

65 Years of Wisdom
Crafting Sustainable Futures

SUSTAINABILITY REPORT 2025

Towards a Sustainable Future for All
Building a Greener, Smarter, and Healthier University

King Mongkut's University of Technology Thonburi | 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 a "Living Laboratory" where sustainable innovations are tested and applied in the real world. This ranges from optimizing 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's 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. In the 2018/2019 academic year, it welcomed around 18,000 students, 8% of whom were international, supported by 2,900 staff members from various backgrounds. This mix of local and global talent fuels KMUTT's dynamic academic environment.

KMUTT's commitment to sustainability began in 2005 with the creation of the Energy Environment Safety and Health Office, 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.

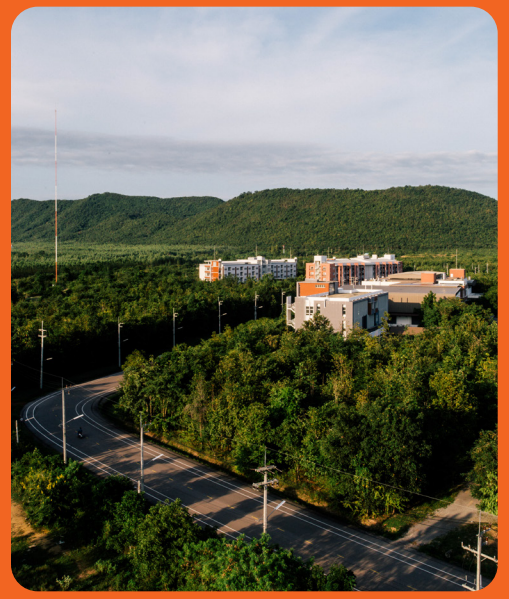
In 2017, the Office of Sustainability was established to drive the Sustainable University for SDGs 2030 vision. This led to the KMUTT Sustainability Strategic Plan 2019–2024, which builds upon the earlier 2010–2020 plan and aligns closely with the 17 UN Sustainable Development Goals (SDGs). The plan focuses on seven 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. This initiative promotes continuous improvement in resource efficiency, environmental protection, and campus safety.

Today, 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

Education and Reseach

>2,800
Environment and Sustainability Courses

$22.1M
Sustainability efforts budget and research dunds
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.

>1,190
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 53



>632
Event releated to Sustainability
We organized events focused on environmental sustainability to cultivate KMUTT students and staff as leaders of change.

Campus

Energy Usage
1606.52 ▲
kWh per capita

Water Usage
16.36 ▼
m^3 per capita

Total Waste
563 ▼
tonnes/yr

Recycled Waste
154 ▲
tonnes/yr

Forest Vegetation Area
1.74 ▲
sq.kilometers

Sustainable transport users
>404K ▲
passengers

Number of Students and Staff
18,153 ▲
People Students 15,500 Staff 2,653

The arrows (▲ / ▼) represent the change in each indicator compared to the values recorded in 2024.



Carbon Neutrality 2040

KMUTT actively combats global warming through its "KMUTT Carbon Neutrality 2040" initiative, aiming for zero carbon emissions by 2040 via renewable energy and carbon-absorbing forests. With over 20 years of sustainability research, the university is recognized internationally for energy conservation and innovation. This initiative aligns with global 2050 neutrality goals, positioning KMUTT as a leader in climate action. It is part of KMUTT's Sustainable Development Goals, focusing on student engagement, research impact, community outreach, green infrastructure, and sustainable management driving not just adaptation but leadership toward a sustainable future.

Read more on page 57

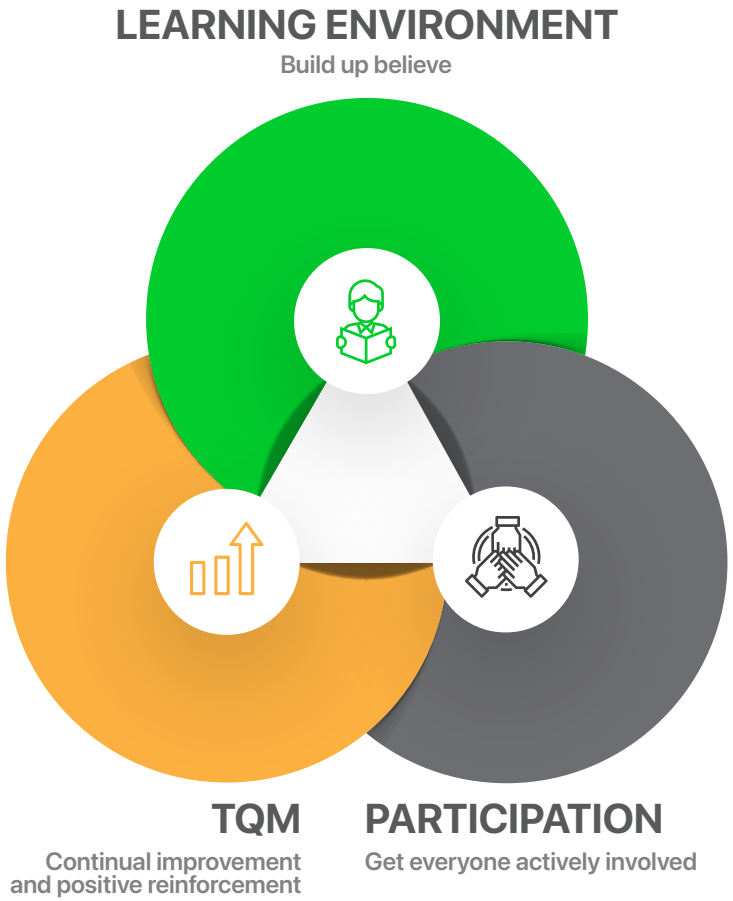
Impact Stories

King Mongkut's University of Technology Thonburi research and innovation are at the heart of our mission to drive national and global progress. With a strong foundation built on decades of academic excellence and collaboration, KMUTT continues to foster an ecosystem that transforms ideas into impactful solutions. The "KMUTT Research and Innovation Impact Stories" highlight real examples of how our researchers, students, and partners contribute to advancing knowledge, addressing societal challenges, and creating sustainable outcomes for Thailand and beyond.

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.



Research and Innovation Impact Stories

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



Expanding Impact through AI-Enhanced Surgical Innovation

OsseoLabs revolutionizes oral surgery with AI-driven 3D printing,reducing costs, improving precision, and transforming patient care nationwide.

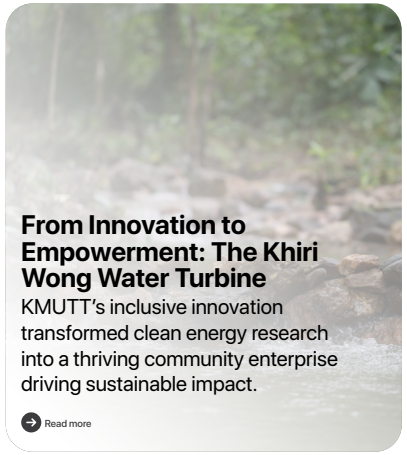
Read more



Khiri Wong Water Turbine: Clean Energy for Mountain Communities

A community-driven hydropower i nnovation by KMUTT,providing affordable and sustainable electricity for remote villages.

Read more



From Innovation to Empowerment: The Khiri Wong Water Turbine

KMUTT's inclusive innovation transformed clean energy research into a thriving community enterprise driving sustainable impact.

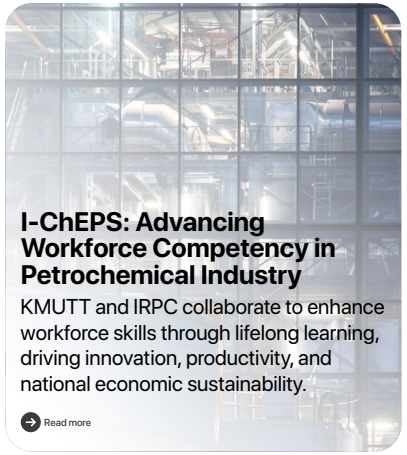
Read more



Automated Transformer Welding Robot for Smarter Manufacturing

FIBO and Precise Electric revolutionize transformer production through robotics innovation that reduces costs and enhances efficiency.

Read more



I-ChEPS: Advancing Workforce Competency in Petrochemical Industry

KMUTT and IRPC collaborate to enhance workforce skills through lifelong learning, driving innovation, productivity, and national economic sustainability.

Read more



A Unique Learning Model for Industry Transformation

Integrating classroom learning with real-world practice, I-ChEPS equips engineers with problem-solving, communication, and leadership skills.

Read more

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

Campaign

In this section

Say No to Single Use Plastics
Waste to Zero
Green School Network
A Sustainable Step Forward
Mangrove Forest Planting



Say No to Single Use Plastics

Since 2015, King Mongkut's University of Technology Thonburi (KMUTT) has actively driven the Plastic Reduction Program toward becoming a plastic-free campus. The initiative began with the "Bring Your Own Mug" campaign that encouraged students and staff to use reusable mugs, laying the foundation for long-term behavioral change. In 2018, the "KMUTT Says No to Single-Use Plastic" project led by the Green Heart Student Club expanded the effort by promoting the elimination of the "BIG 4" plastic bags, bottles, straws, and utensils. This was followed by the personal food container and mug campaigns, where users received a 5-baht discount at every campus food outlet and café, along with 20+ water refill corners offering safe, tested drinking water to reduce bottled water use. In 2019, KMUTT launched the Fabric and Reuse Bag Campaign, providing every freshman with a reusable bag and establishing "Please Reuse Me" corners across campus to encourage sharing. These initiatives were reinforced through online communications and strong participation from the Student Council and campus stores. As a result, KMUTT achieved a 61% reduction in single-use plastic usage by 2024, compared with the 2017 baseline, moving steadily toward its goal of 100% elimination by 2027 and creating a powerful model of university -wide environmental responsibility.

100% ban on single use plastics usage in KMUTT by 2027 compare to 2017 baseline

2017
Initial survey of single-use plastics across campus
0%

2018
"KMUTT Says No to Single-Use Plastic" launched students and staff encouraged to use reusable mugs and food containers.
15%

2019
Freshmen received reusable bags; 20+ "Please Reuse Me" corners introduced campus-wide.
36%

2020
5-Baht discount for personal mugs/containers and new refill stations boosted participation.
40%

2021 - 2022
Consistent campaigns and improved monitoring kept reduction momentum strong.
53%

2023
Plastic bags, bottles, straws, and utensils nearly phased out from campus operations.
57%

2024
Refill systems and reusable containers widely adopted; strong participation university-wide.
61%

2025
Broader engagement from vendors and students; nearing full elimination.
67%







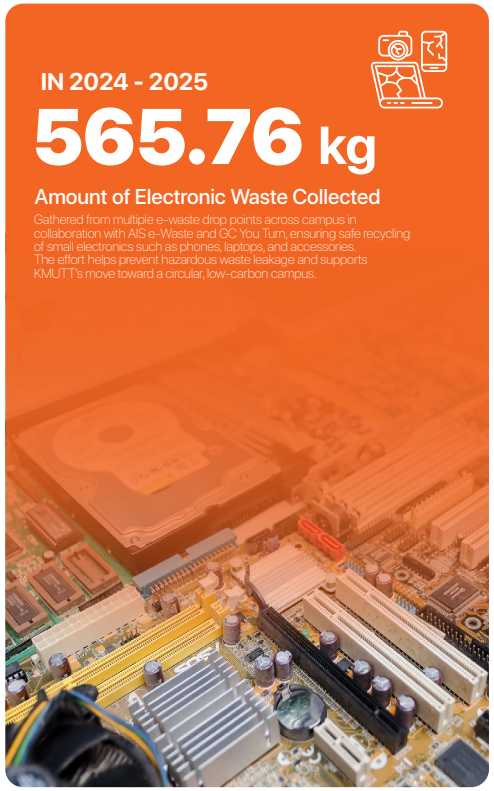


sustainable.kmutt.ac.th/waste/say-no-to-single-use-plastics

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 2025
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	Wat Phutthabucha School (Joining within 2026)
Rattanacheena Uthit School	Wat Ratburana School (Joining within 2026)
Chusinthong Pradit Anuson School	Khajonroj Wittaya School (Joining within 2026)

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 1,500 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 r esponsibility 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

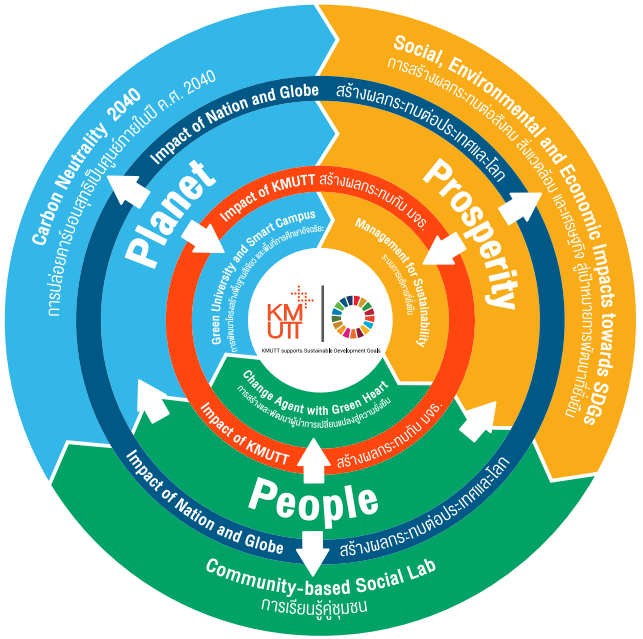
Impact of KMUTT: Creating and developing sustainability change agents with a "Green Heart" mindset.
Impact of Nation & Globe: Community-Based Social Lab.

Planet Dimension

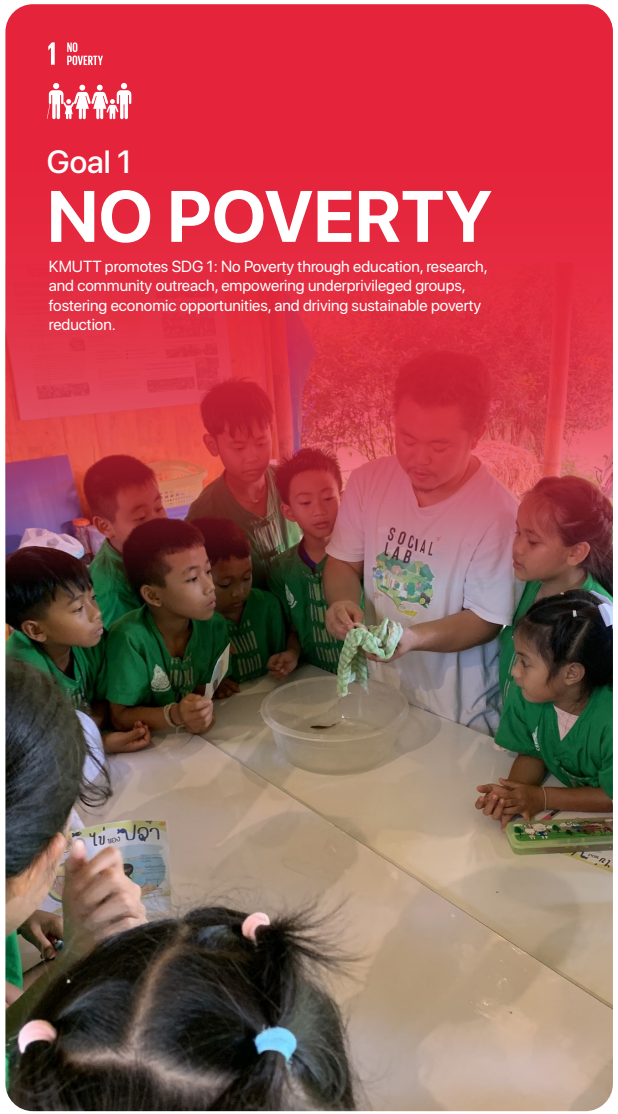
Impact of KMUTT: Developing green infrastructure and a smart campus environment.
Impact of Nation & Globe: Achieving carbon neutrality by 2040 (KMUTT Carbon Neutrality 2040).

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



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) demonstrates a strong commitment to Sustainable Development Goal 1 (SDG 1): No Poverty, by integrating poverty alleviation into its core operations. Through targeted policies, scholarships, research initiatives, outreach programs, and strategic partnerships, KMUTT supports students from low-income backgrounds, fosters community development, and promotes equitable access to education and resources. This section of the annual report highlights key activities, metrics, and impacts for Fiscal Year 2024-2025, showcasing measurable progress in reducing poverty and enhancing opportunities for vulnerable groups.

University Policies and Commitments

KMUTT's policies prioritize educational equity by targeting admissions from the bottom 20% household income groups and providing comprehensive financial support. **In Fiscal Year 2024, the university allocated a total of 7,278 scholarships amounting to 305.14 million Baht, benefiting undergraduate and graduate students.** This includes:

Scholarships for Student Potential Development: 3,162 scholarships (138.09 million Baht), with 2,744 at the undergraduate level (49.86 million Baht) and 418 at the graduate level (88.23 million Baht).

Scholarships for Creating Educational Opportunities and Assisting Students in Financial Distress (Bursary): 3,162 scholarships (138.09 million Baht), with 2,744 at the undergraduate level (49.86 million Baht) and 418 at the graduate level (88.23 million Baht).

Specific programs include the Petchra Pra Jom Klao Scholarship (167 recipients, 23.89 million Baht), Multi-Intellectual Scholarship (17 undergraduate recipients, 3.44 million Baht), and Thamma Raksa Scholarship for underprivileged students. For international students from low or lower-middle income countries (e.g., Cambodia, Lao PDR, Myanmar, Vietnam), 62 students received support totaling 12.88 million Baht, including 37 undergraduates (8.3 million Baht) and 25 graduates (4.58 million Baht). Programs such as the KMUTT International Scholarship Program (KISP) and Greater Mekong Sub-region (GMS) Scholarship facilitate this aid.

Additionally, the Student Loan Fund (SLF) supported 2,137 borrowers (168.39 million Baht) in the 2023 academic year, covering 18.36% of undergraduates. External scholarships from companies and donors contributed 7.79 million Baht in 2023. The Student Financial Assistance Unit provides counseling, fee grace periods, and on-campus employment opportunities. Holistic student development is supported through the KMUTT Student Development 360 (KSD 360) framework, integrating academic and extracurricular activities. Initiatives like surplus food distribution from cafeterias and organic vegetable gardening enhance food security for low-income students and communities.



Research and Publications

KMUTT's research addresses poverty through innovative projects focused on community empowerment and sustainable development. In Fiscal Year 2024, key projects included:

Development of Natural Dye Quality for Wooden Handicrafts (Tao Ngoi Sub-district, Sakon Nakhon Province): Budget of 1.151 million Baht; integrated traditional wisdom with technology to improve elderly quality of life, involving student-led color sensor development.

Expansion of Higher Education Network for Developing Potential of Persons with Disabilities: Funded at 23.32 million Baht; trained 300 participants, resulting in 14 employments.

Study of Factors in Developing Goat Farming Business (Thung Khru Livestock Farmer Group): Involved 53 participants; produced one business development plan and established one network.

Yoe De Ner: Incubation for Thai-Karen Entrepreneurs (Tenasserim Hills): Developed curricula, prototypes, and cultural maps.

Physical and Mental Health Development (Elderly Club, Thatthaniam): Conducted 8 training sessions for 60 elderly participants, achieving 92% satisfaction.

Other initiatives focused on organic waste management, chemical-free cultivation, and lignin extraction optimization. Planned projects for 2025–2026 include Aquatic Farmers Adaptation (300,000 Baht) and Community Learning for Primary Students (1.275 million Baht). Postgraduate scholarships tied to research have led to publications in international journals, with successful completions by recipients like Phakhawat Chullamonthol and Trifan Budi (Master's) under the Petchra Pra Jom Klao Scholarship.





Outreach and Community Engagement

KMUTT engages communities through 16 university-community projects in Fiscal Year 2024, with a budget of 7.136 million Baht, targeting small farmers, persons with disabilities, and the elderly. Notable activities include:

Village Health Volunteers (VHV) Training (Omkoi and Mae Sariang Districts): Trained 30 Super VHVs, produced 6 health education media sets, and distributed medical bags.

Factors Affecting Household Poverty (Phu Fa Sub-district, Nan Province): Developed a poverty index with 13 indicators across 5 dimensions.

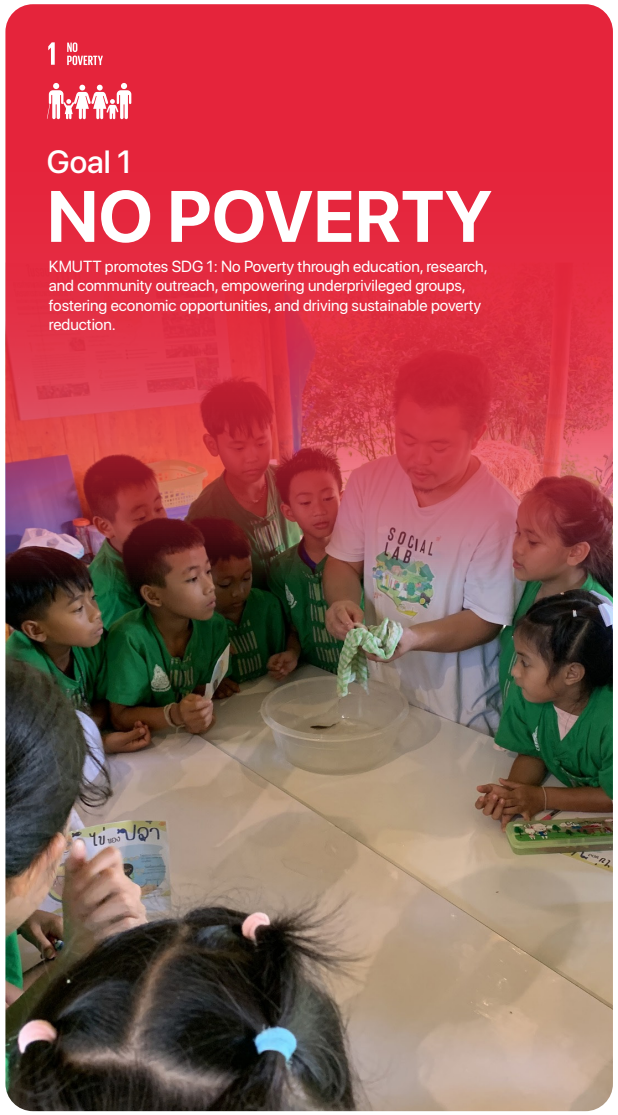
Cassava Yield Improvement (Non Din Daeng District, Buriram): Trained 30 villagers in disease-free stem production and tissue culture.

