, the university has reached its goal of complete helmet compliance by 2023.

100%

of Pilot Laboratory are Safe by Following Lab Safety Guideline or ESPReL Standard

The ESPReL (Enhancing Safety Practice of Research Laboratory) standard, developed by the National Research Council of Thailand (NRCT), focuses on improving laboratory safety through risk management, chemical safety, accident prevention, and personnel training. The ESPReL Checklist system helps laboratories assess and enhance safety practices to meet national standards.



5 Safety Commitments

Workplace safety, lab and workshop safety, road safety, life safety and food safety are our five safety commitments call out attitude and behavior we expect to see from anyone who studies with KMUTT. The commitments are a promise from KMUTT to every student that we value safety above all else. Our commitment to student is that they return home safety every day.

Carbon Neutrality

In this section

Goal Roadmap/Pathway
Strategy Plan
Greenhouse gas emission



Health and Safety

Research

AI-Driven 3D-Printed Porous Bone Replacements

Assoc. Prof. Dr. Patcharapit Prom-umpat,
Department of Mechanical Engineering, KMUTT

To overcome the limitations of traditional bone grafts, KMUTT researchers and its spin-off company, OsseoLabs, have developed an innovative 3D-printed porous bone replacement. Utilizing Artificial Intelligence (AI) for patient-specific digital surgical planning, this technology significantly reduces infection rates and enhances natural bone integration. The innovation has been successfully applied in treating patients with severe ankle osteoarthritis and bone infections, effectively preventing permanent amputations and fully restoring mobility. This breakthrough highlights KMUTT's excellence in medical engineering and its unwavering dedication to advancing global health and well-being.



Activity

KMUTT SAFETY WEEK

Organized by the Center of Energy, Environment, Safety and Health (EESH), the annual KMUTT Safety Week 2026 reinforces the university's dedication to sustainable well-being, occupational safety, and environmental stewardship. Under the theme of carbon reduction and biodiversity restoration, the event features the official launch of the Biodiversity Promotion Policy and awards for peer-evaluated model safety laboratories. Through interactive exhibitions, risk-reduction campaigns, and practical workshops such as working-at-height safety training the initiative actively engages students, staff, and external partners. This collaborative effort empowers the campus community to build a resilient, safe, and eco-conscious environment while extending this commitment to the broader society.



