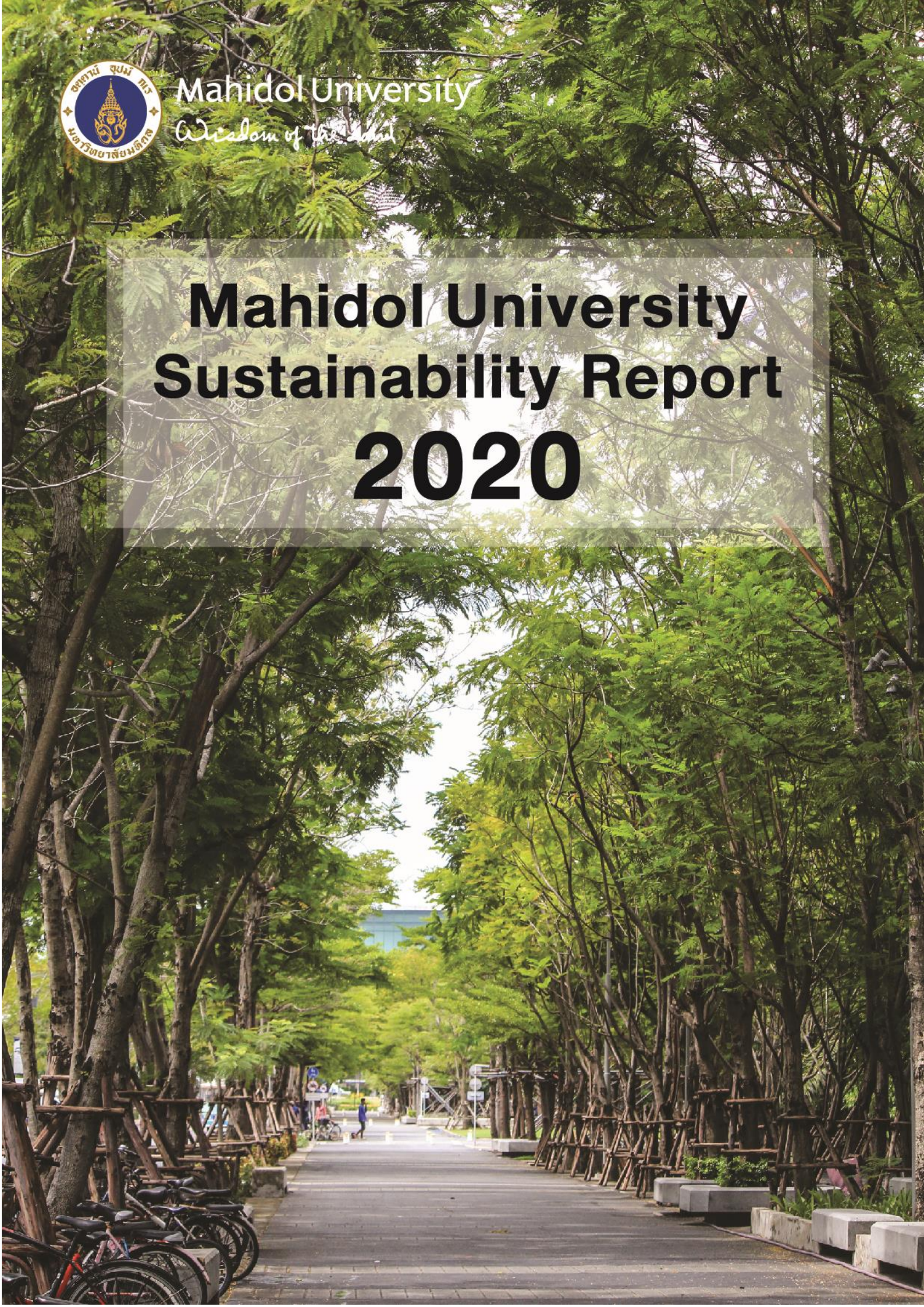




Mahidol University

Wisdom of the Ancients

Mahidol University Sustainability Report 2020