Bang Mot Orange Integrated Mathematics Learning (Phase 3): Implemented in local schools to preserve cultural heritage.

Biochar Production Workshops (February and March 2025): Enhanced income for local farmers.

Goat Meat Products Development (December 2024): Investment of 100,000 Baht for product innovation.

Volunteering via the Student Loan Fund included leadership camps (115 participants, July 2024) and seminars (73 participants, August–September 2024). Extension activities reached 10,263 students on drug prevention and anti-smoking. The Visiting House of Scholarship Student Project assesses family financial needs for targeted aid, while undergraduate employment scholarships provide income and experience.



2024-2025 Recap

Partnerships and Collaborations

KMUTT collaborates with national and international partners to amplify poverty reduction efforts. Key partnerships include:

Forschungszentrum Jülich (Germany): For the Rukkhaphitthayaphat Scholarship (2022–2025).

Greater Mekong Sub-region Countries (Lao PDR, Cambodia, Myanmar, Vietnam, China-Yunnan): Through GMS Scholarships.

External Funders: Fund for Persons with Disabilities (23.32 million Baht), NSTDA, PMU-A, and private donors (7.79 million Baht in 2023).

Networks: Lower Central Higher Education Network (34 institutions), UBI Network (13 institutions, supporting 12 startups and 1,727 student entrepreneurs), Drug Prevention Network (25 locations, 440,000 Baht), University as Mentor for Schools (58 projects, 5.8 million Baht, 218 schools), and C-OSO Network (13 members for genetic conservation).

Community Partners: Thung Khru District Office, Department of Livestock Development, and ZEACHAR Business Unit.

These collaborations have led to outcomes like increased community income, employment for persons with disabilities, and sustainable business models.

Metrics and Impacts

KMUTT's efforts yield tangible impacts:

Scholarships and Loans: 7,278 beneficiaries (305.14 million Baht in 2024); 2,137 loan borrowers (168.39 million Baht in 2023); 62 international students from developing countries (12.88 million Baht).

Student Enrollment: 753 full-time international students, including 608 from developing countries (e.g., 390 from Myanmar, 47 from Cambodia).

Community Participation: 300 in disability training (14 employments); 53 in goat farming workshops (1 network established); 60 elderly trained (92% satisfaction); 30 VHVs and 30 villagers in cassava projects.

Economic Outcomes: Reduced production costs (e.g., chai-po from 300–400 kg/day to 1 ton/day); increased income for communities; 1 business entity utilizing development guidelines.

Broader Reach: 10,263 students in extension activities; 16 projects benefiting small farmers and vulnerable groups.

These metrics demonstrate KMUTT's role in reducing poverty, with ongoing evaluations ensuring alignment with SDG 1 targets.



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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) actively contributes to Sustainable Development Goal 2 (SDG 2): Zero Hunger, by addressing food security, sustainable agriculture, and waste reduction through integrated campus operations, research, and community initiatives. Efforts focus on minimizing food waste, supporting student nutrition, promoting healthy eating, and transferring technology to local farmers for improved productivity and reduced hunger. This section outlines key activities, data, and impacts for Fiscal Year 2025, emphasizing measurable outcomes in alignment with SDG 2 targets such as ending hunger, achieving food security, and promoting sustainable agriculture.

University Policies and Commitments

KMUTT's policies emphasize food security, waste management, and equitable access to nutrition for students and staff. Key commitments include:

Food Waste Management System (Established 2002): Implements waste segregation, collection, and utilization across campus. Organic waste (34.04% of total municipal solid waste, or 191,770 kg in 2025) is processed into biogas and fertilizer. Food waste specifically totals 129,656 kg in 2025, with breakdowns by source: King Mongkut's Food Center (33,262 kg), Residence Hall-KMUTT (54,696 kg), and Food Kiosks (41,698 kg). Historical data shows trends in food waste generation:

Year	Total (kg)	King Mongkut's Food Center (kg)	Residence Hall-KMUTT (kg)	Food Kiosks (kg)
2021	26,042	16,384	6,786	2,872
2022	50,597	38,317	8,340	3,940
2023	60,567	42,182	12,026	6,359
2024	102,187	24,964	45,535	31,688
2025	129,656	33,262	54,696	41,698

Biogas and Fertilizer Production: 36,000 kg of food waste processed into 3,600 m^3/year of biogas (used for cooking) and 12,264 kg/year of fertilizer. Additional 3,168 kg of garden waste composted. This reduces campus emissions by 794,048.7 kg CO_2-equivalent annually and saves over 2,785.69 USD in costs.

Student Support for Hunger and Nutrition: Scholarships and funds target financial distress, including lunch programs funded by donors for needy students. In 2025, 5,172 students received 158.98 million Baht in scholarships, with specific aid for COVID-19 impacts, accidents, and disabilities. Exam-period snacks (noodles, bread, milk) provided via donations. The "KMUTT Healthy Balance Diet 2025" program engaged 46 staff in nutrition workshops, promoting balanced diets and reducing salt/sugar intake.

Campus Food Security Initiatives: Organic vegetable gardens in dorms yield over 200 kg of crops (e.g., water spinach, lettuce, mushrooms) for consumption and trading. Surplus food from cafeterias and markets distributed free to low-income students and staff. Discounts for using personal containers to minimize plastic waste.

Disaster Response: Guidelines for students affected by events like the Myanmar earthquake (March 2025) and floods (September 2024), including free soy milk/soft drinks and donations of dry food and supplies.

sustainable.kmutt.ac.th/goals2

Research and Publications

KMUTT's research advances sustainable agriculture and food safety, with projects integrating technology for zero hunger:

Food Safety Center: Conducts risk assessments, develops rapid test kits, and provides training on standards like SSOP, GMP, HACCP, and ISO 22000. Pilot plant offers freeze-drying services for SMEs and farmers.

Sustainable Agriculture Projects: Solar-powered electric fences (trained 119 farmers, saving 2,500 Baht/household/year); drip irrigation systems with smartphone control (27 farmers, saving 12,000 Baht/household/year in fuel, increasing income by 5,000 Baht/household/year); radish processing machines (doubles production, +25% profit); banana grading technology; sea salt soap production (trained 50 people).

Zero-Waste Initiatives: Phulae pineapple processing (carbon footprint analysis); Bangmod orange container technology; canal water surveys for agriculture; native bee research for pollination in integrated farming.

Community-Focused Research: SAFETist Farm for non-toxic agriculture training (over 50 participants); zero-waste goat farm management using fermented manure and biochar; tilapia farming and indigo dyeing restoration in Tao Ngoi.

Partnerships and Collaborations

KMUTT collaborates with local and national entities to amplify SDG 2 impacts:

Government and Community Partners: Thung Khru District Office, Department of Livestock Development, National Science and Technology Development Agency (NSTDA); partnerships for waste management with municipal agencies.

Farmer and SME Networks: Training with farmers in Ratchaburi (solar fences, irrigation); collaborations with community enterprises for product development (e.g., sea salt soap, radish processing).

Donor and Vendor Alliances: Kind-hearted donors for student meals and snacks; vendors for safe surplus food distribution.

Research Networks: Food Safety Center works with SMEs; Native Bee Research Center promotes integrated farming.

Metrics and Impacts

KMUTT's initiatives deliver quantifiable results in reducing hunger and promoting sustainability:

Waste Reduction: Food waste processed: 36,000 kg into biogas (3,600 m^3/year) and fertilizer (12,264 kg/year); overall MSW generation rate: 31.04 kg/person/year (13.38% reduction since 2006). Campus population: 18,153.

Environmental Savings: 794,048.7 kg CO_2-e reduced annually; cost savings >2,785.69 USD/year.

Student Support: 5,172 scholarship recipients (158.98 million Baht); organic gardens yielding >200 kg crops; free food distributions and donor-funded meals.

Community Outcomes: 119 farmers trained in solar fences (energy savings 2,500 Baht/household/year); 27 in irrigation (income +5,000 Baht/household/year); 50 in sea salt soap; 30 villagers in Non-Din Daeng (>1.6 million Baht income); 8 persons with disabilities employed.

Broader Reach: 5 annual exhibitions/trainings; disaster relief for floods and earthquakes; healthy diet program with 46 participants.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) advances Sustainable Development Goal 3 (SDG 3): Good Health and Well-being through comprehensive policies, health services, research collaborations, outreach programs, and community partnerships. These efforts focus on preventive healthcare, mental health support, vaccination access, smoke-free environments, and physical activity promotion, benefiting students, staff, and surrounding communities. This section details key initiatives, metrics, and impacts primarily from 2023 to 2025, demonstrating alignment with SDG 3 targets such as reducing mortality, promoting mental health, and ensuring universal health coverage.

University Policies and Commitments

KMUTT enforces robust policies to foster a healthy campus environment:

- **Smoke-Free Policy (2022):** Prohibits smoking across all premises under the Tobacco Product Control Act B.E. 2560, with designated outdoor areas under strict conditions. Includes signage requirements, disciplinary measures (e.g., point deductions for students), and campaigns to encourage quitting, protecting non-smokers and promoting health.
- **Safety Policy ("TOTAL COMMITMENT: Safety in All We Do"):** Integrates sustainable safety in energy, environment, and well-being, with annual evaluations.
- **Health-Promoting Workplace:** Aligns with national awards to create a supportive well-being ecosystem, including mental health resources and emergency response guidelines.

These policies support equitable health access, early disease detection, and community well-being.

Research and Publications

KMUTT's research emphasizes health innovation and collaborations:

- **H7N9 Influenza Vaccine Development:** Partnerships with the Government Pharmaceutical Organization (GPO), National Vaccine Institute, and SK Bioscience (Korea) for cell-culture-based production at the National Biopharmaceutical Facility (NBF). Key meetings in January and July 2024 advanced semi-industrial-scale efforts to enhance Thailand's vaccine security.
- **Radiotherapy Research:** Faculty of Science collaboration with Rajthanee Radiation Therapy Hospital (January 11, 2024) on joint research, data management, mathematical modeling, and Work-based Learning (WIL) for cancer treatment.
- **Energy Efficiency in Hospitals:** MOU with Phyathai-Paolo Hospital Group (August 18, 2025) for Smart Energy systems in healthcare facilities.

These projects contribute to health technology advancements and publications in related fields.

sustainable.kmutt.ac.th/goals3

Outreach and Community Engagement

KMUTT conducts extensive outreach to promote health awareness and services:

- **Health Examinations:** Annual personnel checks (e.g., 2,490 participants in February 2024); new student screenings (July-August 2023 and 2024); free community caravans with Bangkok Metropolitan Administration (May-June 2024); breast cancer screenings (May 2024); and 2025 personnel screenings for chronic diseases.
- **Vaccination Programs:** Influenza vaccinations (1,136 in 2024, up from 1,038 in 2023); alternative vaccines (27 participants in 2024); free 9-valent HPV for 1,230 female undergraduates (2025).
- **Mental Health Initiatives:** Monthly "Check Up Jai" stress tests; Mindfulness Exhibition & Hackathon (24 participants, April 2024); GCDC Mission-Based Learning (4 students, August 2024); first aid training (60 participants, November 2024); Emergency Medicine Community Learning Center opening (September 2025).
- **Blood Donation Drives:** Multiple events (e.g., 223 donors, 143 units in May 2024; September 2024 with partners).
- **Sexual and Reproductive Health:** "Safety Sex Safety Life 2025" (February 2025) with counseling and distributions; free HIV/syphilis screenings (February 2025); sanitary pad welfare; HPV DNA self-screening kits (February 2025).
- **Sports and Physical Activity:** Staff Sports Day (January 2024); Three Kings of Technology Competition (March 2024); SAANSOOK Challenge (>100 participants, 2023); "Good Health & Well-Being" Project (>70 participants, May 2024); shared sports facilities (e.g., fields, gyms) with communities.
- **Anti-Smoking and Anti-Narcotics Campaigns:** World No Tobacco Day events (May 2025); online activities (May-July 2025) for credits.

These activities engage thousands annually, enhancing health literacy and access.

Partnerships and Collaborations

KMUTT partners with diverse entities to amplify health impacts:

- **Health Services:** Faculty of Medical Technology (Mahidol University), Bangpakok Hospitals, Mobile Radiology, National Cancer Institute, Bangkok Metropolitan Administration, Chulalongkorn University affiliates, PATH2HEALTH Foundation, Department of Health.
- **Vaccines and Research:** GPO, National Vaccine Institute, SK Bioscience (Korea), M Health and Care, Phyathai-Paolo Hospital Group, Rajthanee Radiation Therapy Hospital.
- **Mental Health and Emergency:** Srinakharinwirot University, Dee Tor Jai CBT Center, National Institute of Emergency Medicine.
- **Blood Donation and Community:** Thai Red Cross Society, BRAND'S Young Blood, Bangkok Bank, local schools and districts.
- **Promotion Bodies:** Thai Health Promotion Foundation (ThaiHealth).

These collaborations facilitate resource sharing, expertise, and broader reach.







2024-2025 Recap

Metrics and Impacts

KMUTT's efforts yield measurable outcomes:

Health Examinations: 2,490 personnel (2024); full new student screenings (3,780 in 2023; 3,446 in 2024).
Vaccinations: 1,136 influenza (2024); 27 alternative (2024); 1,230 HPV planned (2025).
Blood Donations: 143 units (May 2024).
Mental Health Screening (2023, n=3,780):

Mental Health Status	Quantity	Percentage
Better than average	283	7.5%
Equal to average	2,377	62.9%
Lower than average	1,120	29.6%

Mean score: 28 (SD=3.17)

DASS-21 Screening (2023):

Level	Depression (%)	Anxiety (%)	Stress (%)
Normal	64.7	46.5	68.8
Mild	15.6	23.3	16.7
Moderate	15.9	15.3	10.6
Severe	2.9	8.6	3.5
Very Severe	0.8	6.4	0.5

Mental Health Screening (2024, n=3,446):

Mental Health Status	Quantity	Percentage
Better than average	857	24.9%
Equal to average	1,532	44.5%
Lower than average	1,057	30.7%

Mean score: 46.5 (SD=6.1)

DASS-21 Screening (2024):

Level	Depression (%)	Anxiety (%)	Stress (%)
Normal	58.5	47.2	33.8
Mild	16.8	25.0	13.9
Moderate	19.0	15.4	18.1
Severe	4.2	7.7	19.3
Very Severe	1.9	4.6	14.9

Awards: 5-Star Healthy University (2024); Outstanding Health-Promoting Workplace (2025); Outstanding Safe Educational Institution (2024-2025).
Impacts: Increased vaccination rates reduce costs; ~30% of students identified for mental health support; community events promote unity and health; ongoing since 2023 with rising participation.

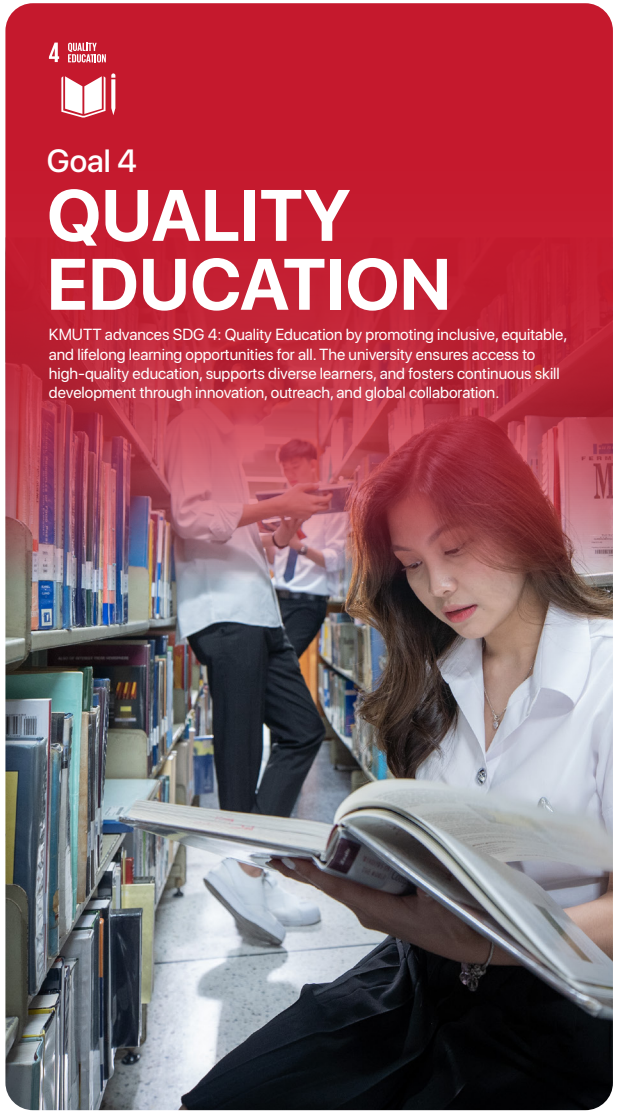












2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) contributes to Sustainable Development Goal 4 (SDG 4): Quality Education by ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. This includes providing free access to educational resources for non-students, hosting public events, offering executive education and vocational training, conducting outreach activities beyond campus, and implementing policies for accessibility regardless of ethnicity, religion, disability, or gender. Key initiatives encompass online courses, innovation hubs, community workshops, and social engagement projects, with metrics such as 37 free THAI MOOC courses, over 398 disability program graduates, and 5,320 lifelong learning enrollees.

University Policies and Commitments

KMUTT is committed to a Lifelong Learning Access Policy offering workshops accessible to all, regardless of ethnicity, religion, disability, immigration status, or gender. The Policy on Social Equity and Diversity promotes fairness across sex, race, nationality, socio-economic status, origin, culture, ethnicity, disability, religion, gender identity, and sexual orientation. The Disability Support Services Unit (DSSU@KMUTT) ensures equitable access for disabled students through monitoring, coordination, and support services. KMUTT emphasizes an open learning system for all ages, producing ethical graduates with social awareness, and maintains inclusive environments like wheelchair-accessible pathways and support for LGBTQIA+ students, allowing uniform choices aligned with gender identity.

Outreach and Community Engagement

KMUTT organizes extensive outreach, including the Master's Program in Environmental Social Sciences' "Green Hero Kids: Mission to Defeat Plastic Waste!" activity for waste management education. Events like World Environment Day 2025 feature workshops on dried flowers, creative fabric art, and homemade dishwashing liquid. The Na-Ae Community Market reopening in Ratchaburi promotes waste segregation and cultural preservation. Volunteer clubs conduct tutoring at Wat Phikun Kaew School (academic sessions, facility repairs), electrical repairs at Wat Boska Rong and Wat Khlong Pho Schools, and the "We Love the Prophet Muhammad" Youth Camp. The Rural Community Development Volunteer Club runs camps for school repairs in Phetchaburi. SoCHAMP develops social change leaders (26 participants) through community activities like soil preparation and coffee harvesting. The "Run for Children – Bo Kluea Run 2025" involves 22 students in community briefings. Flood-affected community consultations in Chiang Mai address economic, social, and environmental issues (30 participants). Royal Project field trips to Suan Than engage 25 –30 students in cultural learning. The Seed Scape #3 program (29 children, 20 volunteers) includes career workshops on food preparation, engineering, photography, and soap-making. Pla Mun fish breeding engages 25 students, rearing and releasing 100,000 fry. Online marketing training at Rang Ratchaphruek Nuchmee Uthit School involves 48 participants. Monitoring of Royal Project stations includes agricultural plot testing (45,000 clean stems distributed) and greenhouse progress. The "Enjoy Careers" project exposes students from 7 schools to professions via stations on circuits, engines, engineering, robotics, and machining. The "English Mentoring Camp" at Ban Nong Kha School strengthens English skills through activities like role play and book-making.

sustainable.kmutt.ac.th/goals4

Partnerships and Collaborations

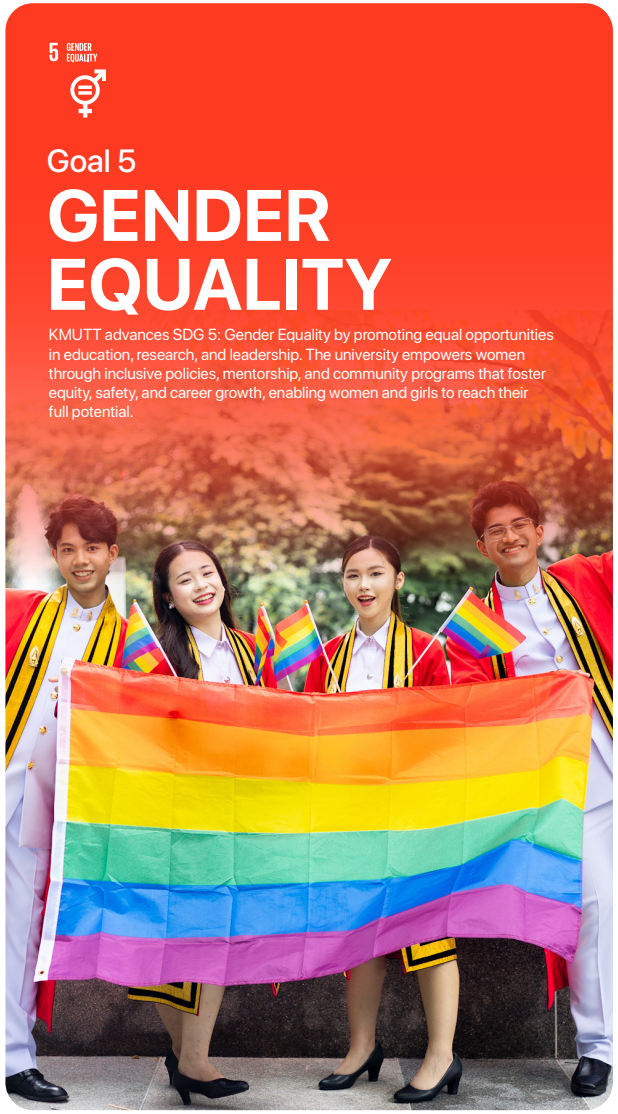
KMUTT collaborates with THAI MOOC for 37 free courses with certificates (≥60% passing). KX Knowledge Xchange partners with Shimane Prefectural Government for business matching, SCB for SME tech growth programs, and TBDC/SIT for Canadian entrepreneurship seminars. TECHBITE incubation (5.0) involves mentors from Osseolab and global pitches. FabLab BKK offers prototyping tools and upsell activities. KMUTT Hatch provides free workshops like "Build Your Green Business" and the New Regional Startups program (up to 50,000 THB funding). The library partners with public for free access. Events include NIA for innovation funding roadshows (up to 1.5M THB grants), MOST for incubation, Leave a Nest for TECH PLANTER, and workshops on AI, molecular techniques, and circular economy with CIRCO Hub. Disability programs partner with Betagro, NRCT, and employers, producing 398+ graduates (50% employed). Community projects involve ALS Laboratory, To Be Number One Club, PMU-A, Thai Health Promotion Foundation, and Royal Project Foundation. International collaborations include The University of Tokyo for IFEC 2025 on urban challenges.