Award

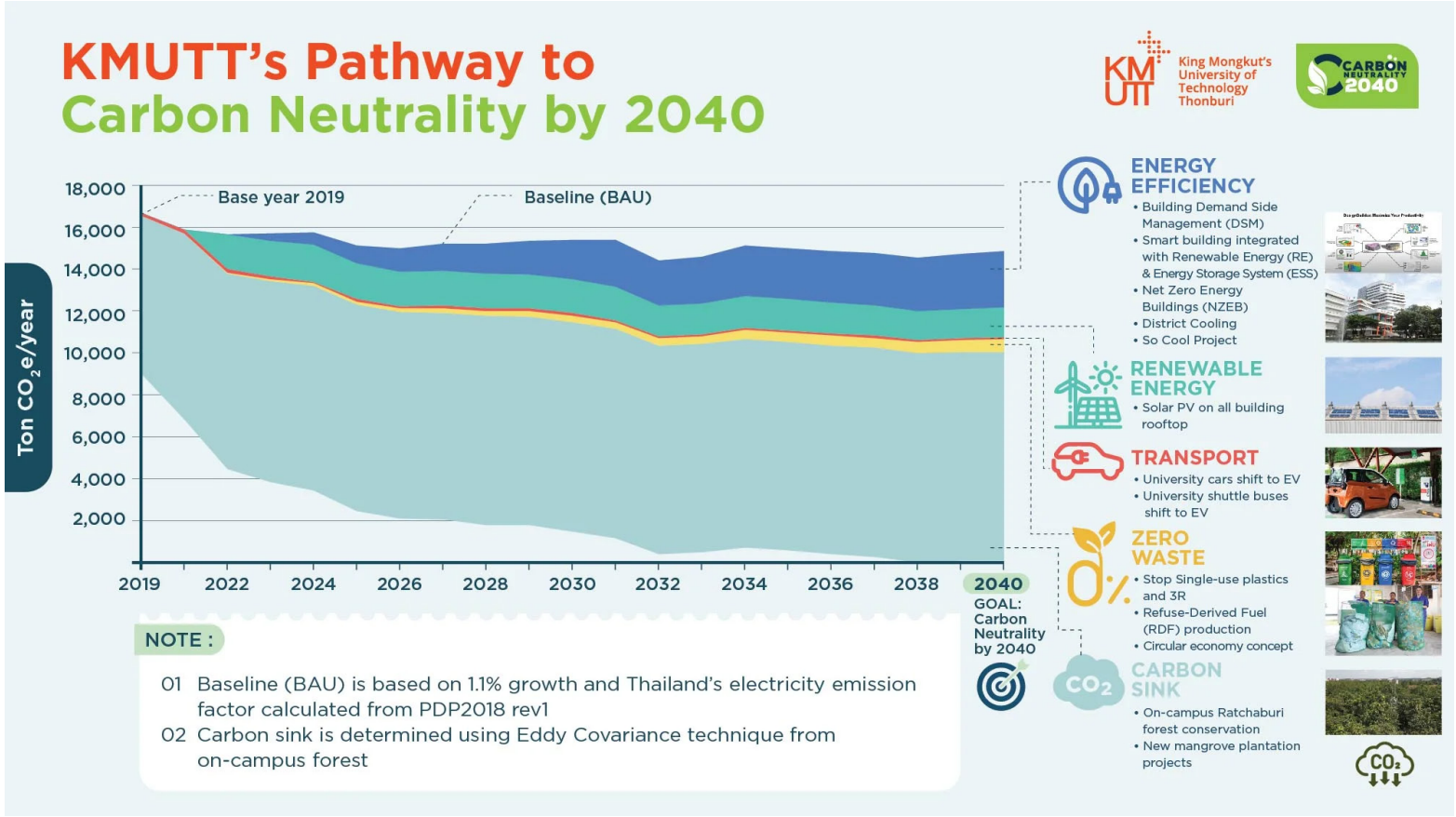
Health Promotion

King Mongkut's University of Technology Thonburi (KMUTT) has proudly received the "Five-Star Healthy University" rating from the ASEAN University Network for Health Promotion (AUN-HPN) under the Healthy University Rating System (HURS) for two consecutive years. This top-tier recognition highlights KMUTT's sustained excellence in promoting health and well-being through strong system infrastructure, designated zero-tolerance areas, and health-promoting environments. By maintaining an impressive score of 800–899 out of 1,000 points, the university reaffirms its commitment to fostering a safe, supportive, and health-conscious campus for all. This continuous achievement reflects KMUTT's vision of creating a learning environment where health, happiness, and sustainability go hand in hand, reinforcing its leadership in driving transformative change toward a healthier and more resilient academic community in the ASEAN region.