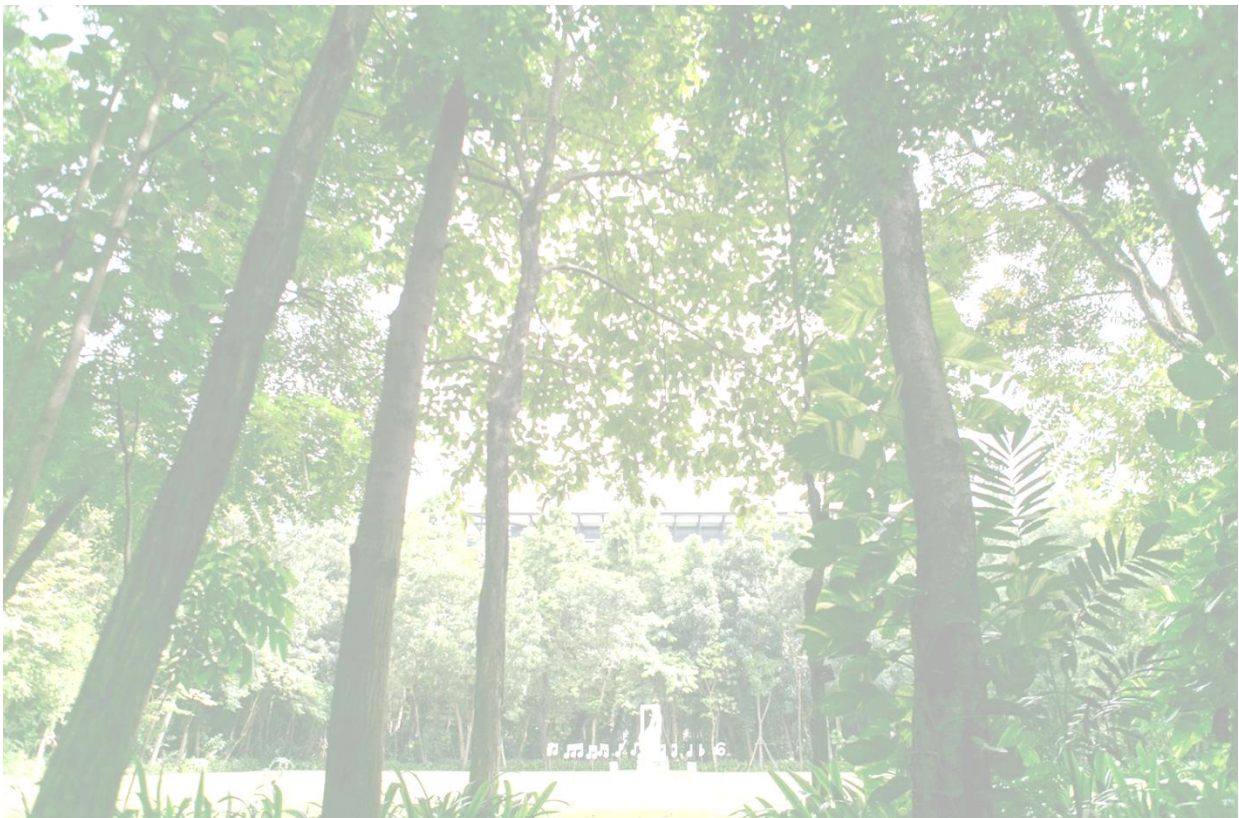
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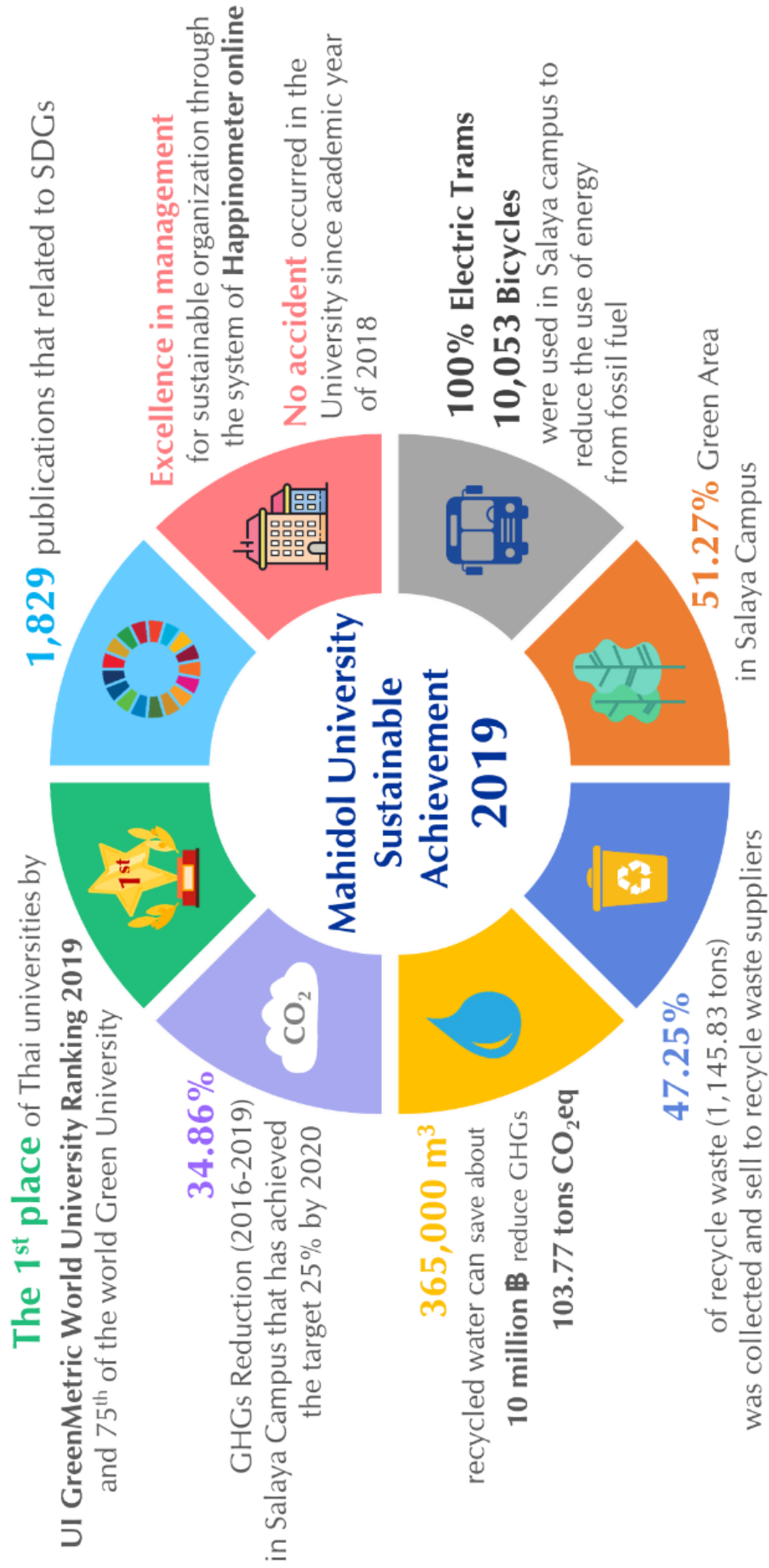
About this report