Metrics and Impacts

- KMUTT's efforts yield tangible impacts:
- 37 THAI MOOC courses, accessible free with certificates.
- KX hosts free Boot Camps, TECHBITE incubation, and seminars; TECHBITE 5.0 offers 5-month programs with 50+ mentors and global pitches.
- FabLab BKK provides affordable prototyping and year-round upsell activities.
- KMUTT Hatch organizes free workshops (e.g., "Personas in Action," "The Climate Fresk"); New Regional Startups funds up to 50,000 THB.
- Library and museum free with ID card.
- Events like DC Junior Camp (ages 7–13), Lego Education (ages 4–15), and AI courses for SMEs.
- TED Fund grants 1.5M THB to 7 startups.
- 398+ disability graduates from 10 cohorts since 2014 (50% employed).
- 100,000 Pla Mun fry released.
- 32 social engagement projects completed.
- 5,320 lifelong learning enrollees (+15%).
- Student satisfaction 89% (+4%).
- 1,240 scholarships (+12%).
- High satisfaction from disability feedback on accessibility.

These metrics demonstrate KMUTT's role in advancing quality education, with ongoing evaluations ensuring alignment with SDG 4 targets.





2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) advances Sustainable Development Goal 5 (SDG 5): Gender Equality by systematically monitoring gender disparities, implementing inclusive policies, providing financial support, conducting outreach initiatives, and establishing institutional mechanisms to empower women and girls. The university tracks application, acceptance, entry, retention, and graduation rates with gender-disaggregated data, enforces non-discriminatory policies, offers scholarships for underrepresented groups, provides childcare facilities, and runs mentoring programs. This section highlights key activities, data, and impacts from 2021 to 2025, demonstrating progress in promoting gender equality and alignment with SDG 5 targets such as eliminating discrimination, ensuring equal opportunities, and empowering women in leadership and education.

University Policies and Commitments

KMUTT's policies promote gender equality, non-discrimination, and support for women's participation across education and employment:

- **Diversity Policy (2021):** Ensures equal treatment for all community members, embracing diversity in gender, race, national origin, socio-economic background, urban/rural origin, culture, ethnicity, disability, religion, gender identity, and sexual orientation. Signed by President Assoc. Prof. Dr. Suvit Saetia, it fosters an inclusive environment.
- **Human Resource Management Policy (2022):** Mandates fairness, transparency, and equal opportunities in recruitment, promotion, compensation, safety, and development. Prohibits discrimination and includes whistle-blower protections and anti-harassment mechanisms.
- **Non-Discrimination for Transgender People:** Supported by the Diversity Policy and HR Policy, recognizing gender identity and sexual orientation, with Equity-Diversity-Inclusion principles and reporting channels.
- **Maternity and Paternity Policies** (Human Resource Management Regulation on Leave, B.E. 2562, 2019; Personnel Resource Policy, B.E. 2565, 2022): Provides 98 days of protected maternity leave with full pay, pre- and post-delivery medical leave, and additional newborn care time. Paternity leave encourages shared responsibilities, with provisions for family emergencies and medical appointments to support work-life balance.
- **Childcare Welfare Policy (B.E. 2559, 2016):** Offers on-campus childcare for children aged 6 months to 3 years 6 months (08:00–16:30 weekdays), subsidized at 2,700 THB/month for infants under one year and 2,200 THB/month for toddlers. Eligible for employees and student parents, including fathers, to reduce burdens on women.
- **Horizontal Student Development Fund (B.E. 2562, 2019):** Provides up to 50,000 THB per student/year (max 300,000 THB per group) for financial aid, scholarships (e.g., 1,000–10,000 THB for academic excellence), competitions (up to 40,000 THB for awards), research publications (2,500–15,000 THB), and community projects, promoting ethics and innovation.
- **Scholarship Policy for Underrepresented Groups:** Includes the Dhammaraksa Scholarship for high-potential students from disadvantaged backgrounds (e.g., no family higher-education experience, remote areas), targeting women in STEM fields through recruitment and barrier reduction.
- **Non-Discrimination and Protection Policy (Code of Conduct Standard, Article 5.2):** Prohibits retaliation for reporting discrimination, ensuring fair access to welfare and opportunities. Supported by the Moral and Management Transparency Policy for accountability.
- **Governance Policies:** Promote inclusive communication, equitable teaching, and equal services without gender-based discrimination.

sustainable.kmutt.ac.th/goals5

Research and Publications

KMUTT integrates gender equality into interdisciplinary research focused on sustainability and resilience:

- **Community/Societal Resilience Discussion (March 18, 2024):** Hosted by the Social Sciences and Humanities Division and Environmental Social Sciences program (Faculty of Liberal Arts) with Prof. Ricardo García Mira from Universidade da Coruña, Spain. Explored collaborations on "Community/Societal Resilience: Adapting to the Effects of Global Warming," involving JGSEE, School of Liberal Arts, and the Social and Environmental Innovation Research Unit to advance sustainable, gender-inclusive solutions.
- **Environmental Social Sciences Research:** Focuses on global warming adaptation, building academic capacity and interdisciplinary approaches aligned with gender equality in environmental innovation.

No additional specific publications or metrics are detailed beyond these collaborative efforts.

Outreach and Community Engagement

KMUTT's outreach empowers women, particularly in underrepresented fields, through targeted programs and support:

- **Women in STEM Encouragement:** Public campaigns, regional engagements, and outreach highlight scholarships and admission pathways for women in engineering, technology, and applied sciences. The Dhammaraksa Scholarship expands opportunities for women from disadvantaged areas.
- **Financial Consultation and Support:** The Student Financial Aid Unit provides scholarships, development programs, and consultations for underprivileged students of all genders, with mentorship to foster change agents and enhance women's access.
- **Territorial Guard Programme:** Offers leadership pathways for female students, with administrative guidance ensuring equal opportunities.
- **Multi Exhibition Media (May 21–22, 2024):** Showcased 37 groups from the CMM Department (Faculty of Industrial Education and Technology) at Bangkok Art and Culture Centre (BACC), attracting over 350 attendees (industry professionals, alumni, students) to promote creativity and career paths in digital media.
- **Pre-Internship Training (April 22, 2024):** Faculty of Science workshop on "Professional Presentation Techniques" for third -year students, equipping them with skills for internships and careers, supporting gender-inclusive professional development.

Partnerships and Collaborations

KMUTT partners with internal and external entities to advance gender equality and empowerment:

- **Rakkaew EmpowerU Camp (May 31–June 2, 2024):** Involved SoCHAMP Gen 2 students (guided by Student Affairs Office and Royal Project Foundation Support and Promotion Center) with 11 institutions and 14 project teams. Workshops on leadership, entrepreneurship, problem-solving, and sustainable development; presented "SoCHAMP4Sochange" for educational opportunities and quality of life improvements.
- **World Envi Day X SSH 2024 (June 5, 2024):** School of Liberal Arts event themed "Policy Pathways to Inclusive Well-Being for All," opened by President Assoc. Prof. Dr. Suvit Saetia, with keynote from Mr. Anan Dondri (Deputy Permanent Secretary, Ministry of Social Development and Human Security). Included sessions on well-being for children/youth, elderly, and people with disabilities, building networks for inclusive social and environmental engagement.
- **External Collaborations:** With Universidade da Coruña (Spain) for research on resilience; Ministry of Social Development and Human Security for disability employment training, supporting broader inclusive policies.

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.



2024-2025 Recap

Metrics and Impacts

KMUTT's initiatives deliver measurable progress in gender equality:

- **Application/Acceptance/Entry Rates:** Gender-disaggregated data via Student Insight Hub shows comparable male/female proportions annually, ensuring balanced access.
- **Retention and Graduation:** MOD Link Application tracks gender-specific graduation rates and timelines, with schemes like academic advising closing gaps.
- **Leadership Representation:** 46% women in leadership roles (4% increase).
- **Pay Equity:** Index of 0.99, trending toward full equality.
- **Training and Leave Uptake:** 88% coverage in anti-harassment training (up 9%); 72% parental leave uptake (up 5%).
- **Mentoring Participation:** Over 10% annual female student involvement in JAIDEE ONLINE and KMUTT Motivation Clinic.
- **Childcare Access:** Subsidized facilities support student mothers, enabling course attendance.
- **Impacts:** Comparable enrollment/graduation ratios promote equitable opportunities; events like Rakkaew Camp and World Envi Day foster youth-led development and inclusive well-being; Dhammaraksa Scholarship empowers women in STEM; policies reduce barriers, enhance safety, and improve culture, with 88% training coverage and 72% leave uptake indicating progress.

These metrics and outcomes highlight KMUTT's role in advancing gender equality, with continuous data-driven evaluations.

sustainable.kmutt.ac.th/goals5







2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) contributes to Sustainable Development Goal 6 (SDG 6): Clean Water and Sanitation by ensuring sustainable management of water and sanitation through conservation, recycling, treatment, and community engagement. The university measures water usage from mains supply, desalinated sources, or extracted from rivers, lakes, or aquifers, with a target of 30% reduction in per capita water consumption by 2030 using 2003 as the baseline. In 2024, total tap water usage was 296,956 cubic meters per year, with per capita consumption of 16.36 cubic meters annually, achieving a 31.38% reduction. At the Ratchaburi campus, 100% of water consumed is produced by an on-site potable water plant with a 5 m^3/hr capacity, primarily using rainwater harvesting to reduce reliance on the Metropolitan Waterworks Authority supply. KMUTT promotes water reuse, wastewater treatment, free drinking water access, efficient building standards, drought-tolerant landscaping, and educational programs. Key initiatives include a water balance system at the Bang Khun Thian campus with anaerobic treatment, recycling, and constructed wetlands; greywater recycling saving 65,000 m^3/year for non-potable uses; and off-campus efforts like mangrove planting and groundwater banking. Metrics include 86 L/person·day per capita use (7% reduction), 96% wastewater treated to compliance with 23% non-potable reuse, and over 175 free drinking water points.

University Policies and Commitments

KMUTT has policies to maximize water reuse and conservation across campuses, including:

- Reducing water usage per person by 30% by 2030 compared to the 2003 baseline.
- Increasing rainwater/open natural water resource usage by 20% by 2020.
- Increasing water recycling from sanitary and reuse sources by 25% in 2023 compared to 2018.
- Achieving safe drinking water and clean wastewater campus-wide by 2023.
- Working with communities to develop awareness on reducing water consumption.
- Measures include turning off faucets, ensuring equipment is closed, checking for damage, using natural reservoirs for plants, collecting water in containers, campaigning on wise use, purchasing water-conserving devices, and using water only when necessary.

Building standards mandate green certification or eco-label for water-using appliances and aim for a 30% reduction by 2030 compared to 2006 levels. All high-water-use urinals and faucets use motion sensor valves. Procurement ensures 100% water-efficient appliances.

Landscaping incorporates drought-tolerant plants (e.g., bougainvillea, dragon tongue tree, needle tree, Hokkien tea tree, oleander tree, mok koson tree) and wet-condition plants in rainwater areas for filtration and erosion control. Drip irrigation systems deliver 4-20 liters/hour at 0.3-2 bar pressure to maintain soil moisture efficiently.

Waste management prevents pollution: strict laboratory procedures for hazardous substances via certified companies, regular training, and separation of greywater (from baths, sinks, etc.) and blackwater (from toilets) for recycling greywater only.

Research and Publications

KMUTT employs advanced wastewater treatment technologies:

- 4-step SBT MICA SAND process: solid separation chamber (removes debris), anaerobic filter chamber (breaks down organic matter), aeration chamber (introduces oxygen for aerobic bacteria to reduce BOD), sedimentation chamber (clarifies water).
- Activated sludge dewatering: aeration tank (microorganisms decompose organics), sedimentation tank (separates sludge, recycles portion back, disposes excess).
- Oil and grease traps (floor-standing and built-in) to prevent blockages.
- Cyanide and heavy metal treatment plant removes arsenic, lead, mercury, cadmium, chromium, copper..
- At Bang Khun Thian (coastal area), artificial wetland system with aerators filters pollutants, supports aquatic life (fish, shrimp, plants).
- Research includes nanobubble technology applications in environmental remediation and agriculture (hybrid lecture by Prof. Samir Kumar Khanal, August 2024).
- Publications referenced: http://www.santech.co.th/15828374/sbt-mica-sand.

Water balance system at Bang Khun Thian: prevention of wastewater entry, aerobic treatment, recycling via solar pumps to reservoir, bio-ecological drainage with constructed wetland. Monthly checks ensure quality meets standards, supporting SDGs 6, 7, 11, 13, 15.

Solar-powered water pumping/aeration system with IoT for remote monitoring via mobile app, installed at Solar Cell Learning Base in Chanthaburi for irrigation under "New Theory Agriculture."

Outreach and Community Engagement

KMUTT provides educational opportunities:

- Visits for public, students, communities on coastal resource management, sustainable mangrove conservation, water quantity /quality challenges.
- Mangrove planting activities with students, staff, locals to protect coastlines, absorb carbon, enhance biodiversity, provide habitats.
- Open House 2024: high school students learn about coagulation water treatment, adsorption for color removal, water quality, wastewater treatment models.
- Green Heart Camp Online: sustainability education for students/teachers (86 participants), promoting energy/water conservation, safety.
- KMUTT Green School Network: training for green society, waste separation, energy conservation (60+ participants at Supitcha School).

Off-campus support:

- Monthly canal cleanups with Thungkhru district: remove plastic/debris, transport to university waste bank.
- Mangrove planting/release events (e.g., 400 volunteers for Queen Sirikit's 90th birthday at Bang Khun Thian Mangrove Forest Learning Center).
- Solar-powered water quality monitoring buoy in Bangmod Canal for real-time saltwater monitoring, aiding farmers in freshwater storage.
- Volunteer projects like "We do good deeds with the heart" for mangrove restoration in Phanthai Norasing, Samut Sakhon.

Promotes conscious usage via campaigns, guidelines for reporting leaks, efficient appliances, mindful habits.

Partnerships and Collaborations

KMUTT collaborates on water security:

- With Thungkhru district and communities for canal cleanups and 3C Project (Cycling-Canal-Community): develops bicycle paths along canals for sustainable travel, economy, reduced pollution.
- GC and Map Ta Phut Municipality: underground water banking in Rayong for mango farmers to prevent flooding, store water for dry season, reduce salinity.
- Rajamangala University of Technology Lanna and Assoc. Prof. Dr. Samir K. Khanal (University of Hawaii): consultation on upland fish farming in watershed for aquaculture and water management.
- Multiple provinces (e.g., Nakhon Phanom, Kamphaeng Phet, Chainat, Sakon Nakhon) for groundwater banking using GIS/satellite data to identify sites (e.g., Ban Phueng as model for drought relief).
- Recommends analyzing underground sources per AGS standards before banking.

sustainable.kmutt.ac.th/goals6

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.

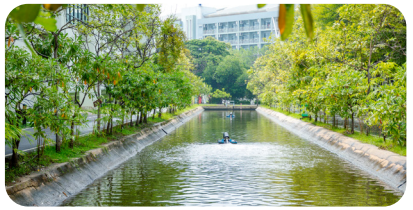


2024-2025 Recap

Metrics and Impacts

KMUTT's efforts yield measurable outcomes:

- Water consumption: 296,956 m³/year total (2024); per capita 16.36 m³ (86 L/person·day, 7% reduction); 31.38% reduction vs. 2003.
- Reuse: Greywater recycling for gardening, toilet flushing, floor/bike cleaning, construction; saves 65,000 m³/year; 25% increase target by 2023 vs. 2018; near 100% implementation by 2030 from 2005 baseline.
- Wastewater: 96% treated to compliance (+3%); 23% non-potable reuse (+5%); monitored monthly/quarterly for pH, SS, BOD, TKN, COD, fats/oils/grease, heavy metals.
- Drinking water: 175+ points with activated carbon, UF membranes (0.01 micron pores), UV filters; monthly maintenance, filters replaced every 6 months.
- Appliances: 100% efficient (1,433 taps, 803 flush valves, 3,702 sanitary ware; average 100%).
- Ratchaburi: 100% on-site production via rainwater.
- Community impacts: Mangrove planting restores ecosystems, reduces erosion; water banking ensures year-round drinking water; buoy aids real-time management; recycling reduces bills, drought effects.
- Education: Events like Open House, lectures reach high school students, researchers, public; Green Heart activities impact 60–86 participants per session, expanding to communities.











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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) advances Sustainable Development Goal 7 (SDG 7): Affordable and Clean Energy by implementing energy efficiency measures, promoting renewable energy sources, conducting research on clean technologies, and engaging in community outreach to foster sustainable energy practices. The university targets carbon neutrality by 2040, a 5% renewable energy usage by 2024, and a 1% annual reduction in per capita energy consumption. Key initiatives include solar PV installations, biogas production from waste, energy-efficient appliances, and collaborations for low-carbon development. This section details activities, data, and impacts primarily from 2021 to 2025, aligning with SDG 7 targets such as ensuring access to affordable, reliable, sustainable, and modern energy for all.

University Policies and Commitments

KMUTT's policies support clean energy and climate action, including energy reduction, renewable energy usage, and greenhouse gas emission reduction. These require energy-efficient appliances, smart/green buildings, total electricity monitoring, and adaptation/mitigation programs. Commitments include carbon neutrality by 2040, 5% renewable energy by 2024, 1% annual per capita energy reduction, and 100% energy-efficient appliances by 2026 (94.5% achieved in 2025). The Green & Sustainable Development Policy (2003) models energy and environmental management, while the Energy Policy (2021) aligns with Thailand's Energy 4.0 for conservation and awareness. The Building and Ground Management Policy emphasizes energy-saving in construction and space use, and the Physical Development Master Plan (41+C) promotes a green, walkable campus with vegetation to reduce heat islands and limited car access. Energy management involves annual plans, monitoring, and evaluation across sectors, with the Energy Environment Safety and Health (EESH) office overseeing implementation.

Research and Publications

KMUTT's research, led by the School of Energy, Environment and Materials and Joint Graduate School of Energy and Environment (JGSEE), focuses on carbon footprint, GHG emissions, and clean energy technologies.
Key projects include:

- Greenhouse Gas Emissions from Low Income House Construction in Thailand: Uses Life Cycle Assessment for construction-phase emissions.
- Biosilica Production from Rice Husk: Biological process produces eco-friendly biosilica, reducing carbon footprint 30 times versus conventional methods; potential for 200,000 tons/year from rice husk waste; applications in cosmetics, pharmaceuticals, and rubber; technology transferred for industrial use.
- Biomass Treatment for High-Purity Lignin: Collaboration with NSTDA to fractionate agricultural waste (bagasse, rice straw) into value-added bio-based products.
- Class A+ Solar Simulator: ISO/IEC 17025 certified at Center for Standardization and Solar Cells System Testing (CSSC) for testing large PV modules.
- EV Charger Standards: Research on safety, performance, and national standards to support low-carbon transport.
- Carbon Management Platform: Developed via EEC project for industrial carbon neutrality.

Additional efforts include EU-ASEAN RESCuE project for mangrove restoration and blue carbon, with collaborations involving NSTDA and BIOTEC.

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Outreach and Community Engagement

KMUTT promotes energy awareness through events and programs:

- Workshop on Simple Energy Conservation Techniques and KMUTT's Energy Management System (September 1, 2025; approximately 50 participants; lectures and case studies).
- Asia Sustainable Energy Week 2025 (July 2–4, 2025; Queen Sirikit National Convention Center): Co-organized Renewable Energy Asia Conference on digital solutions for low-carbon future; exhibitions on biogas and climate engagement; hundreds of attendees.
- Press Conference on Low-Carbon Development in EEC (September 11, 2025; ICONSIAM): Highlighted Carbon Management Platform and GHG reduction technologies.
- Seminar on Promoting Biomass Pellets/Briquettes (July 4, 2025; online; free registration).
- Zombike Project: Repairs and shares abandoned bicycles via Green Society club to promote sustainable transport.
- Promotion Activities: Posters, guides, leaflets, and monthly plans for campus awareness.
- Energy Training/Workshops: 12 annually by EESH on conservation and climate change for staff, students, and vendors.
- Energy/Environmental Conservation Camps: For students.
- Community Events: World Environment Day and Earth Hour (60+ attendees).

These initiatives encourage behavioral changes and knowledge dissemination.

Partnerships and Collaborations

KMUTT collaborates with various entities to advance clean energy:

- Provincial Electricity Authority (PEA): MOU (August 19, 2025) for Digital Energy Management Project focusing on efficiency via digital tech and knowledge transfer.
- Eastern Economic Corridor (EEC), NSTDA, TISTR, FTI: Carbon Management Platform for low-carbon industrial transition.
- Sukhothai Thammathirat Open University (STOU): MOU (October 3, 2025) for carbon footprint evaluation and waste management in industry/agriculture.
- Toyota FarmExpo 2025: Session on forest/farm carbon credits and agricultural GHG reduction.
- Informa Markets Thailand: Co-hosted Asia Sustainable Energy Week 2025.
- New Thai Wheel Manufacturing Co., Ltd. (NTW): Donated Pandat software (January 21, 2025) for light metal research in automotive.
- EU-ASEAN STI Forum: Presented RESCuE Project (June 18, 2025).
- NXPO: Executive Course on Carbon Management and Innovation Policy (June–August 2025; 6 sessions plus site visit).
- IORA Blue Carbon Hub: Think-Tank (September 9–11, 2025).