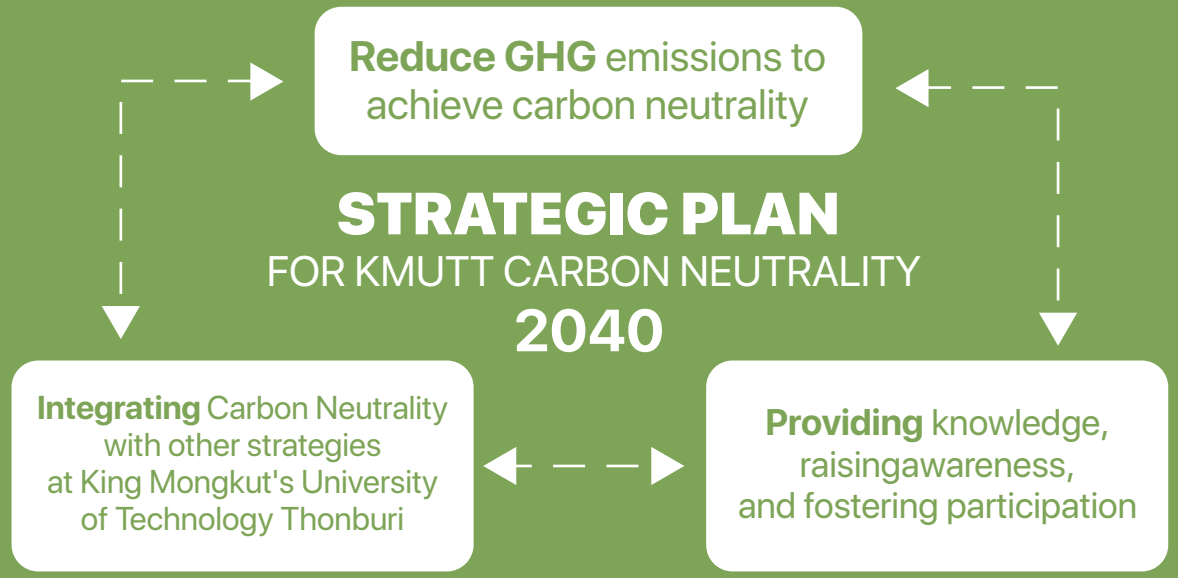


Goal Roadmap/ Pathway

King Mongkut's University of Technology Thonburi has declared its commitment to achieve net-zero carbon emissions by 2040 through the "KMUTT Carbon Neutrality 2040" campaign, advancing Thailand's national target by 10 years. This ambitious initiative responds to Thailand's pledge at COP26 to reach carbon neutrality by 2050 and net-zero emissions by 2065, aligning with the Paris Agreement's goal to limit global warming to 1.5°C. KMUTT's comprehensive strategy encompasses renewable energy adoption, enhanced energy efficiency in buildings and transportation, efficient resource utilization, waste recycling, and forest carbon sequestration. A specialized taskforce has been appointed to develop and monitor strategic implementation plans across all university operations. The university has strengthened its commitment by joining the RE100 Thailand Club and Thailand Carbon Neutral Network, positioning itself as a sustainability leader among educational institutions. KMUTT's proactive approach integrates carbon neutrality goals with broader sustainability strategies including student engagement, impactful research, community involvement, green infrastructure development, and sustainable resource management. As a university with established policies on energy and environmental sustainability, KMUTT demonstrates that higher education institutions can accelerate climate action beyond national commitments, serving as a model for universities across Thailand and internationally in the global fight against climate change.



Strategy Plan



The strategies for achieving carbon neutrality within KMUTT by 2040 include:

1. Increasing the use of renewable energy sources.
2. Enhancing energy efficiency in buildings and transportation.
3. Sustainable resource utilization.
4. Afforestation efforts to sequester carbon.

This strategic commitment by KMUTT focuses on five key areas:

1. Fostering student engagement.
2. Creating positive impacts through research and innovation.
3. Engaging with communities.
4. Establishing eco-friendly infrastructure and environments.
5. Developing a sustainable management system.

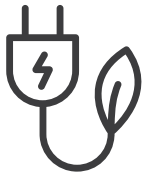
Greenhouse gas emission (ton CO_{2eq})

Scope	2019	2020	2021	2022	2023	2024	2025
Scope 1[a]	2,331	2,252	2,029	2,025	2,154	2,169.68	1,803.05
Scope 2	15,745	13,771	10,878	13,580	14,931	15,266.43	14,238.77
Scope 3[b]	651	524	383	525	751	623.92	689.39
Total	18,727	16,547	13,290	16,130	17,837	18,060.27	16,731.22



Scope 1: Direct Emissions

These are emissions directly produced by the organization's activities, such as fuel c ombustion in machinery, company vehicles, or chemical usage for waste treatment.



Scope 2: Indirect Emissions

These are emissions from the generation of purchased electricity, heat, or cooling used by the organization.



Scope 3: Other Indirect Emissions

These emissions occur from the organization's value chain, such as employee travel, waste disposal, or the use of external services.

Remark

[a] Others: CO, emission from refrigerant (R22) is reported separately and not included here
[b] Data based on fuel used for mobile source and BM only
[c] Scope 3 includes water use and waste disposal
[d] Waste data is based on Bangmod only

Green Heart

In this section

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Green Heart Leadership

King Mongkut's University of Technology Thonburi (KMUTT) is home to an innovative and driven group of students known as the Green Heart students. Established in 2014, this initiative brings together individuals from various academic departments and scholarship programs who share a common goal: to create a more sustainable university environment. These students are not just participants in sustainability efforts; they are at the forefront, volunteering as lead activists for activities and innovations that advance this vital cause.