The Mahidol University Sustainability Report 2020 is aimed at communicating with stakeholders who have an interest in our sustainability performance, including the faculty members, students, staffs, suppliers, alumni, governments, industry, local communities and prospective students. It provides our overall sustainability performance annually, from October 1, 2018 to September 30, 2019; following on from our previous report being published in 2019. The report contains information regarding our own activities towards sustainability especially our contribution to support achievement of United Nation's Sustainable Development Goals (SDGs). The report firstly outlines management of our administration, ethics and transparency, followed by how the university engages with stakeholders as well as enhancing their safety and wellbeing. Then, overall performance of our education, research and innovation is described. Furthermore, our performance for being a greener university concerning greenhouse gas, energy, transport, water and wastes is proudly present. Finally, highlighted activities contributing to each SDG (SDG 1 to SDG 17) are narrated.

The Sustainability Report is the mechanism for annual public reporting on University progress. This report has been prepared in English language, and it can be downloaded from the Mahidol University website.



Overall sustainability highlights in 2019



1. Organization operation

1.1 Our core values and strategies



Mahidol University
Wisdom of the Land

Over 130 years, Mahidol University continues to be recognized as a leader and an innovator in Thai higher education to expand boundaries of knowledge. We aim to use our skills, expertise and facilities to enrich the local and global communities by:

- providing **innovative education**, developing both hard and soft skills, to help our students grow to be a high-quality person who can strongly support development of the country and the world;
- focusing on **translational and transformative research**, making real world change through creating technologies, treatments, and programs for economic and social development;
- working towards **global connectivity**, bringing international institutions together to leverage teaching and learning for global citizens and solve global challenges through research collaboration;
- building a **campus for living and learning**, creating an environment where we are proud to share with local and international students; and
- supporting the development of Thailand and beyond for the benefit of mankind