These partnerships enhance research, technology transfer, and policy implementation.

Metrics and Impacts

KMUTT's efforts produce quantifiable results:

- Energy Usage: 29,163,181 kWh total in 2025; 40.5% per capita reduction compared to 2003 baseline (target 40% by 2025; 39.91% in 2021).
- Renewable Energy: 3.12% of electricity from renewables in 2025 (337.12 kW solar capacity; target 10% by 2025 and 2 MW expansion).
- Appliances: 94.5% energy-efficient in 2025.
- GHG Emissions: Total footprint 16,376.6 metric tons in 2024; reductions from biogas (4,970 kg CO_2/year), wind power (1,027.71 kg CO_2), bioethanol (12% lower emissions vs. diesel), and hydropower (18,834 kWh/year savings).
- Green Transport: EV shuttle buses, charging stations, bike sharing, and car restrictions reduce Scope 3 emissions.
- Events and Training: Workshops and conferences engage hundreds; 12 annual trainings promote conservation.
- Research Impacts: Biosilica reduces imports and supports BCG Model; bioethanol scales commercially; lignin project valorizes waste.

These metrics illustrate KMUTT's progress toward affordable and clean energy, with ongoing monitoring and evaluations.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) supports Sustainable Development Goal 8 (SDG 8): Decent Work and Economic Growth by implementing policies that ensure fair compensation, uphold labor rights, promote non-discrimination, and foster ethical employment practices. Aligned with international standards such as ILO Conventions No. 87 and No. 98, KMUTT addresses SDG targets including 8.2.2 (living wage), 8.2.4 (labor rights), 8.2.5 (non-discrimination), 8.2.6 (no forced labor/slavery/child labor), and 8.2.8 (pay equity). Initiatives focus on living wage compliance, union recognition, gender pay equity, and enhancing student employability through internships, startups, and skill-building programs, contributing to sustainable economic growth and inclusive workplaces.

University Policies and Commitments

KMUTT's policies emphasize decent work, equity, and employee welfare:

- Living Wage Policy: Ensures all staff and faculty receive salaries exceeding Thailand's living wage benchmark (12,000–15,000 THB/month for a family of four in 2024–2025). Compensation is reviewed annually against the national poverty line, supplemented by welfare benefits such as meal, healthcare, and transportation allowances to guarantee total income surpasses required levels.
- Labor Rights and Union Recognition: Upholds freedom of association and collective bargaining for all employees, including women and international staff, without discrimination. Governed by Regulations of KMUTT on Personnel Management (No. 6) B.E. 2559 (2016) and Human Resources Policy B.E. 2565 (2022), these policies promote transparent governance, whistleblower protections, and employee participation in decision-making.
- Non-Discrimination Policy: The Human Resources Policy B.E. 2565 (2022) prohibits discrimination on grounds of gender, gender identity, age, disability, nationality, race, religion, economic background, or political belief. It mandates fairness, respect, equal opportunities, harassment prevention mechanisms, and conflict resolution processes.
- Prohibition of Forced Labor, Slavery, and Child Labor: Under Regulations on Personnel Management B.E. 2550 (2007), employees must be at least 18 years old, with strict bans on coercion, exploitation, or trafficking. Hiring processes exclude individuals with records of corruption or unfit conditions.
- Pay Scale Equity and Gender Pay Gap Monitoring: Salaries are determined by objective criteria like job classification, qualifications, and experience, with no gender-based disparities. Guidelines for Academic Positions (Announcement No. 2, effective October 1, 2011) ensure equal pay for equal work, with real-time salary tracking via HR applications.
- Rights for Outsourced Workers: Outsourced staff receive equivalent rights to internal employees, including fair treatment and non-discrimination, as outlined in the Moral and Management Transparency Policy.
- Appeals Process: Employees can file appeals on rights or pay issues under Regulations on Appeals and Grievances B.E. 2009 and Personnel Management B.E. 2007, with a 30-day window, independent reviews, and safeguards against retaliation.

Additional strategies include organizational reform, performance management, competency development, talent retention, and digital HR tools to support sustainable employment practices.

sustainable.kmutt.ac.th/goals8

Outreach and Community Engagement

KMUTT engages communities and students through programs promoting employability and economic development:

- Career Center 360: Provides career coaching, CV clinics, and mock interviews to prepare students for the workforce.
- Skills Wallet: A digital platform for tracking micro-credentials and badges to enhance employability.
- Alumni Connect: Facilitates mentorship and networking with employers for career guidance.
- Working Adult Education: Offers skill upgrades and qualification enhancements for the existing workforce.
- Student Incubation Programs: Fosters entrepreneurship through student-led startups and innovation initiatives.
- Fair Work and Safety Initiatives: Includes supplier audits, safety drills, and a dedicated student employment policy with a hotline for support.

These efforts aim to bridge education with economic opportunities, supporting inclusive growth.

Partnerships and Collaborations

KMUTT collaborates with various stakeholders to advance decent work and economic growth:

- Industry Partnerships: Works with industrial sectors to form innovation alliances and support startup ecosystems.
- Regional and SME Support: Assists small and medium enterprises (SMEs), rural innovation hubs, and upskilling programs to boost local economies.
- Government Coordination: Partners with bodies like the Department of Employment to ensure rights for international staff and align with national labor standards.

These collaborations enhance knowledge transfer, innovation, and equitable economic development.

Metrics and Impacts

KMUTT's initiatives yield measurable outcomes in decent work and economic growth: **Salary Data (Effective October 1, 2025)**

Group / Qualification	Starting Salary (THB/month)
Academic Group	
Doctoral Degree	42,800
Master's Degree	32,400
Academic Support Group	
Doctoral Degree	35,800 – 41,800
Master's Degree	27,730 – 30,730
Bachelor's Degree	23,700 – 25,700
Vocational Diploma	17,420 – 19,420
Academic Support Group	
Bachelor's Degree	23,700 – 25,700
Below Bachelor's Degree	11,570

Historical salary increases include Academic Doctoral rising from 39,800 THB (May 1, 2024) to 42,800 THB, and Support (Below Bachelor) from 10,520 THB to 11,570 THB.

- Employment Metrics: 92% of graduates employed within 6 months (4% increase); 43% of students participating in paid internships or co-ops (7% increase).
- Startup and Economic Impacts: 1,280 jobs created by university-supported startups and spin-offs (12% increase); 76% of vendors complying with fair-work standards (9% increase).
- Additional Metrics: Implementation of a performance-based pay system, employee well-being programs, and comprehensive safety policies, contributing to equitable and sustainable economic practices.

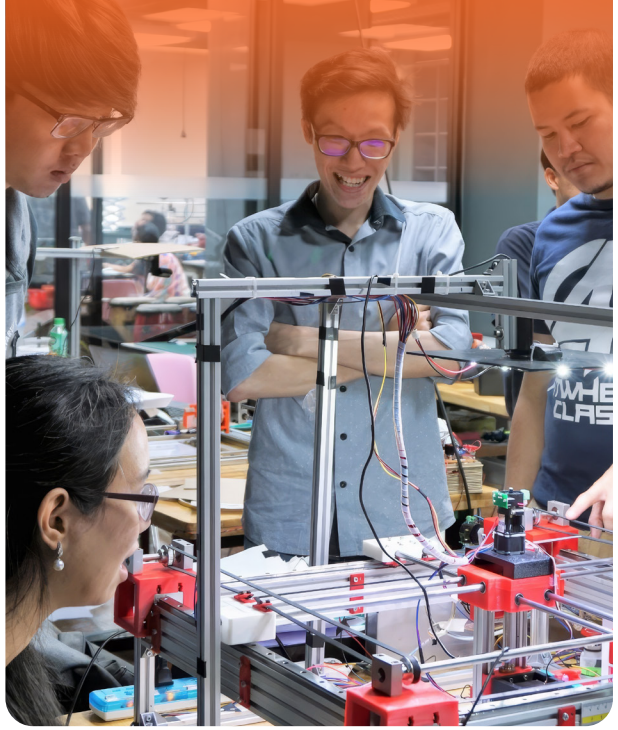
These metrics demonstrate KMUTT's progress in fostering decent work and economic growth, with ongoing evaluations to ensure alignment with SDG 8 targets.

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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) supports Sustainable Development Goal 9 (SDG 9): Industry, Innovation and Infrastructure by building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation. This is achieved through robust industry-academia partnerships, research funding from commerce, smart campus infrastructure, and dedicated innovation hubs like the Knowledge Exchange for Innovation (KX) building. Efforts focus on enhancing technological capabilities, supporting SMEs, nurturing startups, and driving demand-driven research to elevate Thailand's innovation ecosystem. This section outlines key policies, research, outreach, partnerships, and metrics for 2020–2025, demonstrating alignment with SDG 9 targets such as upgrading infrastructure, increasing industry value addition, and enhancing scientific research.

University Policies and Commitments

KMUTT's policies emphasize sustainable industrialization via an industry cluster model that integrates academia, government, and industry. The university promotes digital transformation with advanced IT infrastructure and cloud tools, and its Physical Master Plan guides campus development to support sustainability and innovation. KMUTT transforms its campus into a living lab for hands-on learning and collaboration. The Green & Sustainable Development Policy integrates innovation with environmental goals, while commitments include elevating technological competency through demand-driven research and ethical, sustainable economic paradigms. Policies also ensure smart infrastructure coverage for IoT-enabled energy, mobility, and operations, with a focus on inclusive access for SMEs and startups.

Research and Publications

KMUTT maintains 128 active R&D partnerships (up 12% from previous years), with 48% of research funding from industry-sponsored projects. Research income from industry and commerce shows consistent growth, with totals and breakdowns by subject area as follows (in THB):

Year	Total Research Income from Industry and Commerce	STEM	Medicine	Arts & Humanities / Social Sciences
2024	540,665,288	428,211,890	-	112,453,398
2023	493,802,044	384,469,060	-	109,332,983
2022	543,050,224	450,231,724	-	92,818,500
2021	687,660,685	470,973,352	-	187,027,954
2020	576,609,994	423,370,623	-	21,870,694

Services include product development, process improvement, and quality control consulting. Innovation hubs feature a Prototype Lab for rapid design and a Tech Transfer office for IP licensing. Industrial PhD programs involve co-supervised research with industry partners, fostering translation into sustainable impacts and startup creation. Research emphasizes deep tech, creative economy, and sciences, addressing real-world challenges through demand-driven approaches. No specific publications are detailed, but outcomes include enhanced technological solutions for companies.

sustainable.kmutt.ac.th/goals9

Outreach and Community Engagement

KMUTT engages communities via Maker Fairs, Bootcamps, and Hackathons to encourage youth innovation, problem-solving, and hands-on creation. It supports local economic development by collaborating with leaders to identify needs, contributing to stability and job creation. SMEs are encouraged to adopt sustainable practices like waste reduction and energy efficiency through GREEN SOCIETY and GREEN Living Lab initiatives, providing resources on sustainable models. The Student Incubation Program instills entrepreneurial spirit. Additional outreach includes knowledge exchange events with school consortia (e.g., April 30, 2025, event with 65 schools), offering tours of faculties like Engineering and Institute of Field Robotics, and brainstorming for 2025–2026 activities to promote inclusive education and innovation.

Partnerships and Collaborations

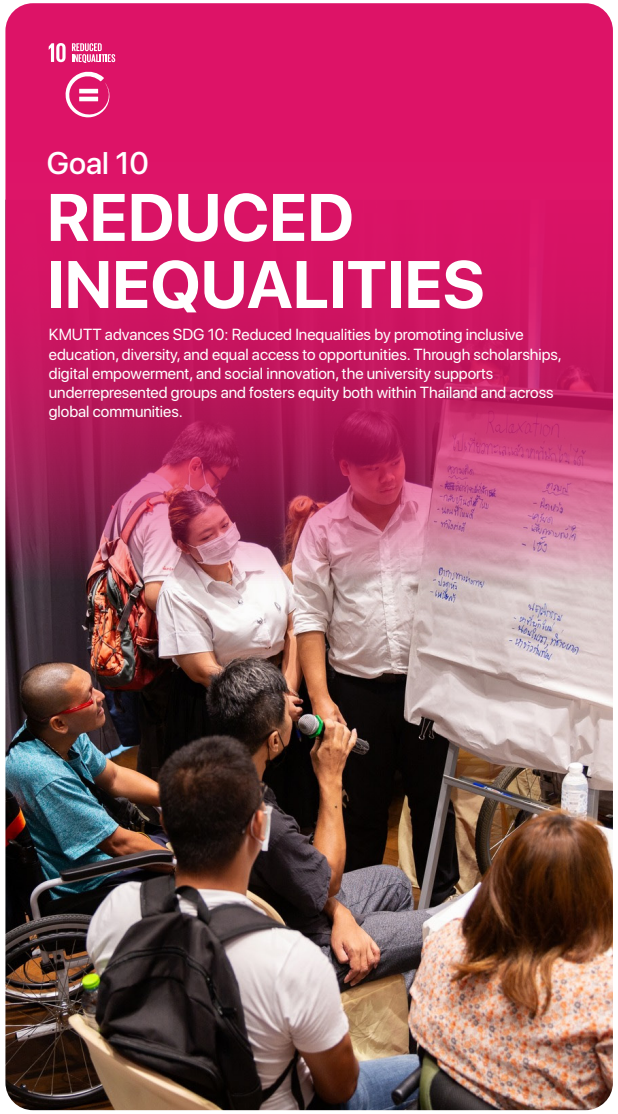
KMUTT partners with academia, government, and industry via the KX building, a 20-floor, 28,000 sqm facility in Bangkok serving as an open innovation hub for knowledge, technology, and innovation exchanges. It supports SMEs in strategic sectors, forward-looking enterprises, and public organizations, enhancing competitiveness through alliances. The Graduate School of Management and Innovation (GMI) offers programs like Digital Business Management, Entrepreneurship and Sustainable Innovation Management, and Integrated Innovation Management. KX incubates startups with mentorship, resources, and spaces, fostering a world-class ecosystem for deep tech and creative economy. Key collaborations include the Social Design Institute (SDI) with Chiba University (inaugurated May 29, 2024), promoting innovation and research; and MoUs with school consortia for academic cooperation. Partnerships also involve NSTDA, TISTR, FTI, and others for carbon management and low-carbon transitions.

Metrics and Impacts

KMUTT's initiatives deliver measurable results:

- Research and Funding: 128 R&D partnerships (up 12%); 48% industry funding; historical research income as detailed in the table above, showing fluctuations but overall resilience (e.g., peak of 687 million THB in 2021).
- Innovation and Startups: 32 innovation-based startups (up 10%) via Student Incubation Program; incubation spaces at KX supporting growth and job creation.
- Infrastructure: 67% smart infrastructure coverage (up 6%) for IoT in energy, mobility, and operations; KX facility spans 28,000 sqm with accessibility features.
- Broader Impacts: Enhanced SME productivity and value chains; elevated national technological competency; inclusive education through consortia events reaching 65 schools; contributions to ethical, sustainable economic paradigms.





2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) advances Sustainable Development Goal 10 (SDG 10): Reduced Inequalities by promoting diversity, equity, and inclusion across its community. Through non-discriminatory admissions, targeted recruitment for underrepresented groups, anti-harassment policies, accessible facilities, and support services, KMUTT ensures equal opportunities regardless of gender, race, national origin, socio-economic background, culture, ethnicity, disability, religion, gender identity, or sexual orientation. Key initiatives include scholarships for disadvantaged students, disability training programs, and psychological support, aligning with SDG 10 targets such as reducing inequalities within and among countries, empowering marginalized groups, and eliminating discriminatory practices. This section highlights activities, policies, and impacts primarily from 2023 to 2025.

University Policies and Commitments

KMUTT's policies foster an inclusive environment with a focus on non-discrimination and positive discrimination:

- Equality and Diversity Policy: Embraces differences in gender, race, national origin, socio-economic background, urban/rural origin, culture, ethnicity, disability, religion, gender identity, and sexual orientation, ensuring fair treatment for all community members.
- Admissions Policy: Non-discriminatory and publicly posted, with positive discrimination via the Students with Disabilities Project for Academic Year 2568 (2025). Eligibility includes holding a Disability Identification Card under the Promotion and Development of Quality of Life of Persons with Disabilities Act B.E. 2550 (2007), completion of Mathayom 6 or equivalent, minimum GPAX/GPA requirements, no obstructive diseases, and no prior expulsion. Applications run from February 14–March 14, 2025, through the Thai University Central Admission System (TCAS).
- Early Active Recruitment Project (Academic Year 2567): Allows high-achieving students with talents to apply via portfolio, maintaining non-discriminatory criteria.
- Anti-Harassment Policy (Guidelines for Prevention and Resolution of Sexual Harassment or Assault B.E. 2562, 2019): Applies to the entire community, prohibiting verbal, physical, or other harassing behaviors. Includes informal/formal resolution processes, protection from retaliation, and complaint channels such as supervisors, HR, online systems, and emergency lines (02-470-9090, contact@kmutt.ac.th).
- No One Left Behind Scholarship Policy: Allocates funds for needy students, including those with disabilities, to reduce educational inequalities.
- Human Resources and Management Policies: Support transparency, fairness, and inclusion in recruitment and operations.

These policies are monitored through tools like the MOD Link Application for tracking graduation rates and complaints.

Research and Publications

KMUTT researchers contribute to SDG 10 through studies addressing educational inequalities, particularly in rural and underserved areas, by integrating innovative teaching methods and green technologies to promote equitable access to quality education.

- Sustainable Education with Local-Wisdom Based Natural Reagent for Green Chemical Analysis with a Smart Device: Experiences in Thailand (2021, Sustainability): Authors Kiwfo K., Yeerum C., Ayutthaya P.I.N., Kesonkan K., Suteerapataranon S., Panitsupakamol P., Chinwong D., Paengnakorn P., Chinwong S., Kotchabhakdi N., Saenjum C., Vongboot M., Grudpan K. This study developed a natural-reagent assay kit for iron determination, implemented across six Thai universities, using guava leaves as a reagent. It supports SDG 10 by reducing inequalities through accessible, low-cost green chemistry education, enabling broader participation in STEM regardless of resource limitations.
- Fostering 4Cs in Thailand's Rural School Students Using Design Thinking and Experiential Learning (2025, International Journal of Inclusive Education): Authors Ekawat Nithichaiyo, P. Lertthahan, J. Thepkeaw. The research integrated design thinking and experiential learning for 30 Grade 7 rural students in Ratchaburi Province, showing significant improvements in critical thinking, communication, collaboration, and creativity. It addresses SDG 10 by empowering rural students, bridging educational disparities caused by limited resources and traditional methods.
- Lab-at-Home: Hands-On Green Analytical Chemistry Laboratory for New Normal Experimentation (2022, Sustainability): Authors Chonnipa Yeerum, Piyanat Issarangkura Na Ayutthaya, Kullapon Kesonkan, Kanokwan Kiwfo, Siripat Suteerapataranon, Piyatida Panitsupakamol, Pathinan Paengnakorn, Dujrudee Chinwong, Surarong Chinwong, Chalermpong Saenjum, Monnapat Vongboot, Kate Grudpan. This work created a remote lab kit for colorimetric iron determination during the COVID-19 pandemic, sent to students for supervised online experiments. It relates to SDG 10 by reducing inequalities in access to hands-on learning, especially for large classes and resource-constrained students.

These publications emphasize equitable education through innovative, sustainable approaches, with outcomes evaluated via quizzes, reports, and skill assessments.

Outreach and Community Engagement

KMUTT engages in outreach to support underrepresented groups through training, scholarships, and awareness programs:

- Disability Apprenticeship Training Program (11th Round, May 1–October 31, 2024): Trained 42 participants in Office Staff, Digital Media Production, and Local Handicraft courses, funded by companies under the Persons with Disabilities Empowerment Act (e.g., Duniil Co., Ltd.).
- Phrakanit Scholarship Support Program (January 29, 2024): Aids financially disadvantaged vocational students in Northern Thailand, focusing on academic and research skills development.
- FIBO & NSTDA Training (February 9, 2024): Provided robotics, AI, and coding workshops for hearing-impaired high school students from Thung Mahamek School for the Deaf.
- Good Health & Well-Being Program (May 2, 2024): Engaged over 70 participants, including disabled students, in health promotion activities.
- KMUTT Network Visit (June 22, 2024): Organized cultural site visits for 40 disabled participants.
- Training on Social Safety and Emergency Response (August 28, 2024): Focused on preparedness for underrepresented groups.
- Faculty of Science Exhibition (September 5, 2024): Offered career guidance at partner schools.
- Heddi Craft Showcase (September 26–27, 2024): Featured products by disabled artisans through architecture and design collaborations.
- BKI Scholarship Award (October 11, 2024): Granted to three KMUTT Mathematics students from disadvantaged backgrounds.
- Online Psychological Consultation: Available Monday–Friday, 6:00 p.m.–8:00 p.m., for 15–20 minute stress assessments via LINE channels.
- Student Financial Aid Unit: Provides support and consultations for needy and underrepresented students.

These activities aim to build skills, provide access, and foster inclusion.





sustainable.kmutt.ac.th/goals10

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.



2024-2025 Recap

Partnerships and Collaborations

KMUTT collaborates with government, industry, and educational institutions to reduce inequalities:

- Ministry of Social Development and Human Security Project (Launched May 9, 2024): Partners with five universities to train 300 participants in employment skills, with a budget over 23 million THB, following six steps: job identification, recruitment, training, employment promotion, mentoring, and data analysis.
- MOU with Ministry and Five Universities (November 30, 2023): Supports disability empowerment, with KMUTT presenting on technology applications for disabilities.
- Collaborations for Phrakanit Program: With regional universities in Northern Thailand for vocational student support.
- Industry Partners for Disability Training: Companies like Duniil Co., Ltd., funding programs under the Persons with Disabilities Empowerment Act.
- NSTDA and FIBO: For specialized training in robotics and AI for hearing-impaired students.
- Partner Schools: Such as Thung Mahamek School for the Deaf and others for exhibitions and guidance.

These partnerships enhance resource sharing and program effectiveness.