The Green Heart students are deeply involved in promoting sustainability across the campus through various projects and initiatives. Their activities range from increasing the campus community's awareness of environmental issues to implementing practical solutions that enhance energy management, reduce waste, and promote recycling. By doing so, they aim to transform KMUTT into a model of environmental responsibility that inspires other institutions and communities to follow suit.

Moreover, the group plays a crucial role in educating and engaging the surrounding community about the importance of environmental stewardship. They organize workshops and seminars that focus on energy management, environmental safety, and sustainable practices, thereby extending their impact beyond the university grounds. This outreach is vital for building a broader understanding of sustainability issues and fostering a collective effort towards a greener future.



The success of the Green Heart students is a testament to the effectiveness of leadership in sustainability. By taking the initiative to lead by example, these students demonstrate that change starts with individual action and communal effort. Their dedication not only enhances the quality of life on campus but also contributes to the global movement towards sustainability.

As KMUTT continues to support and promote the Green Heart initiative, it reinforces its commitment to being a leader in environmental education and sustainability. Through the continuous efforts of the Green Heart students, KMUTT is setting a benchmark for how universities can integrate sustainability into their operational and academic frameworks, paving the way for future leaders who are well-equipped to handle the pressing environmental challenges of our time.



Policy

To be "Green and Sustainability University"
To encourage students to become change agents
To strive for continual improvement to achieve sustainable for all

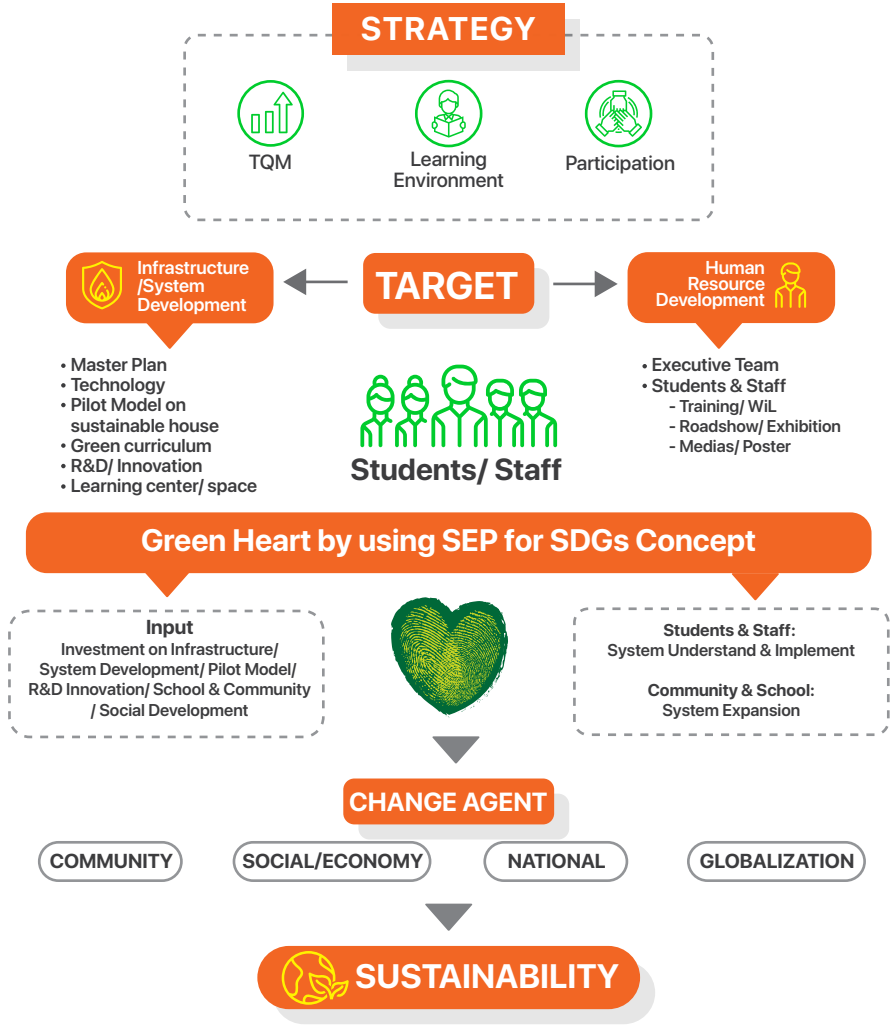
King Mongkut's University of Technology Thonburi (KMUTT) is dedicated to establishing itself as a leader in sustainability, embodying the principles laid out in its Green Heart Policy. This ambitious policy is structured around the goal of transforming KMUTT into a "Green and Sustainable University," a vision that seeks to merge environmental responsibility with educational excellence. The policy emphasizes the cultivation of a campus ethos that values and practices sustainability at every level, from energy consumption to waste management and beyond.