Metrics and Impacts

KMUTT's efforts produce measurable outcomes in reducing inequalities:

- Disability Training Participants: 42 in the 11th Apprenticeship Program (2024); 300 targeted in the Ministry project (budget over 23 million THB); 40 in KMUTT Network cultural visits.
- Scholarship Awards: Three BKI Scholarships (October 2024); Phrakanit Program aiding disadvantaged vocational students.
- Event Participation: Over 70 in Good Health & Well-Being Program; hearing-impaired students in FIBO & NSTDA training.
- Accessibility Features: Campus includes disabled parking, toilets, elevators, ramps, health units with aids, accessible library computers, and adaptable meeting spaces.
- Tracking and Support: MOD Link Application monitors women's graduation rates and provides services; DSSU handles consultations and accommodations; online psychological sessions available weekly.
- Impacts: Enhanced employment skills for disabled individuals, increased access to education for underrepresented groups, and promotion of diversity through policy implementation and community engagement.

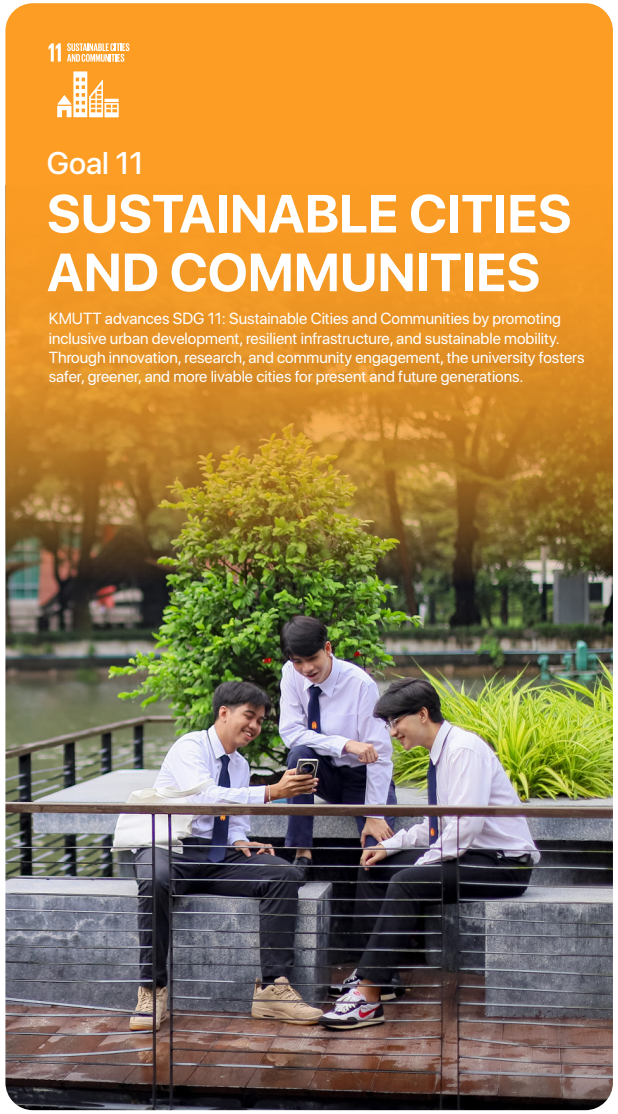
These metrics demonstrate KMUTT's commitment to SDG 10, with ongoing monitoring for sustained progress.





Opportunity should not depend on privilege.

KMUTT empowers all learners to rise through education, innovation, and equal support.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) contributes to Sustainable Development Goal 11 (SDG 11): Sustainable Cities and Communities by promoting sustainable transport, green infrastructure, cultural heritage preservation, waste management, and resilient urban planning. Through policies like the Walk & Bike initiative, green building certifications, and community engagement in mangrove restoration, KMUTT fosters low-carbon mobility, accessible public spaces, and ecosystem conservation. Key efforts include EV sharing, bike programs, cultural events, and research on carbon monitoring, aligning with SDG 11 targets such as making cities inclusive, safe, resilient, and sustainable. This section details activities, data, and impacts primarily from 2018 to 2025.

University Policies and Commitments

KMUTT's policies support sustainable urban development and carbon neutrality by 2040:

- Walk & Bike Policy (December 2018): Issued by Assoc. Prof. Dr. Suvit Saetia, promotes safe walking and cycling with infrastructure for lanes, supportive environments, community networks, and change agents for energy conservation and health. Benefits include reduced emissions, improved well-being, and collaboration.
- Green and Clean University Concept: Integrates SDGs into curricula and activities, with a Physical Master Plan for learning, interaction, and sustainability.
- Transportation Policies (Since 2015): Limits private vehicles, replaces surface parking with a 470-car vertical facility, and promotes modal shifts to buses, bikes, and walking.
- Telecommuting and Flexible Work: Standard remote/hybrid options, including work-from-home during PM 2.5 events (e.g., January 27–31, 2025) and online teaching to cut commuting emissions; exploring condensed work weeks.
- Green Building Policies (B.E. 2009 Energy Conservation Guidelines): Targets 1% annual per capita energy reduction, renewable promotion, and full renovation by 2030 using 10 Green Building Codes (e.g., green roofs, LED lighting, natural ventilation, low VOC paints).
- Safety Policy: Ensures workplace, road, and life safety for secure environments.

The campus acts as a Living Lab and Open Innovation Hub (KX) for sustainability.

Research and Publications

KMUTT's research focuses on sustainable infrastructure and environmental monitoring:

- Bioresearch and Innovation Building (BRI): Designed under LEED standards, reduces energy/water use by 32%, targeting Silver certification by 2021 (22,399.20 m²).
- Learning Exchange Building (LX): Incorporates sustainable design for efficiency and interdisciplinary learning (34,260 m², TGBI/TREES certified).
- CO2 Monitoring Tower: 10-meter pole at Ratchaburi campus (4 km² dry dipterocarp forest) collects data 10 times/second on photosynthesis, respiration, and microbial processes; supported by JGSEE, TRF, and Earth System Knowledge Enhancement Project; contributes to ThaiFlux, Asia Flux, and Global Flux networks.
- Student Innovations: MOD Bike for carbon-neutral actions (honorable mention at 8th Sustainable University Network Conference, February 15-16, 2024); EV charger cabinets for standardization.
- Unmanned Aerial Vehicle and Electric Tuk-Tuk Research: With partnerships for development.

These efforts enhance understanding of forest vulnerability and support low-carbon technologies.

sustainable.kmutt.ac.th/goals11

Outreach and Community Engagement

KMUTT provides public access to cultural and green spaces while engaging in preservation activities:

- Public Access: KMUTT Library (since 1988) offers free resources in science/engineering; KMUTT Archive exhibits royal projects; exhibitions like "Bird and Mangrove Species" at Bang Khun Thian and rotating displays at LX on mental health/culture.
- Cultural Activities: 25 art promotions (e.g., Suthaphirom Dance, Loy Kratong, Music in the Garden) and 28 hybrid sustainable events last year to reduce emissions and raise awareness.
- Green Spaces and Events: "Green Heart" garden, mangrove areas, clean-ups, health fairs; Mangrove Forest Planting (April 24, 2024) with 300 saplings and 100 trees in Plot 4 at Bang Khun Thian, involving students/staff/community for ecosystem restoration and GHG reduction (SDGs 11, 13, 14, 15).
- Bike Sharing: 1,500 bikes free via student ID; workshops like Zom-bike and UNI BIKE.
- Community Programs: Over 92 initiatives, including SDG labs, studios, and disaster preparedness (emergency planning, flood prevention, risk mapping, drills).

These foster cultural heritage, biodiversity, and sustainability.

Partnerships and Collaborations

KMUTT partners with diverse entities for sustainable urban initiatives:

- EV and Mobility Partners: Haupcar Co., Ltd., SAIC Motor-CP, MG Sales for EV sharing (10 cars at KX); BMW Group Thailand for studies via MOU; Nissan Motors, FOMM (Asia) for EV research; Dynax Corporation for electric tuk-tuks with in-wheel motors.
- CO2 Tower Support: JGSEE, TRF, Earth System Knowledge Enhancement Project.
- Mangrove Center Donation: Pruksa Real Estate (136 rai land, Chairman Thongma Vijitpongpun).
- Housing Network: Local authorities for Network Dormitory Program (17 off-campus options in Bangmod meeting safety/quality standards).
- Shuttle Services: Building and Ground Management Institute for inter-campus transport.
- Community Events: With artists, schools, organizations for arts festivals, green campaigns, and cultural preservation

These enhance technology transfer and community resilience.

Metrics and Impacts

KMUTT's initiatives yield quantifiable results:

- Cultural Engagement: 25 art activities and 28 cultural events last year, hybrid to minimize emissions.
- Mobility Metrics: Over 8,500 Green Bike Club members (since 2009), targeting 50% bike usage increase (2010-2023); 1,500 bikes; EV fleet: 7 vehicles (3 buses, 2 BYD Atto3, 2 MG ES, 1 FOMM ONE, 1 Nissan Leaf, 2 BMW, 2 PCX Electric); shuttles reduce emissions 12% vs. diesel; 64%+ student usage (+8%).
- Green Buildings: 6 certified (KX 23,773.96 m², UX 5,140 m², BRI, LX, Kosen 7,792 m²) totaling >93,000 m²; features reduce energy/water 32-35%; renewable energy, waste separation.
- Parking and Area: 0.29% parking ratio on 2,564,678.4 m² campus; vertical facility for 470 cars.
- Housing: Dormitories at Bangmod/Bangkhuntien (109-191 rooms), Ratchaburi (46 rooms); utilities 6 Baht/kWh electricity, 17 Baht/liter water; deposits 3,000+100 Baht; Heliconia House (54 rooms).
- Community Programs: 92+ initiatives; mangrove planting (300 saplings, 100 trees); Ratchaburi forest (1,117 rai) with CO2 data.
- Accessibility: 78%+ inclusive facilities (universal design, CCTV, audits for 80+ sites).
- Impacts: Reduced emissions via ZEVs/active mobility; enhanced heritage awareness; ecosystem restoration; student sustainability skills.

These metrics underscore KMUTT's progress in SDG 11, with continuous evaluations.

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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) advances Sustainable Development Goal 12 (SDG 12): Responsible Consumption and Production by integrating sustainable practices into campus operations, procurement, and community engagement, guided by the sufficiency economy philosophy. This fosters a circular economy, reduces waste, minimizes single-use plastics, and promotes resource efficiency. Key initiatives include the municipal solid waste management system (established 2002), "No BIG 4" plastic reduction program (targeting bags, bottles, straws, and spoons/forks by 2020), and events like World Environment Day campaigns. These efforts ensure access to clean water and healthy food while transforming the campus into a living lab for social change agents, aligning with SDG 12 targets such as sustainable consumption patterns, waste reduction, and efficient resource use. This section highlights activities, data, and impacts primarily from 2018 to 2025.

University Policies and Commitments

KMUTT's policies emphasize waste hierarchy (reduction, reuse, recycling, treatment, disposal), sustainable procurement, and environmental stewardship:

- Food and Drinking Water Safety Policy (KMUTT Order No. 0008/2561): Establishes a Food and Drinking Water Safety Working Committee (FOOD SAFETY) to inspect quality, ensuring clean water and healthy food for students and staff, aligned with Safety Policy No. 2/2555.
- Sustainable Procurement Policy: Complies with Ministerial Regulation on Goods and Methods of Procurement (No. 2) B.E. 2020, prioritizing eco-friendly supplies, SMEs, community enterprises, and disability organizations; requires 80% internal personnel for academic services.
- Waste Disposal and Hazardous Materials Policy: Mandates sorting into five categories (food waste to biogas, recyclables to waste bank, non-recyclable to BMA/Nong Khaem Center, toxic/workshop waste managed separately); promotes sufficiency economy for decision-making.
- Plastic Use Minimization Policy (Launched 2015): Achieved "No BIG 4" single-use plastics by 2020; from July 3, 2018, bans plastic bags (except for cooked food) and unsolicited forks/straws; offers 5-baht discounts for personal mugs/containers since 2018.
- Disposable Items Minimization Policy: Encourages source reduction, equipment reuse/repair, recycling via waste bank (e.g., paper, metals, plastics), and compliant disposal.
- Repair Café @ KMUTT Policy: Supports free repairs of household items, bikes, and furniture to extend product life.
- Supplier Extensions: Mandates eco-alternatives (recycled/FSC-certified materials), waste minimization in construction, hazardous waste compliance, and environmental reporting under Green University principles.

These policies are monitored annually through dashboards and sustainability reports.

Research and Publications

KMUTT's research and systems focus on waste management and circular economy practices:

- Municipal Solid Waste Management System (Since 2002): Developed by EESH Center and Building & Grounds Division; includes segregation, collection, utilization, and annual monitoring via daily records and dashboards. Outcomes: Supports circular economy by diverting waste from landfills; tracks five waste streams since 2006.
- Sustainability Reports (Annual since 2025): Detail ESG performance, waste data via infographics; accessible online, aligning with SDG reporting.
- Learning Exchange Building (Opened October 2019): LEED-rated design using recycled (R), local (L), and green/eco-labeled (G) materials to promote sustainable architecture for well-being and productivity.

No additional specific publications post-2020 are detailed, but systems inform behavior change and reduction targets.

sustainable.kmutt.ac.th/goals12

Outreach and Community Engagement

KMUTT conducts regular outreach to promote responsible consumption through education and events:

- Workshop on Basic Electricity Usage and Smart Systems (August 16–17, 2025): Academic Electricity Club event for 60+ participants; covered programming, measurements, visualization; promoted reusable bottles for plastic reduction.
- Waste Separation at Graduation Ceremony (August 8, 2025): Sustainability Committee guided disposal for Academic Year 2023, advancing Sustainable Event concepts.
- KMUTT First Date 2025 Orientation (July 20, 2025): Student Government encouraged reusable containers and waste sorting.
- World Environment Day 2025 (June 5, 2025): EESH Center's "Beat Plastic Pollution" exchanged 12.7 kg waste (11.5 kg plastics) for plants; follow-up June 30, 2025.
- Green Hero Kids Activity (World Environment Day 2025): ESS Master's with EESH, ALS Lab, To Be Number One Club; taught waste sorting/recycling to Benjasuk Community children.
- All About Waste Campaign (May 15–18, 2025): With BMA at Benchakitti Park; workshops on terrariums, textile art, dishwashing liquid.
- Sustainable Christmas Tree (2024): Repurposed 25 kg plastic bottles, 30 kg cups, and other waste into decorations.
- Loy Krathong 2024 (November 17, 2024): Eco-krathongs; 1,457 used, 997 reusable (68.4% reduction); natural materials from Phutthabucha farmers.

Events occur ~5 times/year via exhibitions/trainings; "Say No to Single Use Plastic" campaign since 2018.

Partnerships and Collaborations

KMUTT collaborates with internal/external entities for sustainable practices:

- Food Safety Committee: Advisors like Asst. Prof. Dr. Tippawan Pinvanichkul, Assoc. Prof. Dr. Chaowalit Limmaneevichitr.
- Waste Management: BMA for disposal; Nong Khaem Solid Waste Center.
- Repair Café @ KMUTT: Suanthon GoldCity Cycling Club, Green Cycling Club, KMUTT Cycling Club, Dept. of Electrical Technology Education, Innovation Engineering Co., Ltd.
- Green Hero Kids: ALS Laboratory Group (Thailand) Co., Ltd., To Be Number One Club (Bangchak Phra Pradaeng Community).
- All About Waste: BMA, Green Heart student network.
- Loy Krathong: Phutthabucha community farmers.
- Suppliers/Contractors: Eco-compliance in construction/renovation for material reuse.

These partnerships enhance waste diversion and circular initiatives.

Metrics and Impacts

KMUTT's efforts yield measurable progress in waste reduction and circularity:

Waste Category (2024–2025)	Quantity (kg/year)	STEM
Total Generation	563,545	100%
Recycled/Reused	114,891	20.39%
Organic	191,770	34.04%
Non-Recycled	225,092	39.94%
Toxic	3,453	0.61%
Non-Recycled Workshop	28,339	5.03%

- Recycled Materials (Waste Bank): Paper 57,449 kg (50.14%), Metal 31,215 kg (27.22%), Plastic 19,780 kg (17.25%), Glass 6,184 kg (5.39%); 218 kg for student activities.
- Per Capita Waste (kg/person/year): 2006: 35.84 (peak); 2021: 9.73 (lowest); 2023: 32.89; 2024: 35.43; 2025: 31.04 (51.90% reduction from 2006).
- Repair Café: 500+ bike stands from pipes; 75 bikes repaired/donated; 121 restored for sharing; 145 chairs/desks repaired; 120 recycled for workshops.
- Event Metrics: World Environment Day 2025: 12.7 kg waste collected; Loy Krathong 2024: 68.4% reduction (997/1,457 reusable krathongs).
- Key Rates: Waste diversion 62% (+9% YoY); single-use plastic reduction 48% (YoY); sustainable procurement 38% (+6%).
- Building Impacts (Learning Exchange, 2019): Used R/L/G materials for LEED compliance.

These metrics highlight KMUTT's role in SDG 12, with annual tracking since 2002 ensuring continuous improvement.

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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) has established a comprehensive Greenhouse Gas (GHG) Emissions Reduction Program as part of its strategic roadmap toward achieving Carbon Neutrality by 2040, aligning with Thailand's Net Zero 2065 target and the United Nations Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 7 (Affordable and Clean Energy). The program integrates carbon management practices across energy generation, building design, waste management, transportation, and research activities, focusing on mitigation (reducing emissions) and adaptation (enhancing resilience) strategies, supported by monitoring, reporting, and verification (MRV) systems. KMUTT recognizes universities' role in shaping a low-carbon society through knowledge creation and innovation. The Carbon Neutrality 2040 initiative positions KMUTT as a leader among Southeast Asian universities in climate action, with a declaration of intent announced on November 2, 2021, committing to net-zero emissions 25 years ahead of national targets.

University Policies and Commitments

KMUTT's key policies and commitments include:

- Carbon Neutrality by 2040: A strategic roadmap emphasizing five action areas: Energy Transformation (increasing renewable energy share and efficiency), Sustainable Infrastructure (expanding green building standards), Carbon Management System (developing carbon accounting tools), Offset Mechanisms (promoting reforestation and soil carbon storage), and Education and Awareness (integrating sustainability into curriculum).
- Zero Waste to Landfill Policy: Implemented through waste segregation, recycling, composting, and conversion of organic waste into biogas or fertilizer, with hazardous waste handled via certified processes.
- Green Building Standards: Adherence to LEED and TGBI standards in buildings like Learning Exchange (LX), Utility Exchange (UX), Knowledge Exchange (KX), and Bioprocess Research and Innovation (BRI), incorporating energy recovery systems, natural ventilation, radiant cooling, and green roofs.
- 100% Renewable Electricity Consumption by 2040: Supported by solar photovoltaic (PV) systems and smart energy monitoring.
- Low-Carbon Transportation: Promotion of electric shuttle buses, carpooling, bicycle-sharing, pedestrian walkways, and EV charging stations.
- Energy Management System (EnMS): Integrated for efficient energy use and behavioral changes.
- Membership in RE100 Thailand Club (initiated by Federation of Thai Industries), Thailand Carbon Neutral Network (founded by Thailand Greenhouse Gas Management Organization), and global "Race To Zero" campaign.

Research and Publications

KMUTT engages in research-based carbon management with outputs including:

- Projects on carbon capture, utilization, and storage (CCUS), biochar applications, and mangrove forest carbon sequestration modeling under the KMUTT Carbon Sink Initiative, collaborating with local communities and governmental agencies for coastal ecosystem restoration.
- "Greenhouse Gas Emissions from Low Income House Construction in Thailand" study applying Life Cycle Assessment to calculate construction-phase emissions.
- "Development of Thailand's Air Pollutants and Greenhouse Gases (GHGs) Emission Inventory and Projection for Air Quality Simulations and Future Energy Related Emission Reduction Assessment (Phase VII)": Develops emission inventories for air quality models, assessing ozone and haze pollution, evaluating mitigation options for energy sectors, and supporting Pollution Control Department (PCD) policy formulation (outputs used since at least 2018).
- "Estimation of Emission Reduction Potential of Air Pollutants from the Transportation Sector in Thailand": Analyzes pollution from transportation and mitigation via Euro 5/6 standards, results submitted to Ministry of the Environment of Japan (ongoing since at least 2018).
- "Precipitation Modeling in Greater Bangkok with Impact of Urbanized Land Cover and Air Pollution using WRF-Chem-UCM -GBK": Configures modeling system for precipitation events (EV1 summer, EV2/3 wet season), evaluating urban physics and emissions effects, with recommendations for future work (conducted prior to 2025).
- "Bilateral Cooperation Between Japan and Thailand on Air Quality Improvement for Thailand": Synthesizes outcomes from Japan-Thailand Clean Air Partnership (JTCAP) Phase I (2018-2019), focusing on air quality enhancements.
- Support for research in seven topics: Bioeconomic, Smart Manufacturing and Construction, Sustainable Energy and Environment, Sustainable Mobility, Smart Healthcare, Digital Transformation, and Innovative and Creative Learning Society, with funding guidance and principal investigator support.

Outreach and Community Engagement

KMUTT conducts various events and campaigns:

- Energy Conservation Training: On September 1, 2025, EESH organized a workshop on "Simple Energy Conservation Techniques and Dissemination of the Energy Management System at KMUTT" (1:00–4:00 p.m., LX Building Auditorium), delivered by Mr. Natthawat Wisaiprom, focusing on efficient practices and behavioral changes.
- Carbon Footprint Workshop: On August 20, 2025, "Carbon Footprint GO GREEN Together" at Chetupon Commercial College, in collaboration with EESH, featured speakers Mr. Natthawat Wisayaprom, Mr. Apichart Thammajarn, and Ms. Naiyarat Wongwet, including carbon calculation and GHG reduction activities.
- Orientation Event: "KMUTT First Date 2025" on July 20, 2025, promoted waste reduction by encouraging reusable items and waste separation.
- World Environment Day 2025: On June 5, 2025, "Beat Plastic Pollution" campaign exchanged 12.7 kg of waste (11.5 kg plastic bottles, 1.2 kg mixed) for potted plants, with a follow-up on June 30, 2025; achieved 48% plastic reduction year-over-year.
- AGRI-PV Seminar: On April 24-25, 2025, at KX Building and Bangkhuntien campus, collaborated with NSTDA, Forschungszentrum Jülich (Germany), RMUTL, NRCT, MHESI, PMU-B; topics included solar PV-agriculture integration, with presentations by Assoc. Prof. Dr. Suvit Saetia, Prof. Dr. Navadol Laosiripojana, and others.
- Nature and Environmental Conservation Camp (ENVI-SCI #3): March 15–16, 2025, at Sai Yok Integrated Rural Development Center, featured sustainable agriculture, biomass composting, and tree-planting, opened by Asst. Prof. Dr. Nakharin Patanaboonmee.
- Loy Krathong 2024: November 17, 2024, under "Festival of Water: Crafting a Culture of Sustainability," used 1,457 eco-friendly krathongs (997 reusable, 68.4% waste reduction), in collaboration with Phutthabucha community.
- Fsci-Innovation #1 Competition: October 5, 2024, themed "Green Heart," included EESH workshop on environmental solutions.
- Multicultural Event: January 31–February 2, 2025, at Chalermprakiat Sports Center, shared energy and environment knowledge via GREEN HEART student leaders.
- Energy Awareness Training: December 11, 2024, "Participatory and Sustainable Energy Management in Organizations" by EESH and Innovation Technology Co., Ltd.
- Initiatives like Zombike (bicycle reuse), Electric Vehicle Bus (Hop On–Hop Off), Electric Motorcycle and Car Charging Stations (at Student Dormitory, KX Building, SEEM, Office of the President, EESH), Bike Sharing/Rental, and PM2.5 alerts when levels exceed 50 mg/m^3.

Partnerships and Collaborations

- Government and Agencies: Collaborations with Pollution Control Department (PCD) for emission inventories; Ministry of the Environment of Japan for transport emissions; NSTDA, RMUTL, NRCT, MHESI, PMU-B for AGRI-PV; Office of Natural Resources and Environmental Policy and Planning for environmental assessments.
- International: Forschungszentrum Jülich (Germany) for AGRI-PV; bilateral Japan-Thailand Clean Air Partnership (JTCAP) Phase I (2018-2019).
- Industry: Partnerships with Delta Electronics (Thailand) for EV chargers; Betagro Public Company Limited, IRPC Public Company Limited, Siam Cement Public Company Limited for research.
- Networks: RE100 Thailand Club, Thailand Carbon Neutral Network, Race To Zero.
- Community: Local communities for mangrove restoration (Carbon Sink Initiative); Phutthabucha for Loy Krathong materials; Thung Khru Community for multicultural events.
- MOUs and projects include University to Community and Society initiatives since 1982, Social Labs for fieldwork, and 67 industry partnerships for knowledge transfer.

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.



2024-2025 Recap

Metrics and Impacts

- GHG Emissions: Base year 2019 total 16,720 tons CO_2 (94% from electricity); targeted net-zero by 2040.
- Renewable Energy: Installed solar PV capacity >300 kW across Bangmod, Bang Khun Tein, and Ratchaburi campuses (15 sets total); aiming for 100% renewable electricity by 2040.
- Waste Management: 62% waste diversion rate; Zero Waste to Landfill with biogas/fertilizer from organic waste; 12.7 kg waste collected in 2025 Environment Day event.
- Transportation: EV infrastructure with charging stations; zero-emission electric buses and motorcycles; bike-sharing promotes low-carbon mobility.
- Buildings: Green standards in LX, UX, KX, BRI reduce energy use.
- Research Impacts: Emission inventories support national air quality policies; modeling informs urban climate strategies; studies submitted to governments for mitigation options.
- Outreach Reach: Events like workshops (e.g., 2025 trainings) and camps engage students/staff; 8 personnel involved in 2024 government climate disaster planning (e.g., subcommittee roles in Ministry of Higher Education, Science, Research and Innovation; advisors in Thailand Science Research and Innovation).

Metric	Value	Timeframe
Solar Capacity	>300 kW	Current (2018-2025)
Waste Diversion	62%	Ongoing
Plastic Reduction	48% year-over-year	Annual
GHG Emissions (Base)	16,720 tons CO_2	2019
Reusable Krathongs	997 (68.4% reduction)	2024
Event Waste Collected	12.7 kg	2025

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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.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) contributes to Sustainable Development Goal 14 (SDG 14): Life Below Water by conserving and sustainably using oceans, seas, and marine resources through educational programs, research, outreach, and community initiatives. Efforts focus on freshwater ecosystems, sustainable fisheries, aquaculture, tourism, overfishing prevention, and ecosystem restoration, addressing challenges like water scarcity, pollution, and habitat loss. Key activities include water management programs, aquaculture training, mangrove planting, and biodiversity conservation, aligning with SDG 14 targets such as reducing marine pollution, protecting marine ecosystems, and increasing economic benefits from sustainable marine resources.

University Policies and Commitments

KMUTT's policies support marine and freshwater conservation through education, waste reduction, and pollution prevention:

- Educational Programs: Over six programs in irrigation, water conservation, and management, including Water Resources Engineering (Department of Civil Engineering, Faculty of Engineering), Environmental Engineering (Department of Environmental Engineering, Faculty of Engineering), Environmental Technology (School of Energy, Environment and Materials), and Climate Change and Sustainability (Joint Graduate School of Energy and Environment).
- Food Safety Center Policy: Promotes sustainable practices for aquatic products via GMP, HACCP, and ISO 22000 standards, with training on hygiene, risk assessment, and compliance.
- Waste Management Policy: Emphasizes reduction, reuse, recycling, treatment, and disposal of municipal solid and hazardous waste, aligned with SDG 2030.
- Plastic Reduction Program (Launched 2015): Targets "Big 4" single-use plastics (bags, bottles, straws, spoons/forks) for elimination by 2020; achieved 78% reduction by 2021 vs. 2017 baseline; includes "Say No to Single Use Plastic" campaigns, discounts for personal mugs/containers, and ECOLIFE project with 37 shops.
- Single-Use Plastics Ban (July 25, 2018): Prohibits plastic bags (except for cooked food) and unsolicited utensils.
- Paper and Foam Reduction Policy: Encourages two-sided printing, electronic processes, and campaigns to minimize usage.
- Marine Pollution Prevention Policy: Monitors wastewater and manages hazardous waste to minimize impacts on aquatic ecosystems; includes monthly/quarterly water quality checks and biannual hazardous waste collection.

Research and Publications

KMUTT's research advances sustainable water use and marine conservation:

- Khiriwong Small Water Turbines Initiative: Installed over 140 turbines generating >91 kW; developed community master plan for electricity and water management to combat drought.
- Underground Water Bank Project (Since 2017): Uses GIS/satellite imagery to identify sites (e.g., Ban Phueng, Nakhon Phanom; Wang Ham Hae, Kamphaeng Phet; Nong Mamong, Chainat; Chiang Khruea, Sakon Nakhon); recommends AGS-standard groundwater analysis.
- EEC&C Research Group: Fieldwork on sustainable aquaculture framework to prevent Gulf of Thailand eutrophication; funded by UK Biotechnology and Biological Sciences Research Council at Song Nam Chaipattana Farm, Chachoengsao.
- Irrawaddy Dolphin Conservation: Molecular biology, genetic markers, and eDNA studies in Thailand/Indonesia to identify feeding areas, reduce overfishing, and establish conservation zones.
- Tilapia Farming Bacterial Communities: Research on closed recirculating systems with vegetable cultivation.
- Solar-Powered Water Quality Monitoring Buoy: For real-time saltwater intrusion in Khlong Bangmod.
- IoT in Solar-Powered Water Systems: For efficient irrigation and pollution prevention.

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- Stone Licking Fish Breeding (Since 2016): Bred/released 30,000 fish into Mang River (Nan Province, 11,000 THB budget); RAS system for tilapia (10 m^3 experimental, 500 L community sets) with bio-filter/hydroponics wastewater treatment.
- Mangrove Planting: 4,999 saplings in Samut Sakhon as part of 200,000-mangrove project.
- Workshops: "Application of Molecular Techniques and Bioinformatics for Wastewater Treatment" (June 17–20, 2024) with NSTDA; "Show & Share Atmospheric and Ocean Models for Coastal Conservation" (June 4–5, 2025) with MOU signing to Sakon Nakhon Rajabhat University.

Outreach and Community Engagement

KMUTT engages communities through training, camps, and conservation activities:

- Environmental Genetic Sequencing Training: For sustainable aquaculture/water quality at KPR Building, Klong Khuean Development Center (Royal Initiative); part of Thailand-UK project with EEC&C, Newcastle University, BBSRC.
- Lifelong Learning Course: "Developing Aquaculture Potential for Smart Agriculture" for 50 farmers/entrepreneurs (free).
- Fish Survey in Ban Huai Phak River Basin: Involved 50 local students (Girls' Journalist Group School 2, Ban Huai Phak School) and 24 KMUTT engineering students with mentors from Silpakorn University, Rajamangala University of Technology Tawan-ok, Save Wildlife Thailand, Natural History Park.
- ENVI-SCI #2 Camp (April 20–21, 2024): At Marine Science and Conservation Center, Samaesan, Sattahip (Chonburi); 75 participants (faculty/students); activities: diving training, coral biology, nursery building, ecosystem dives, sea turtle conservation.
- Mangrove Planting: 700 saplings on May 22, 2023, at Phanthai Norasing, Samut Sakhon (2,869 kg CO_2 reduction); "Volunteer Ants for Mangrove Conservation" for International Biodiversity Day.
- Open House, Open Khlong, Open Bangmod: With Thung Khru District Office; food festival, boat races, eco-compost demos, water conservation seminars.
- Campaigns: "Not Throw Garbage into Bang Mot Canal" with Thung Khru and bike club; waste-trapping buoy at Wat Chak Daeng; coastal cleanups, biodiversity seminars.

Partnerships and Collaborations

KMUTT collaborates with government, academia, and communities for marine initiatives:

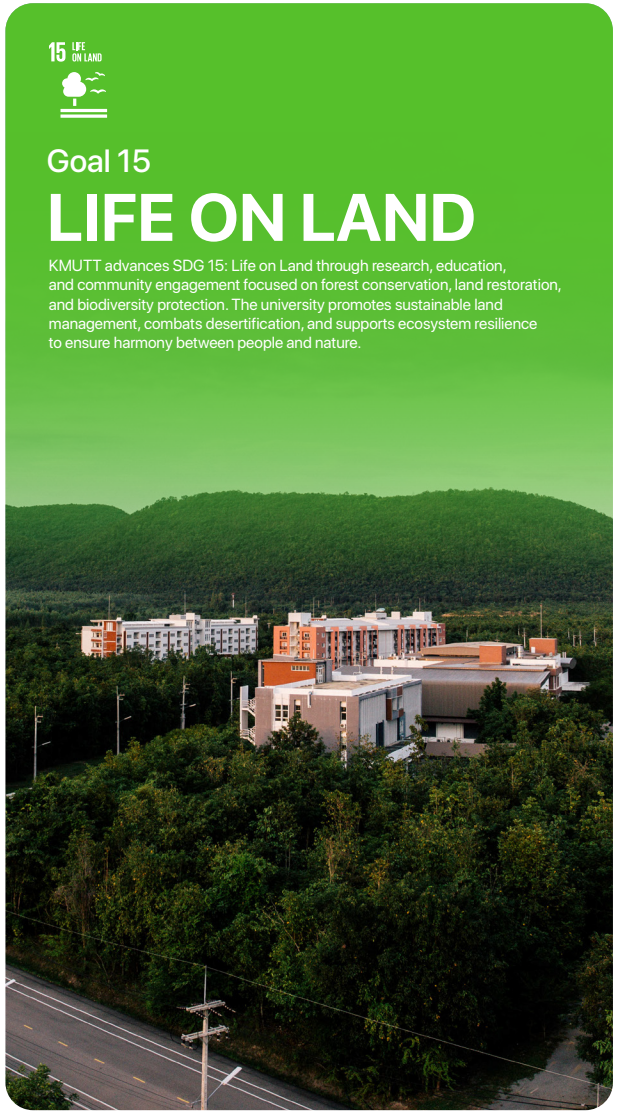
- Khiriwong Project: With local officials, technical students, Phatthalung energy officer (Mr. Arun Inthasara).
- Stone Licking Fish: With Promotion Center, Royal Project Foundation, Bo Kluea Tai Subdistrict Municipality, Rajamangala University of Technology Lanna Nan, communities (Ban Bo Luang, Ban Pha Khab, Ban Nakok).
- MoU with Phetchaburi Municipality/Phra Nakhon Khiri Community (September 2, 2025): For sustainable waste management/energy in Upper Gulf coastal area; handed over learning center.
- Workshops: NSTDA, Tokyo University of Agriculture and Technology, Universiti Malaya, National University of Singapore; Sakon Nakhon Rajabhat University MOU (2025).
- Dolphin Research: Government/academic institutions in Thailand/Indonesia.
- ENVI-SCI Camp: Marine Science and Conservation Center.
- Mangrove Project: VNU Exhibitions Asia Pacific Co., Ltd., Innolab Co., Ltd.

Metrics and Impacts

KMUTT's efforts deliver measurable conservation outcomes:

- Water Turbines: >140 installed, >91 kW generated in Khiriwong.
- Fish Releases: 30,000 stone licking fish since 2016.
- Mangrove Planting: 4,999 saplings (Samut Sakhon); 700 in 2023 (2,869 kg CO_2 reduction).
- Plastic Reduction: 78% by 2021 vs. 2017.
- Participant Engagement: 75 in ENVI-SCI #2 (2024); 74 in fish survey (50 local + 24 KMUTT students).
- Water Monitoring: 31 sites (+6%); parameters: pH, SS, BOD, TKN, COD, FOG, heavy metals.
- Hazardous Waste: ~12 tons/year; 18 liquid/5 solid categories since 2007.
- Broader Impacts: 20% increase in coastal cleanups (24 events); 5 blue carbon pilots; enhanced aquaculture productivity, reduced eutrophication risks, protected habitats.

These metrics demonstrate KMUTT's progress in SDG 14, with ongoing monitoring for sustained impact.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) actively supports Sustainable Development Goal 15 (SDG 15): Life on Land by protecting, restoring, and promoting sustainable use of terrestrial ecosystems, halting biodiversity loss, combating desertification, and managing forests sustainably. Key focus areas include mangrove conservation and restoration, green campus development, native species promotion, invasive species control, sustainable agriculture, biodiversity monitoring, and community engagement. KMUTT transforms campuses into living laboratories for ecological restoration, operates the Native Honeybee and Pollinator Research Center (Bee Park), and advances the Bio-Circular-Green (BCG) Economy model. The university targets carbon neutrality by 2040 through forest carbon sequestration and has increased green space coverage to over 35% (a 3% rise), while restoring 14.5 hectares of land (a 9% increase). These efforts integrate biodiversity into education, research, operations, and outreach, preventing negative impacts on ecosystem integrity and supporting Thailand's sustainability goals.

University Policies and Commitments

KMUTT demonstrates strong institutional commitment to terrestrial biodiversity and land restoration:

- 2025 Biodiversity Promotion and Restoration Policy (announced September 2, 2025, during the 23rd Occupational Safety Week): Mandates environmental quality planning, conservation zone designation, pollution control, ecological restoration, biodiversity integration into education/research/community service, external collaborations, value creation from biodiversity, and natural resource awareness.
- Green & Clean Campus Policy: Develops a 136-rai area in Tambon Phanthai Norasing, Samut Sakhon, into a mangrove conservation zone, learning center, and net-zero facility; promotes native species landscaping and invasive alien species phase-out.
- Single-Use Plastics Ban (effective May 2021 for foam containers and thin bags): Part of broader plastic reduction since 2015, with recycling targets of 50%+.
- Hazardous Waste Management (EESH system since 2007, ESPReL standard): Segregates and properly disposes of waste to prevent land contamination.
- Sustainable Food and Agriculture Policy: Allocates campus areas for ecological farming (vertical gardening, hydroponics, organic fertilizers); uses produce in cafeterias and promotes community self-reliance.
- 13th Strategic Plan (2022–2026): Incorporates BCG model for sustainable agriculture, biodiversity conservation, and innovation.

These policies ensure measurable progress toward halting land degradation and biodiversity loss.

Research and Publications

KMUTT's research emphasizes practical biodiversity conservation and sustainable land use:

- Native Honeybee and Pollinator Research Center (Bee Park, Ratchaburi, established 2008): Studies bee behavior, diversity, climate impacts; develops smart hives (beeconnex app with Department of Computer Engineering); produces high-value "BEESANC" honey; transfers technology for stingless bee farming and income generation.
- Agricultural Technology Transfer Research Center (CTAR): Conducts farmer-involved research for Reskill/Upskill/Newskill, promoting lifelong learning and productivity.
- Mangrove Ecosystem Research: Uses drones/sensors for species inventories, animal monitoring, and water quality assessment at Phanthai Norasing.
- Chemical-Free Lettuce Cultivation Project (Ratchaburi): Hydroponic system with ceramic tiles; minimizes chemicals/water; serves as living lab and employs people with disabilities.
- Biodiversity Monitoring: IoT sensors, native tree zones, biodiversity corridors; collaborations on bio-cement panels for soil salinity/water retention.

These initiatives generate actionable knowledge for ecosystem restoration and sustainable agriculture.

Outreach and Community Engagement

KMUTT conducts extensive outreach to promote land ecosystem conservation:

Mangrove Planting Events:

- December 21, 2022: 7,010 trees with VNU Asia Pacific.
- March 22, 2024: 730 trees ("Forest Love").
- March 27, 2024: 200 saplings + 1,200 trees (Plots 3/4).
- February 28, 2024: 480 saplings + 1,800 trees (Plot 4).
- August 6–7, 2023: 50 trees + 2,000 saltwater trees/mangroves (>100 participants).

World Environment Day Campaigns:

- 2024: "Our Land Our Future" with sapling distribution.
- 2025: "Beat Plastic Pollution" and "All About Waste" workshops.

Sustainable Food Initiatives: "Because We Care Valentine" organic vegetable growing; dorm/community gardens yielding >200 kg annually; seed/vegetable donations to 15 communities during COVID-19.
Bee Park Training: Hollow/stingless bee keeping, honey product development for farmers and underprivileged children.
Educational Programs: Mangrove Learning Center tours/ecosystem studies; Dry Dipterocarp Forest camps (species identification, conservation planning); Hazardous Waste Management Training (twice yearly, 1-day intensive with certificates).
Green Volunteer Program: Engages >400 students annually in conservation activities.

These programs foster behavioral change and community-led restoration

Partnerships and Collaborations

KMUTT collaborates widely to amplify SDG 15 impacts:

- VNU Asia Pacific: Major mangrove reforestation partner (7,010 trees in 2022).
- Satun UNESCO Global Geopark: Geoscience education and biodiversity knowledge sharing.
- Department of Water Resources, Mahidol University, Akara Resources, CP Group: Bio-cement panels for soil improvement.
- Royal Project Development Centers (Chiang Mai): Soil/water management, off-season crops.
- Big Trees Foundation: Urban forest database and ecology research.
- Bangkok Metropolitan Administration: World Environment Day waste campaigns.
- Local Communities and Farmers: Bee farming technology transfer, agricultural training via CTAR.

These partnerships enhance technology dissemination and large-scale restoration.

Metrics and Impacts

KMUTT achieves tangible results in terrestrial ecosystem protection:

Category	Metric
Mangrove Reforestation	>13,000 trees/saplings planted across multiple events (2022–2024)
Green Space Coverage	>35% of campus (3% increase)
Restored Land	14.5 hectares (9% increase), including 2.4-hectare Urban Forest (3,000 trees)
Organic Vegetable Production	>200 kg/year from dorm/community gardens
Plastic Waste Reduction (2018–2024)	Bags: 48%; Spoons/Forks: 62%; Straws: 53%; Cups: 47%; >50% recycled
Water Recycling	65,000 m^3/year for non-potable uses
Hazardous Waste Management	~12 tons/year properly segregated/disposed (18 liquid + 5 solid categories)
Bee Farming Impact	Farmers earn 1,000–1,500 THB/kg honey; supports underprivileged education
Community Reach	Seed donations to 15 communities; >400 student volunteers/year

These outcomes demonstrate KMUTT's leadership in biodiversity restoration, sustainable land management, and community empowerment for SDG 15.

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2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) promotes peaceful, inclusive societies for sustainable development, provides access to justice for all, and builds effective, accountable, and inclusive institutions. This aligns with SDG 16 through inclusive governance, anti-corruption measures, stakeholder engagement, academic freedom, and transparency initiatives. Key elements include elected representation on the University Council, a Code of Conduct (promulgated 2011), Integrity and Transparency Assessment (ITA) with a 2025 score of 94.41 (Level A), and policies emphasizing honesty, morality, ethics, and professionalism (announced February 4, 2019). The Anti-Corruption Action Plan (2019–2022) creates a culture of honesty, supporting Thailand's National Strategy on Anti-Corruption Phase 3. KMUTT supports academic freedom via Outcome-Based Education Module (OBEM) guidelines and Regulations on Undergraduate Studies (B.E. 2557, 2014).

University Policies and Commitments

KMUTT implements robust policies for ethical governance, transparency, and inclusion:

- Inclusive Governance Structure The University Council includes elected representatives from faculty, staff, and students, ensuring diverse voices in policy formulation, transparency, and checks and balances.
- Code of Conduct (2011) Establishes 10 ethical principles covering morality, fairness, academic integrity, responsibility, resource protection, compliance culture, confidentiality, conflict avoidance, and workplace safety. Violations trigger penalties ranging from admonishment to serious disciplinary actions (e.g., for bribery, harassment, or confidentiality breaches).
- Anti-Corruption and Transparency Framework Seven measures: public information dissemination, stakeholder participation, transparent procurement, complaint handling, bribery prevention, conflict-of-interest safeguards, and discretion monitoring. Supported by the 2019 Administration Policy on honesty/transparency and Daily Management tool (2021–2023)
- for integrity in operations.
- Stakeholder Participation Policy Promotes input through announcements, feedback channels (boxes, call centers, website/email), and annual reporting. Example participation model:

No.	Mission/Task	Target/Stakeholders	Form of Participation	Undertaker
1	Graduate Production & Teaching	Entrepreneurs, Alumni, Private Sector	Meetings, Opinion Polls	Faculties/Education Development
2	Student Orientation	Alumni, Parents	Meetings	Faculties
3	Research/Academic Services	Research Users	Performance Appraisal, Polls	Faculties/Institutes
4	Academic Service to Society	Communities, Networks	Activities, Feedback	Relevant Departments
5	University Service	External Experts, Alumni	Committees, Meetings	Relevant Departments
6	Volunteer Activities	Personnel, Communities	Participation, Feedback	Relevant Departments

- Academic Freedom and Research Ethics Protected via OBEM guidelines, undergraduate regulations, and Issue 2 (2024) policy on plagiarism/peer review. Human Research Ethics Training provided regularly.