At the heart of the Green Heart Policy is the commitment to foster change agents among the student body. KMUTT believes that students are not only the beneficiaries of knowledge but also pivotal players in the global shift towards sustainability. The university actively encourages its students to engage in sustainability initiatives, providing them with the tools, knowledge, and platforms to innovate and lead. Through specialized curricula, student-led projects, and community engagement activities, students are empowered to advocate for and implement sustainable practices within and outside the campus.

Continual improvement is another cornerstone of the Green Heart Policy. KMUTT is committed to regularly evaluating and enhancing its sustainability practices. This is achieved through ongoing research, the adoption of new technologies, and the revision of operational strategies to ensure they are as environmentally friendly as possible. The university also invests in training programs for staff and students to keep the campus community well-informed and engaged in the latest sustainability trends and techniques.

To support these goals, KMUTT has developed a comprehensive infrastructure that promotes sustainable living and learning. From green buildings that reduce energy consumption through smart design to systems that minimize water waste and enhance recycling efforts, the campus serves as a living laboratory for sustainability. Moreover, the university's push for renewable energy sources, such as solar power installations, exemplifies its commitment to reducing carbon footprints and promoting clean energy.

The success of KMUTT's Green Heart Policy is bolstered by robust community participation and strategic partnerships with local businesses, government entities, and global organizations, which amplify and expand the reach of its sustainability initiatives. By fostering a collaborative environment, KMUTT not only advances its own sustainability goals but also contributes significantly to global sustainable development. This approach ensures that the university doesn't just produce skilled professionals but also responsible citizens equipped to address critical environmental challenges, embedding a deep commitment to sustainability in the fabric of its academic and community life, and setting a precedent that will inspire future generations.



Learning Outcome

Change Agent with Green Heart Development

Agents of Change for Sustainability individuals who apply their knowledge and expertise to drive impactful development, fostering transformation toward sustainability. Their efforts aim to improve communities and society while adhering to the principles of sustainable development under the Sufficiency Economy Philosophy, with a focus on achieving balance among the three dimensions: Social (People), Environmental (Planet), and Economic (Prosperity).



Award

KMUTT encourages students and staff to create innovations and actively contribute to advancing the United Nations Sustainable Development Goals (SDGs).

Thailand New Gen Inventors Award 2025

KMUTT students won a gold medal in the Food category at the Thailand New Gen Inventors Award 2025 for "Spirulux Caviar," a plant-based fish roe alternative made using protein recovered from spirulina processing by-products. The team refined its flavour and texture and was exploring industrial-scale production and private-sector partnerships to support future commercialisation.



Innovative Data Centre Cooling System 2025

KMUTT mechanical engineering students and academics received a gold medal at an international invention and innovation competition organised by NRCT in 2025 for an open microchannel heat sink. Its curved channel surfaces improved cooling performance by up to 120% compared with the earlier design. A patent application and further testing with industry were underway when reported.



Climate Resilience Urban Design Excellence Award 2025

Twelve KMUTT architecture and design students won the Climate Resilience Urban Design Excellence Award at Designing Resilience Globally 2025 in Guangzhou, China, for "Rooted Currents." Their urban design proposal combined walkable neighbourhoods, adaptive reuse of historic architecture and blue-green infrastructure, including rain gardens and wetland restoration, to connect community life, cultural heritage and climate resilience.