These policies foster accountable, transparent, and participatory institutions.

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Research and Publications

KMUTT advances SDG 16 through policy-oriented research and knowledge dissemination:

- Thailand-China Climate Collaboration 26 projects, 199 publications, >100 researchers, and 15 PhDs focused on monsoon patterns, extreme events, land surface processes, and applications.
- JGSEE Disaster and Climate Research Frameworks for earthquakes, tsunamis, landslides, floods, droughts, storms, heat waves, ecosystem impacts, and urban water security.
- Environmental Innovation Research 2023 PhD dissertation on titanium dioxide coatings achieved 33% acetaldehyde reduction; multiple ISI/Scopus publications on VOC degradation, N-doped TiO_2 synthesis, and methylene blue decomposition.
- Strategic Planning Outputs 13th Strategic Plan (2022–2026) and HR roadmap (2017–2036) developed through participatory seminars.

These contribute to evidence-based policy and institutional strengthening.

Outreach and Community Engagement

KMUTT engages stakeholders through training, surveys, and community programs:

- Ethics and Compliance Training Asset use compliance (November 2022), Daily Management/PDCA workshops (March 2024), Research Ethics (September 2024, 480 participants), ITA knowledge seminar (May 2025, 140+ participants).
- Stakeholder Surveys Annual External Integrity and Transparency Assessments (EIT) for 2024–2025, collecting feedback from alumni, students, companies, and agencies.
- Community Innovation Initiatives Satun Community Innovation Center (5+ years) trained 130+ facilitators, created opportunities for 150+ residents. Soft power symposium (May 2024), blended learning workshops (50 schools), and strategic plan brainstorming (July 2022, >200 participants).
- Local Development Projects Pilot evaluations in regions (March 2024), UNESCO Learning City discussions with Satun (July 2024), Ratchaburi learning ecosystem MOU (May 2024).

These activities build trust, participation, and institutional accountability.

Partnerships and Collaborations

KMUTT collaborates extensively for strong institutions and peace:

- **National Policy Roles** → 35 KMUTT personnel served in high-level government positions in 2025 (e.g., Vice Minister of Science and Technology, advisors to NRCT/NSTDA, EEC committees).
- **International and Regional Networks** → Partnerships with 300+ universities/institutes; memberships in AIMS, APHERP, ASAIHL, ASEA-UNINET, AUAP, IAUP. Key collaborations: Thailand-China climate forum (2023), ASEAN Energy & Utilities Digital Week (2021), UDC Spain on community resilience (March 2024).
- **Local Partnerships** → MOU with Bang Nam Phueng SAO (February 2024) for smart city innovation; community enterprises evaluations (e.g., Trongkamon Co., Tawantip Food).

These partnerships enhance policy influence and institutional capacity.

Metrics and Impacts

KMUTT demonstrates measurable progress in SDG 16:

- Integrity and Transparency Assessment (ITA): 94.41 points (Level A) in fiscal year 2025.
- Training and Compliance: 87% ethics/anti-corruption training completion (+12%); 92% policy compliance with SDG 16 (+7%).
- Grievance and Participation: 148 cases resolved (+18%); >200 participants in 2022 strategic seminar; 480 in 2024 ethics workshop.
- Research Outputs: 199 publications from Thailand-China collaboration.
- Open Data and Transparency: 36 datasets published.
- Financial Projections (Strategic Plan No. 13, 2022–2026): State budget proportion decreasing; research/services ≥2.0 million THB/academic personnel; asset rental +30%/year; fundraising +7%/year. Total expenses 3,880–4,820 million THB.

These metrics reflect KMUTT's commitment to accountable, inclusive, and inclusive institutions.



2024-2025 Recap

Introduction

King Mongkut's University of Technology Thonburi (KMUTT) strengthens the global partnership for sustainable development through multi-stakeholder collaborations, policy contributions, joint research, knowledge exchange, and capacity-building initiatives. The university engages government agencies, industry, NGOs, international institutions, and communities to advance all SDGs, with emphasis on technology transfer, data/AI systems, low-carbon transitions, waste management, health security, and equitable education. Key platforms include the Carbon Management Platform for the Eastern Economic Corridor (EEC), zero-waste learning centers, and extensive MOUs. KMUTT hosts major events (e.g., Global Sustainable Development Congress 2024) and integrates SDG 17 into curricula (72.97% of courses relate to environment/sustainability in 2025). These efforts support Thailand's BCG Economy, carbon neutrality by 2050, and net-zero by 2065, while fostering inclusive partnerships at local, national, and international levels.

University Policies and Commitments

KMUTT embeds partnership principles into institutional frameworks:

- Policy Development and SDG Localization: Collaborates with government/NGOs to identify issues, develop strategies, model scenarios, monitor outcomes, and enable adaptive management using research expertise and data systems.
- Carbon Neutrality and Net-Zero Commitments: Aligns with national targets through multi-sector platforms (e.g., EEC Carbon Management Platform) and international networks (RE100 Thailand, Thailand Carbon Neutral Network, Race To Zero).
- Lifelong Learning and Equity: Promotes "OneKMUTT," "Learning Journey," and "Credit Bank" for accessible education; "65 Years of Wisdom: Crafting Sustainable Futures" vision.
- Sustainability Reporting: Publishes annual KMUTT Sustainability Reports (2018–2025, including English versions) for transparency and stakeholder engagement.
- Curriculum Integration: Courses explicitly address partnerships, governance, and multi-stakeholder collaboration (e.g., CET605/CET612 Frontier Technology, DBM530 Digital Governance, EEM6247 Energy Policy, ENV631 Sustainable Design, ESS624 Health Impact Assessment, ESS629 Participatory Processes).

These commitments are operationalized through MOUs, joint projects, and active membership in national/international networks.

Research and Publications (Collaborations)

KMUTT drives collaborative research across disciplines:

- Carbon Management Platform (with NSTDA, TISTR, FTI): Workshops reached 282 participants; 250 enterprises registered.
- Vaccine and Biopharmaceutical Development (with GPO, National Vaccine Institute, SK Bioscience, Greater Pharma): H7N9 influenza vaccine scale-up under $620M Partnerships for a Healthy Region (Australia).
- Agri-Photovoltaics (with Forschungszentrum Jülich, Germany): Net-zero farming integration.
- Materials and Green Technology (with University of Toyama Japan, Xi'an Jiaotong China, Shimadzu Asia Pacific): Sustainable aluminum, non-destructive testing, energy/climate analysis.
- Social Design and Resilience (with Chiba University Japan): Community adaptation to global warming.
- Smart Agriculture (with Turnkey Communication): IoT/AI/robotics for coconut, pomelo, cherry tomato farming.
- Waste-to-Energy/Zero Waste (with Phetchaburi Municipality, Mahidol/Silpakorn/Burapha Universities): Phra Nakhon Khiri Model Learning Center.
- Power Plant Sustainability (JGSEE/STIPI): Public hearings (65 in-person + 130 online participants).

Research courses require external collaboration (e.g., industrial training, cooperative education, dissertations with industry supervision, multi-lab projects).

Outreach and Community Engagement

KMUTT extends partnerships through education, volunteering, and public events:

- Student Volunteering Programs 2024: Focused on social engagement, innovation, quality-of-life improvement via IT access, STEM education, environmental control, clean energy.
- Hackathons and Innovation Challenges: "Hack Hed Dee" for disability solutions (6 finalist teams).
- Conferences and Symposia: CARE Network Symposium 2024 (renewable energy), ICLIST/NCLIST 2024 (150+ attendees, 84 presentations), "Thriving in an Era of Change (Nov 6, 2025).
- Community Learning Centers: RETURN-NA Zero Waste Center; Phra Nakhon Khiri Model; Samut Sakhon Green Industrial City initiative.
- Educational Outreach: School of Architecture/Design network expanded to 31 secondary schools (2025); Presidential Dialogue/Educational Fair 2025 for international lifelong learning.
- Public Hearings and Workshops: Power plant sustainability, carbon management, synthetic biology forums.

Cooperative education and industrial training mandate real-world partnerships (128+ hours minimum).

Partnerships and Collaborations

KMUTT maintains extensive national and international partnerships:

Type	Key Partners	Focus Areas
National	NSTDA, TISTR, FTI, Phetchaburi Municipality, National Vaccine Institute, GPO, Ministry of Labour, National Data Institute, Ratchaburi Province, Samut Sakhon Province, IRPC Technology College, Analog Devices, Thai Toshiba, Aero Group, CEA + 12 universities	Carbon management, vaccines, waste-to-energy, AI/data, safety culture, creative ecosystems, pollution reduction
International	Chiba University (Japan), University of Toyama (Japan), Xi'an Jiaotong University (China), Shimadzu (Asia Pacific), Forschungszentrum Jülich (Germany), CSIRO (Australia), Hainan University (China), Prof. Dr. Lene Lange (Denmark), UNV (Germany)	Social design/resilience, aluminum recycling, agri-photovoltaics, bioeconomy, health systems, academic exchanges
Networks	CaRe Network, ASCN, ISCN, HURS, SUN Thailand, AIMS, Hub Net Zero, RE100 Thailand, Thailand Carbon Neutral Network, Race To Zero	Renewable energy, smart cities, sustainable campuses, net-zero talent development

Over 20 MOUs signed in recent years; active involvement in Australian $620M health partnerships and Japan-Thailand Clean Air initiatives.

Metrics and Impacts

KMUTT's partnerships deliver measurable outcomes:

- Partnership Scale: >20 recent MOUs; 66 projects under Australia's Partnerships for a Healthy Region (KMUTT in 1); 282 workshop participants + 250 registered enterprises (Carbon Platform).
- Event Reach: 150+ attendees/84 presentations (ICLIST/NCLIST 2024); 65 in-person + 130 online (power plant hearing); international delegations (Japan/Taiwan/Indonesia/Australia/EU/US).
- Curriculum Coverage: 2,888/3,958 courses (72.97%) related to sustainability/SDGs in 2025.
- Training Hours: Minimum 128 hours industrial training; 45+ hours/year external seminars; 320 man-hours field practices.
- Broader Impacts: Enhanced industrial competitiveness, vaccine self-reliance, zero-waste communities, green tech transfer, policy influence (national energy/environment strategies), human capital development in AI/cybersecurity/semiconductors/agriculture, and advancement of Thailand's BCG/net-zero goals through multi-sector collaboration.

These partnerships amplify KMUTT's role as a catalyst for sustainable development, fostering innovation, equity, and global cooperation.

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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.

2025 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.



Integrated Water

Water Recycling

King Mongkut's University of Technology Thonburi has established an integrated water reservoir management system to support on-campus water use and reduce dependency on external sources. Rainwater and treated wastewater are reused for purposes such as landscape irrigation, facility cleaning, and building cooling systems. The university's wastewater treatment system, developed through laboratory experiments and research, ensures that reclaimed water meets safety and quality standards for reuse. KMUTT also conducts regular water quality monitoring every 1–2 months to ensure that all treated and stored water maintains high environmental and safety standards.



Green Mobility and Low-Carbon

Transportation System

King Mongkut's University of Technology Thonburi (KMUTT) promotes Green Mobility and Low-Carbon Transportation as part of its commitment to creating an environmentally friendly and sustainable campus.
The university operates a fleet of electric shuttle buses that provide convenient and safe transportation between its campuses, such as Bangmod and Bangkhunthian, for students and staff. These 100% electric vehicles help reduce fuel consumption and significantly lower greenhouse gas emissions. In addition, KMUTT provides electric vehicle charging stations to support the transition toward clean energy transportation.
To further encourage sustainable mobility, the university has developed designated bicycle lanes with clear markings and signage to ensure safety and convenience for cyclists. Through these initiatives, KMUTT continues to promote low-carbon mobility and contribute to a greener, more sustainable future.



Energy and Climate Change

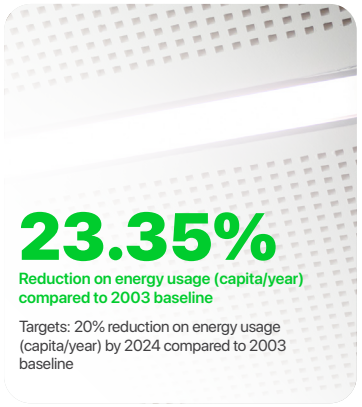
Focus To be affordable and clean energy for smart university by 2024 which related to SDG 7, SDG 13 and SDG 15, by active contribution in energy reduction, implementation of energy efficient appliances,renewable energy usage, climate change and green area expansion.

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.

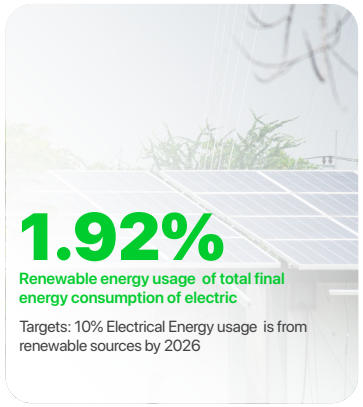
Alongside its energy initiatives, KMUTT recognizes the pressing challenges of climate change and ardently champions sustainable responses to this global concern. The university has undertakencomprehensive studies on climate change impacts, especially focusing on its immediate community and Thailand at 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.

2025 progress



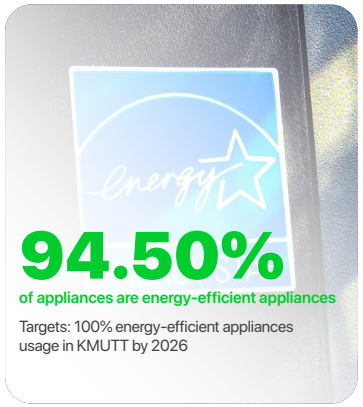
23.35%
Reduction on energy usage (capita/year) compared to 2003 baseline
Targets: 20% reduction on energy usage (capita/year) by 2024 compared to 2003 baseline



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



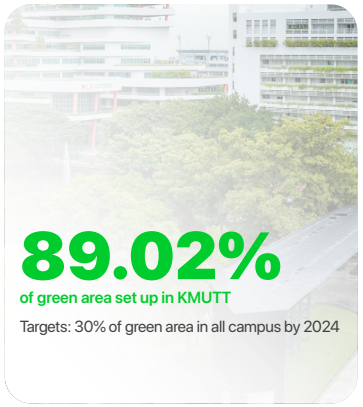
69.19%
Smart building implementation
Targets: 100% Smart building implementation on campus by 2030



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: 30% of green area in all campus by 2024

in 2025

KMUTT Footprint Per Year is 17,853.47 ton

29,163,181.31
Electricity Usage Per Year

Transportation Per Year

0	194.55	201.84

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."

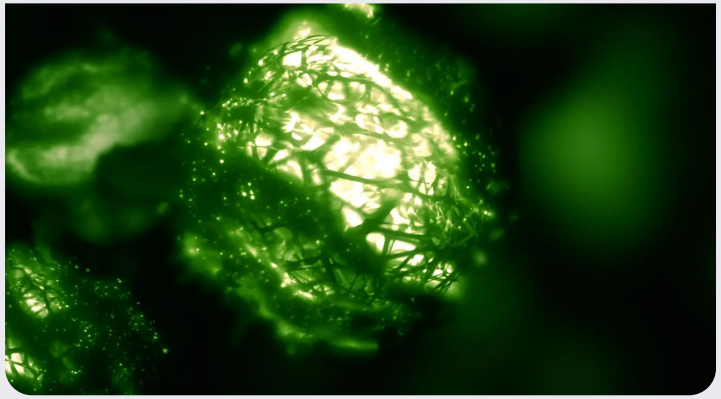
Energy and Climate Change

Research

Development of Microalgae Strains Using Synthetic Biology for Enhanced Carbon Dioxide Capture Efficiency

Prof. Dr. Nuadol Laosiripojana and Dr. Kallyanee Phaithoonrangsi,
Joint Graduate School of Energy and Environment (JGSEE) and BIOTEC-NSTDA

This research focuses on using synthetic biology techniques to develop microalgae strains with significantly improved carbon dioxide (CO2) capture efficiency. The strains are engineered to tolerate high temperatures and elevated CO2 concentrations. The project integrates solar energy technology with photobioreactors and CO2 nanobubble systems to create an efficient, sustainable cultivation platform. The outcome includes high-value bioproducts such as dietary supplements, animal feed, and algae oil, which contribute to climate change mitigation by reducing industrial CO_2 emissions and advancing bio-based economic development.



Activity

Earth Hour 2025

The "Change Agent with Green Heart" activity under the theme "Biggest Hour for Earth" served as a dynamic and inspiring platform to promote environmental awareness and action. Participants engaged in interactive workshops, creative exhibitions, and student innovation showcases that highlighted the importance of energy conservation and sustainable living. Beyond the symbolic one-hour lights-off, the event emphasized the power of individual actions in reducing energy use and protecting the planet. The activities encouraged participants to adopt lasting eco-friendly behaviors such as minimizing waste, using renewable energy, and conserving resources while fostering a sense of shared responsibility toward the environment. The event generated strong enthusiasm and tangible behavioral change among the campus community, reinforcing a culture of sustainability and collective impact toward a greener future.



Green Mobility

Electric Bus

KMUTT has made remarkable progress toward sustainable and low-carbon transportation by launching a modern fleet of 10 electric buses that operate daily, including weekends and holidays, to serve students, faculty, and staff. These electric buses not only provide convenient and reliable transportation but also significantly reduce greenhouse gas emissions and noise pollution on campus. Complementing this initiative, the university has installed multiple electric vehicle charging stations to support the transition toward clean energy mobility. Together, these efforts represent a major step in transforming the university into a model for sustainable transportation, promoting cleaner air, energy efficiency, and an environmentally responsible commuting culture that aligns with global trends toward greener urban living.



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.

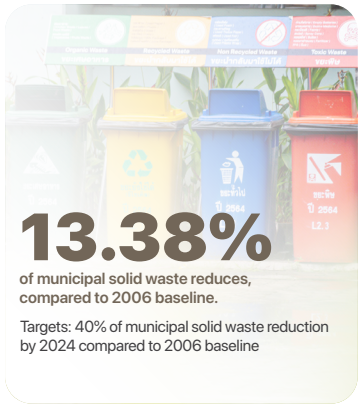
Waste water Quality monitoring
Monitors treated water every 1–2 months to ensure safe reuse and compliance with environmental standards.

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



13.38%
of municipal solid waste reduces, compared to 2006 baseline.
Targets: 40% of municipal solid waste reduction by 2024 compared to 2006 baseline



20.39%
of municipal solid waste are reused and recycled.
Targets: 70% of municipal solid waste are reused/ recycled by 2030



20.42%
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

Development of Biomass Treatment Process for Fractionation and Precipitation of Pure Lignin

Prof. Dr. Navadol Laosiripojana, Dr. Chayanon Chotirotsukon

To address the growing biomass waste crisis, especially from agricultural residues like sugarcane bagasse, rice straw, and palm waste, researchers developed a semi-zero-waste process to extract high-purity lignin using an efficient organic solvent system. This innovative method retains lignin's valuable properties UV absorption and antioxidant activity making it suitable for high-value applications such as UV-resistant bioplastics, natural rubber enhancement, and eco-friendly cosmetics. The approach not only adds significant value to agricultural waste but also reduces greenhouse gas emissions from open burning, aligning with goals for circular economy and zero emissions.



Activity

Turning Waste into Wonder

The KMUTT community turned waste into wonder by building a Christmas tree entirely from donated discarded materials such as plastic bottles, bottle caps, cups, paper bags, old plant pots, and other recyclables. Students and staff joined hands to collect and creatively transform these items into beautiful Christmas decorations and crafts, breathing new life into what would otherwise be trash. This initiative not only reduced waste but also reflected KMUTT's strong commitment to sustainability showing that with creativity and collaboration, even small acts like donating recyclables can inspire positive environmental change. It stands as a shining reminder that festive joy and environmental care can coexist, turning celebration into a meaningful act of sustainability for the planet.



Workshop

Waste Management

In 2025, KMUTT continues to empower Green Heart student leaders to drive behavioral change in waste separation across all faculties. These trained student leaders play a crucial role in promoting sustainable waste management during major campus events, including cultural festivals and academic ceremonies. By applying KMUTT's Speaker Bin Model which emphasizes the principles of Reduce, Replace, and Sort under the 4M framework (Man, Management, Money, and Materials) they guide their peers in proper waste sorting and recycling practices. As a result, more than 300,000 kilograms of recyclable materials were diverted from landfills in 2025, reducing carbon emissions by an estimated 310 tCO_2e and strengthening a culture of environmental responsibility throughout the university community.



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.

2025 progress

31.38%
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 2026 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 2024

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

Wastewater Management Using Constructed Wetlands: A Case Study KMUTT Bang Khun Thian Campus

Mr. Padung Boonpetch, Mr. pornpirom kaewsiri, Mr. payung tumnim

This research implemented a constructed wetland system as part of the water balance system at KMUTT Bang Khun Thian Campus to treat wastewater from all buildings through an anaerobic wastewater treatment plant, followed by water recycling using solar-powered pumps, and finally through a bio-ecological drainage system using constructed wetlands to remove pollutants and reduce peak flow. Monthly water balance analysis demonstrated that the system effectively manages water resources while maintaining water quality standards. The constructed wetland system serves as an environmentally friendly, low-cost wastewater treatment solution that seamlessly integrates with the university landscape while providing practical demonstration of nature-based solutions for water management that can be replicated in other educational institutions and communities.



Activity

Canal Cleanup Initiative

KMUTT has implemented a structured community-based learning initiative that integrates environmental education with civic engagement. Through this program, students actively participated in volunteer-led activities such as cleaning local canals in the surrounding university area. These practical experiences were complemented by educational sessions highlighting the environmental consequences of improper waste disposal and the broader implications for public health and aquatic ecosystems. This initiative aligns with KMUTT's strategic objective to cultivate environmentally literate and socially responsible graduates. By embedding experiential learning within a real-world context, the university encourages students to critically reflect on sustainability challenges and develop problem-solving skills grounded in community awareness. The program not only reinforces the value of environmental stewardship but also supports the development of leadership and ethical responsibility, preparing students to contribute meaningfully to sustainable development at both local and global levels.