The Best of Bangkok Design Week 2026

"Augmented Craft," a steam-bent rattan pavilion developed through collaboration across KMUTT academic units, received The Best of Bangkok Design Week 2026 award from the European Product Design Award. Exhibited at the Grand Postal Building in Bangkok, the pavilion integrated Mixed Reality andAugmented Reality with traditional craftsmanship to extend the use of rattan into architectural construction.



Award

KMUTT encourages students and staff to create innovations and actively contribute to advancing the United Nations Sustainable Development Goals (SDGs).

NRCT Quality Achievement Award 2026

KMUTT research on flexible perovskite solar cells received the NRCT Quality Achievement Award for fiscal year 2026. Using two-dimensional surface passivation to reduce material defects, the team reported solar cell efficiency of approximately 21%. The technology remained at the laboratory validation stage, with potential applications in building components, wearable devices and IoT sensors requiring further development.



Invention Award 2026 Very Good Level

A biomass-powered heat exchanger jointly developed by KMUTT and Thaksin University received a Very Good Invention Award in the Sociology category for fiscal year 2026. Installed at at least six locations in southern Thailand, the technology enabled drying during rainy periods. Reported results from four years of use included energy cost reductions of up to 50% and improved community enterprise income.



Winner Sriracha Hackathon 2026

Team WASTESIDE, comprising third-year KMUTT industrial engineering students, won first prize in the Prototype category for Smart Environment & Circular Economy at Sriracha Hackathon 2026. Their project, "SYMBIOS: Digital Industrial Circularity Platform," uses AI to match non-hazardous industrial by-products between factories, assess economic viability and transport distances, and track material exchanges, supporting resource reuse and industrial circularity.





Shaping Tomorrow

KMUTT Sustainable Journey in 2026

In 2026, King Mongkut's University of Technology Thonburi (KMUTT) elevated its commitment to global sustainability by seamlessly integrating eco-conscious practices across its operations, education, research, and community engagement. By strengthening renewable energy infrastructure, advancing zero-waste and circular economy initiatives, and accelerating the transition to green mobility, the university has firmly established itself as a leader in environmental stewardship. Beyond physical infrastructure, KMUTT cultivated a deeply rooted culture of sustainability, emphasizing behavioral change, technological innovation, and shared responsibility among students, faculty, and staff.

Navigating the challenges of increasing resource demands and the urgent need for climate action, the university implemented robust, adaptive strategies driven by the Center of Energy, Environment, Safety and Health. These comprehensive approaches included cross-sector collaborations, data-driven energy monitoring systems, and the empowerment of student-led initiatives such as the GREEN HEART network. By utilizing the campus as a living laboratory, KMUTT transformed sustainability challenges into valuable opportunities for creativity, peer learning, and hands-on problem-solving.

These collective endeavors have significantly strengthened KMUTT's ecological resilience and accelerated its trajectory toward the Carbon Neutrality 2040 vision. As the year progresses, the university takes immense pride in these milestones, recognizing that sustainability is a continuous journey. The achievements detailed in this report reflect the profound power of collaboration and visionary leadership. Through steadfast partnerships at every level, KMUTT remains dedicated to serving as a premier model of sustainable transformation for Thailand and the global community.

"Together We Create a Greener Future."

Collective action, continuous innovation,
and shared responsibility for a sustainable world.

Beyond the Horizon: KMUTT's Sustainability Vision for 2027

Looking ahead to 2027 and beyond, KMUTT envisions a future where sustainability and innovation advance hand in hand. The university plans to strategically expand its renewable energy capacity particularly in solar and wind power while enhancing biodiversity and green spaces that nurture well-being and lifelong learning. These forward-looking initiatives will be guided by advanced environmental data systems to seamlessly track progress, optimize resource utilization, and strengthen long-term carbon management.

Moreover, KMUTT will deepen its collaborations with local and international partners through interdisciplinary research and community -focused projects addressing climate change, the circular economy, and sustainable urban living. By empowering students and staff as active changemakers, KMUTT aims to nurture a generation of visionary leaders who embody the principles of sustainability and drive a profound, positive impact for both people and the planet.

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We never stop striving for a sustainable future, turning challenges into opportunities for growth and innovation.

KMUTT SUSTAINABILITY REPORT 2026