Monitoring

Wastewater Monitoring

KMUTT Water Conservation Policy is committed to prevent pollution in waterways with health & safety concern. To achieve clean wastewater in campus by 2020, we have a separated waste water treatment plant at all building. Wastewater monitoring is set up monthly to analyze wastewater quality from effluent. Water quality result have been tested and analyzed according to Industrial Wastewater standard from Central laboratory services, Department of Environmental Engineering, Faculty of Engineering. The example of parameters that affect the quality of water are pH, BOD, COD, TDS and heavy metal. These consistent evaluations ensure compliance with national environmental standards and contribute to long-term ecological health. The policy also promotes awareness among campus users about responsible water use and wastewater disposal practices.



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.

2025 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

18%
of e-vehicle usage in KMUTT by 2024 compared to 2010 baseline

50%
increase in bicycle usage, with more than 8,500 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

Development of Autonomous Electric Bus Prototype with Communication Between Autonomous Electric Bus, People, and Tourists Using Mobile Application and 5G Technology

Associate Professor Dr. Yossapong Laoonual

KMUTT led the development and public road operation of Thailand's first Level 3 autonomous electric bus, equipped with 5G technology in the Ayutthaya Historical Park area. The autonomous bus is designed to carry 20 passengers and operates on a 2.8 km route with four designated pick-up points, using sensors, radar, and GPS for navigation. Passengers book seats via the "5G Auto Bus" mobile application; the bus travels at up to 30 km/h and includes a safety driver on board. This project was funded by the National Broadcasting and Telecommunications Commission (NBTC) and involves collaboration with multiple government and industry partners. The pilot demonstrated both technical and operational feasibility under real city conditions, marking a significant step toward smart mobility, while providing a unique test-bed for evaluating the adoption and social acceptance of autonomous electric vehicles in Thailand.



Activity

Community Cycling

King Mongkut's University of Technology Thonburi organizes Walk and Bike activities to promote sustainable and healthy commuting both within and beyond the campus. Students, staff, and community members join in cycling events that explore nearby neighborhoods, allowing participants to learn about the local community's lifestyle, culture, and environmental context surrounding the university. In addition, KMUTT hosts bicycle maintenance workshops, where university staff and local volunteers share knowledge on repair and safety practices. These initiatives have fostered a strong and lasting bicycle network between the university and nearby communities, strengthening relationships while encouraging a shift toward greener, low-carbon transportation.



Green Mobility

EV Charging Stations

KMUTT actively promotes sustainable mobility through the use of electric vehicles (EVs) and electric shuttle buses for transportation between academic zones, research centers, and service areas within the campus. To support this transition, the university has installed EV charging stations that are accessible to both staff and students, encouraging the shift from conventional fuel vehicles to cleaner alternatives. These initiatives not only reduce carbon emissions and noise pollution but also enhance energy efficiency and environmental awareness among the university community. Through this effort, KMUTT continues to move closer to its long-term vision of achieving Carbon Neutrality by 2040, while serving as a model for sustainable campus transportation in Thailand.



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

13.79%
of courses and subjects in KMUTT are related to sustainability concepts

45.35%
of research fund are dedicated to environmental and sustainablility research

632 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 2025

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

65%

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

Development of an AI predictive model to categorize and predict online learning behaviors of students in Thailand

Dr. Jira Chonraksuk, Assoc. Prof. Surapon Boonlue

This study aimed to develop an AI-based model to categorize and predict online learning behaviors of students in Thailand using data from over 8,000 learners on the Thai MOOC platform. The researchers employed K-means clustering to classify learners into distinct behavior groups and used Decision Tree algorithms to predict future learning outcomes. The model successfully identified three major learner types: highly active, moderately active, and low engagement. Results showed that the predictive system achieved an accuracy rate exceeding 95%. This research contributes significantly to personalized learning design and offers a practical solution for reducing dropout rates in online education environments.



Activity

Presidential Dialogue and Educational Fair 2025: Pioneering KMUTT's Transformation into a Lifelong Learning University

KMUTT held the "Presidential Dialogue and Educational Fair 2025" on August 25, 2568 at the Learning Exchange Building, advancing the vision "65 Years of Wisdom: Crafting Sustainable Futures" to transform KMUTT into a "Lifelong Learning University" through three core systems: OneKMUTT, Learning Journey, and Credit Bank. The event featured keynote addresses from experts in Indonesia, Japan, and Thailand covering lifelong learning and micro-credentials, followed by roundtable discussions among international university leaders and government agencies. An Education Fair simultaneously connected students with representatives from leading universities in Japan, Taiwan, Indonesia, Australia, the European Union, and the United States, expanding educational opportunities and fostering a sustainable future in higher education.



Learning Space

Living Lab

GREEN Living Lab at KMUTT is a hands-on learning space that encourages students to actively participate in sustainability through real experiences. It integrates learning with practical action by engaging students in activities such as renewable energy workshops, waste and water management, ecosystem restoration, and safety and well-being training. Through these experiences, students learn to apply knowledge from multiple disciplines, work collaboratively to solve real environmental and social challenges, and develop essential skills for their future careers. The Lab not only strengthens sustainability learning within the university but also inspires students to become responsible citizens who can create 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.

2025 progress

In 2025

Zero accident in KMUTT compared to 2015 baseline

26%

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.

Health and Safety

Research

American Sign Language Fingerspelling Recognition in the Wild Using Multitask Learning and Spatio-Temporal Feature Extraction

Professor Dr. Wutthipong Khamvilai, Dr. Nutnanun Thutphitakulgul, Dr. Chachawon Harnsakul, Mr. Peerawat Pannatthee

This research project develops an artificial intelligence system for recognizing American Sign Language fingerspelling in real-world conditions using multitask learning combined with spatio-temporal feature extraction techniques. The system aims to accurately detect and interpret fingerspelling gestures from video inputs, which has significant applications for improving accessibility and communication for the deaf and hard-of-hearing community. By utilizing advanced deep learning algorithms and multi-task learning approaches, the system can simultaneously process temporal (motion) and spatial (position) information, enabling robust performance even in challenging real-world environments with varying lighting conditions, backgrounds, and hand sizes. This research received the "Good Level Award" (in the Information Technology and Communication category) at the Thailand Inventors' Day 2024 (Thailand National Research Awards, Fiscal Year 2567) organized by the National Research Council of Thailand (NRCT) under the Ministry of Higher Education, Science, Research and Innovation, with Her Royal Highness Princess Mahachakri Sirindhorn gracing the opening ceremony on February 2, 2568.



Activity

KMUTT SAFETY WEEK

KMUTTheld the "Presidential Dialogue and Educational Fair 2025" on August 25, 2568 at the Learning Exchange Building, advancing the vision "65 Years of Wisdom: Crafting Sustainable Futures" to transform KMUTT into a "Lifelong Learning University" through three core systems: OneKMUTT, Learning Journey, and Credit Bank. The event featured keynote addresses from experts in Indonesia, Japan, and Thailand covering lifelong learning and micro-credentials, followed by roundtable discussions among international university leaders and government agencies. An Education Fair simultaneously connected students with representatives from leading universities in Japan, Taiwan, Indonesia, Australia, the European Union, and the United States, expanding educational opportunities and fostering a sustainable future in higher education.



Award

Health Promotion

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



Carbon Neutrality

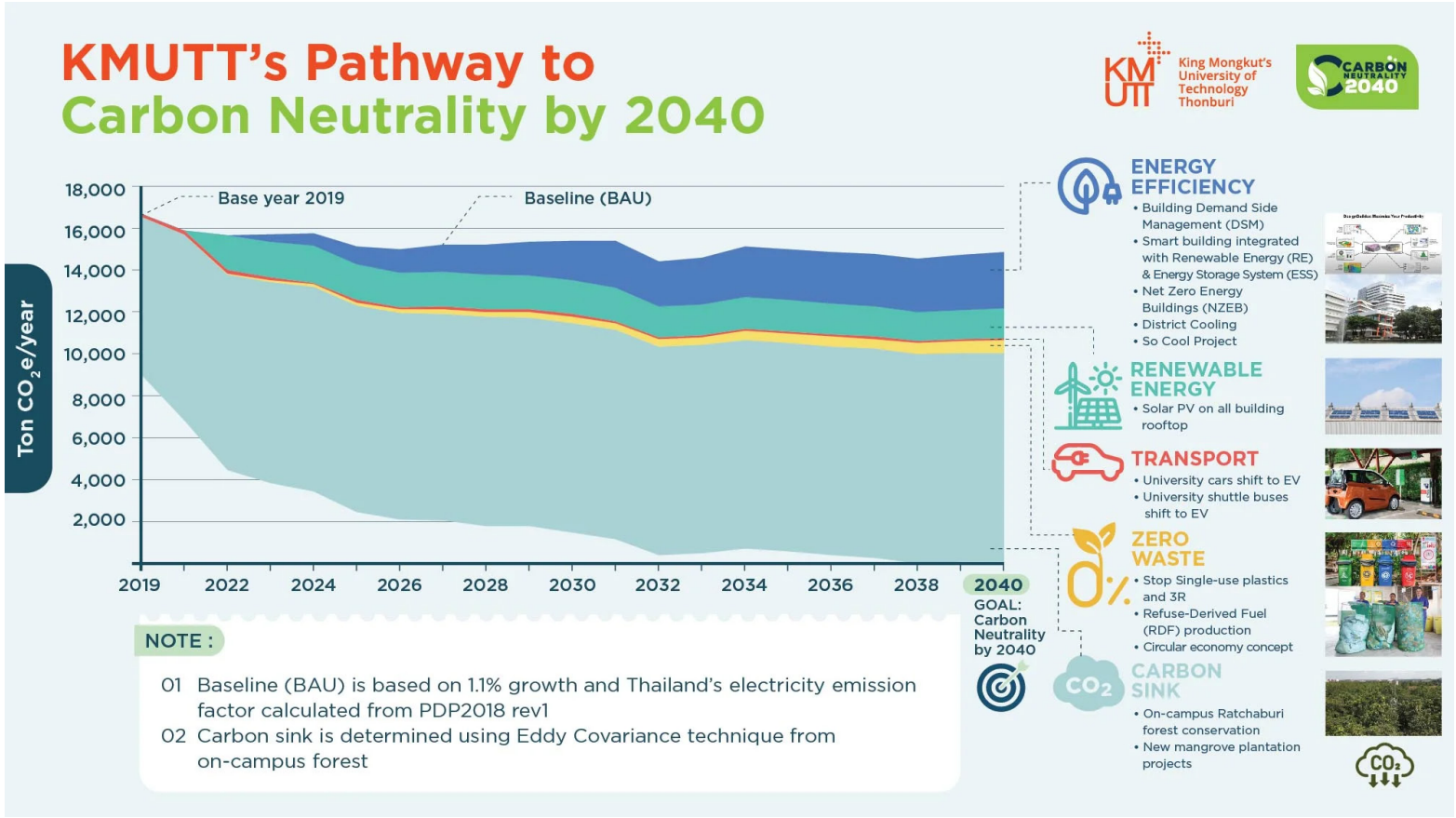
In this section

Goal Roadmap/Pathway
Strategy Plan
Greenhouse gas emission

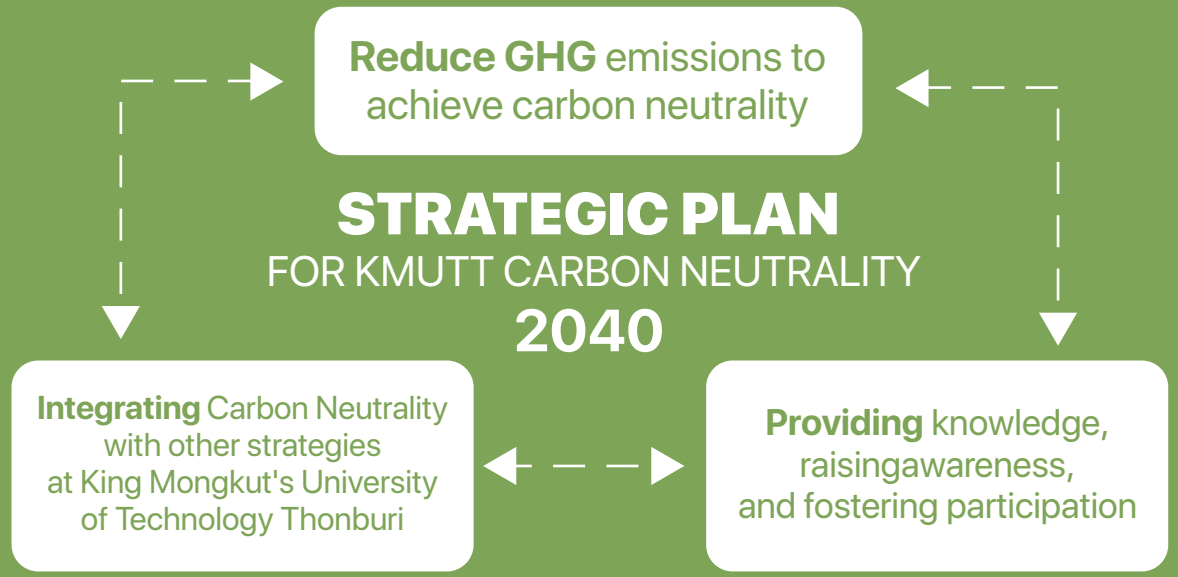


Goal Roadmap/ Pathway

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.

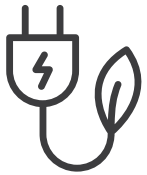
Greenhouse gas emission (ton CO_{2eq})

Scope	2019	2020	2021	2022	2023	2024	2025*
Scope 1[a]	286	322	186	193	309	1,949	1,090.15
Scope 2	15,744	13,772	10,878	14,420	14,931	15,266	9,568.19
Scope 3[b]	690	428	827	431	751	628	323.98
Total	16,720	14,522	11,891	15,044	15,991	17,843	10,982.32



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
*The value for 2025 represents the total from Q1–Q3.
[c] Scope 3 includes water use and waste disposal
[d] Waste data is based on Bangmod only

Green Heart

In this section

Green Heart Leadership
Policy
Green Heart Development



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

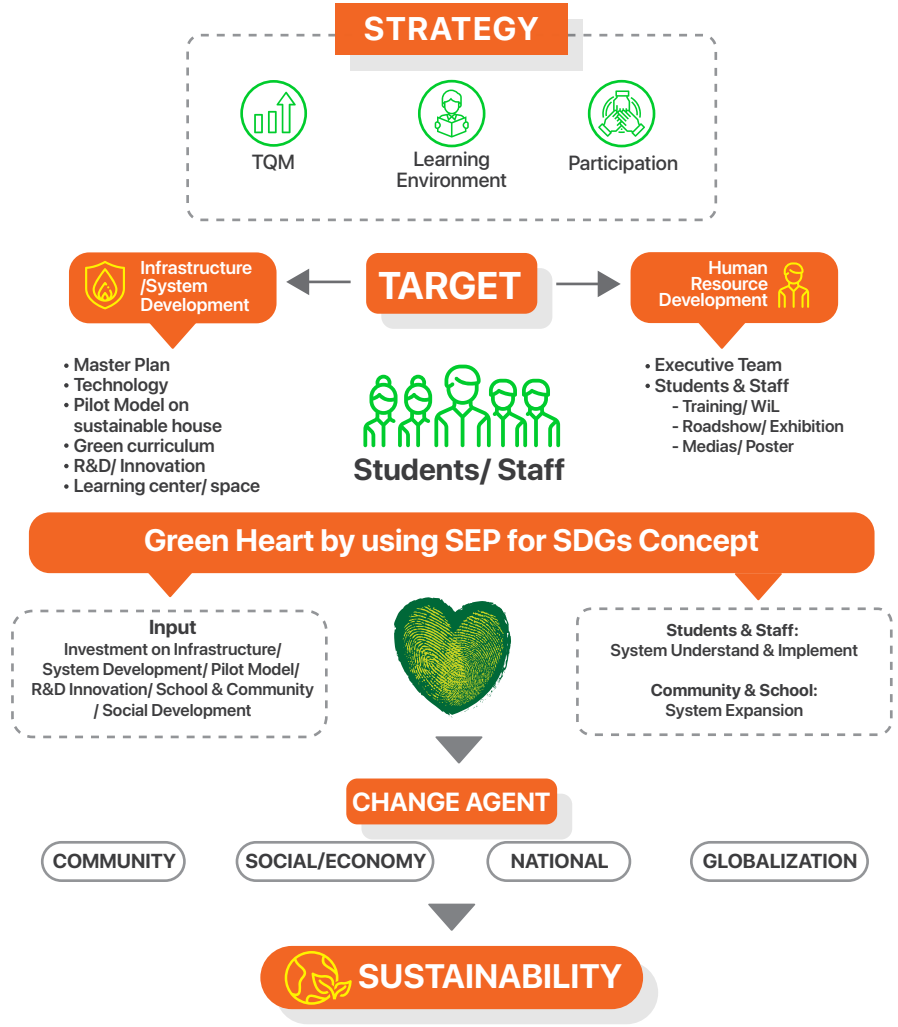
King Mongkut's University of Technology Thonburi (KMUTT) is dedicated to establishing itself as a leader in sustainability, embodying the principles laid out in its Green Heart Policy. This ambitious policy is structured around the goal of transforming KMUTT into a "Green and Sustainable University," 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).

Winner of Muang Thong Hackathon 2024

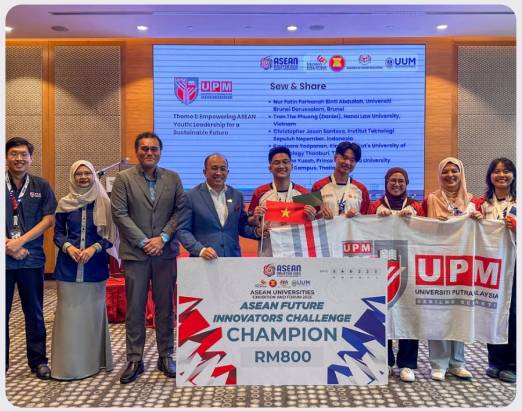
"CuddleCam: CCTV Security Project AI System for Accident Detection, Traffic Violation Monitoring, and Traffic Congestion Management"



Winner of the ASEAN Future Innovators Challenge

A project addressing textile waste resulting from the fast fashion problem through the innovative concept "Sew & Share."

This initiative utilizes AI and machine learning to generate new product patterns from fabric scraps, engaging NEETs (Not in Education, Employment, or Training) as laborers to sew them into new products. The project helps reduce textile waste while promoting sustainable employment opportunities. It was part of the ASEAN Student Mobility 2025 competition under the theme "Empowering ASEAN Youth: Innovation and Collaboration for a Sustainable Future."



Gold Medal Award Food Category

Project: "Spirulux Caviar"
From the Thailand New Gen Inventors Award 2025 (I-New Gen Award)



Climate Resilience Urban Design Excellence Award

From the Designing Resilience Globally (DRG) 2025 Symposium and Student Competition

The design emphasizes circular and sustainable resource management, integrating creativity, local context understanding, and systemic approaches that address climate, community, and cultural challenges.



Award

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

Outstanding Safe Educational Institution Award 2024

KMUTT received the Outstanding Safe Educational Institution Award from the Department of Labour Protection and Welfare for the fifth consecutive year. The award recognizes KMUTT's effective and continuous safety management system, led by the EESH Center, and its strong commitment to promoting a sustainable safety culture across the university community



BSA Building Safety Award 2024 – Gold Level

KMUTT's Bioprocess Research and Innovation Building received the Gold-level BSA Building Safety Award 2024 from the Department of Public Works and Town & Country Planning and the Building Inspectors Association of Thailand. The award recognizes the building as a model of safety excellence among high-rise and large-scale buildings, reflecting KMUTT's strong commitment to safe and sustainable infrastructure development.



Outstanding Model Workplace for Health Promotion and Well-being Organization Award 2025

KMUTT received the Outstanding Model Workplace for Health Promotion and Well-being Organization Award from the Department of Health, Ministry of Public Health, as the only university among 63 awardees nationwide. This top-tier recognition highlights KMUTT's strong commitment to promoting staff health and well-being through comprehensive initiatives in physical activity, mental health, nutrition, and healthy environment





Shaping Tomorrow

KMUTT's Sustainable Journey in 2025

In 2025, King Mongkut's University of Technology Thonburi (KMUTT) continued to advance its commitment to sustainability through integrated action across operations, education, research, and community engagement. The university strengthened renewable energy systems, promoted waste reduction and recycling programs, and encouraged sustainable mobility through electric vehicles and green commuting options. Beyond infrastructure, KMUTT cultivated a strong sustainability culture among students, faculty, and staff emphasizing behavioral change, innovation, and shared responsibility in achieving long-term environmental goals.

Throughout the year, KMUTT faced challenges such as managing increasing resource demands, maintaining energy efficiency, and encouraging continuous participation from all community members. To overcome these, the university implemented adaptive strategies including cross-sector collaborations, data-driven energy monitoring, and student-led initiatives like GREEN HEART, which promote sustainability through creativity and peer learning. These collective efforts strengthened KMUTT's resilience and accelerated its progress toward the Carbon Neutrality 2040 vision.

As 2025 draws to a close, KMUTT takes pride in its accomplishments while recognizing that sustainability is an ongoing journey. The achievements of this year reflect the power of collaboration, innovation, and leadership in shaping a responsible and sustainable future. Through strong partnerships and engagement at every level, KMUTT remains steadfast in its mission to serve as a model of sustainable transformation for Thailand and beyond.

"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 2026

Looking ahead to 2026, KMUTT envisions a future where sustainability and innovation advance hand in hand. The university plans to expand its renewable energy capacity particularly in solar and wind power while enhancing biodiversity and green spaces that nurture well-being and learning. These initiatives will be guided by advanced environmental data systems to track progress, optimize resource use, and strengthen long-term carbon management.

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

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Editorial & design
Energy Environment Safety and Health Center

Published by
Office of Sustainability KMUTT

126 Pracha Uthit Rd., Bang Mod,
Thung Khru, Bangkok 10140, Thailand

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

KMUTT SUSTAINABILITY REPORT 2025