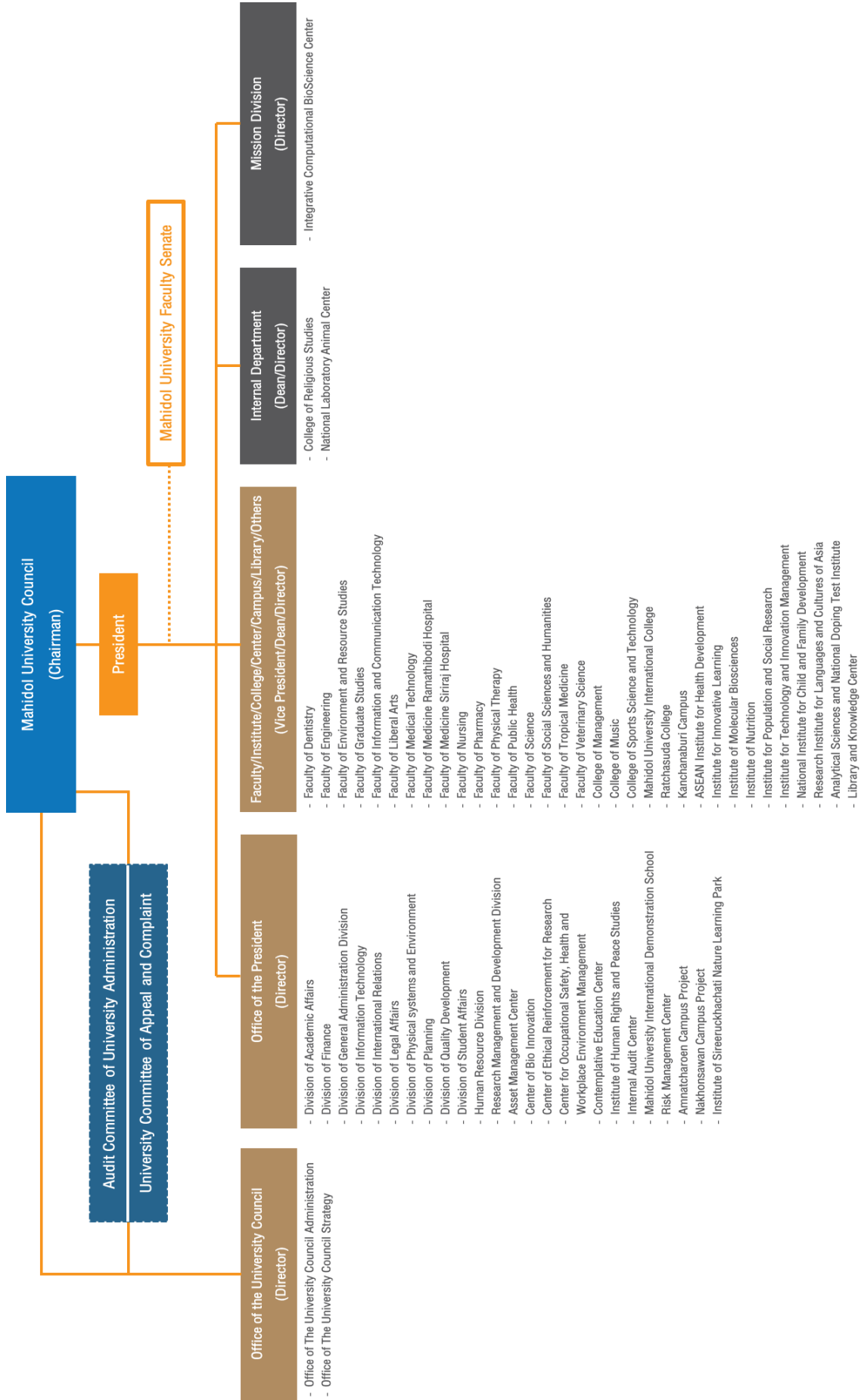
We set the missions as to excel in health, sciences, arts, and innovation with integrity for the betterment of Thai society and the benefit of mankind. Mahidol University is determined to be a world class university having progressive strategies: 1) excellence in global and social impact, 2) excellence in outcome-based education for globally competent graduates, 3) excellence in professional services and social engagement, and 4) excellence in management for sustainable organization.



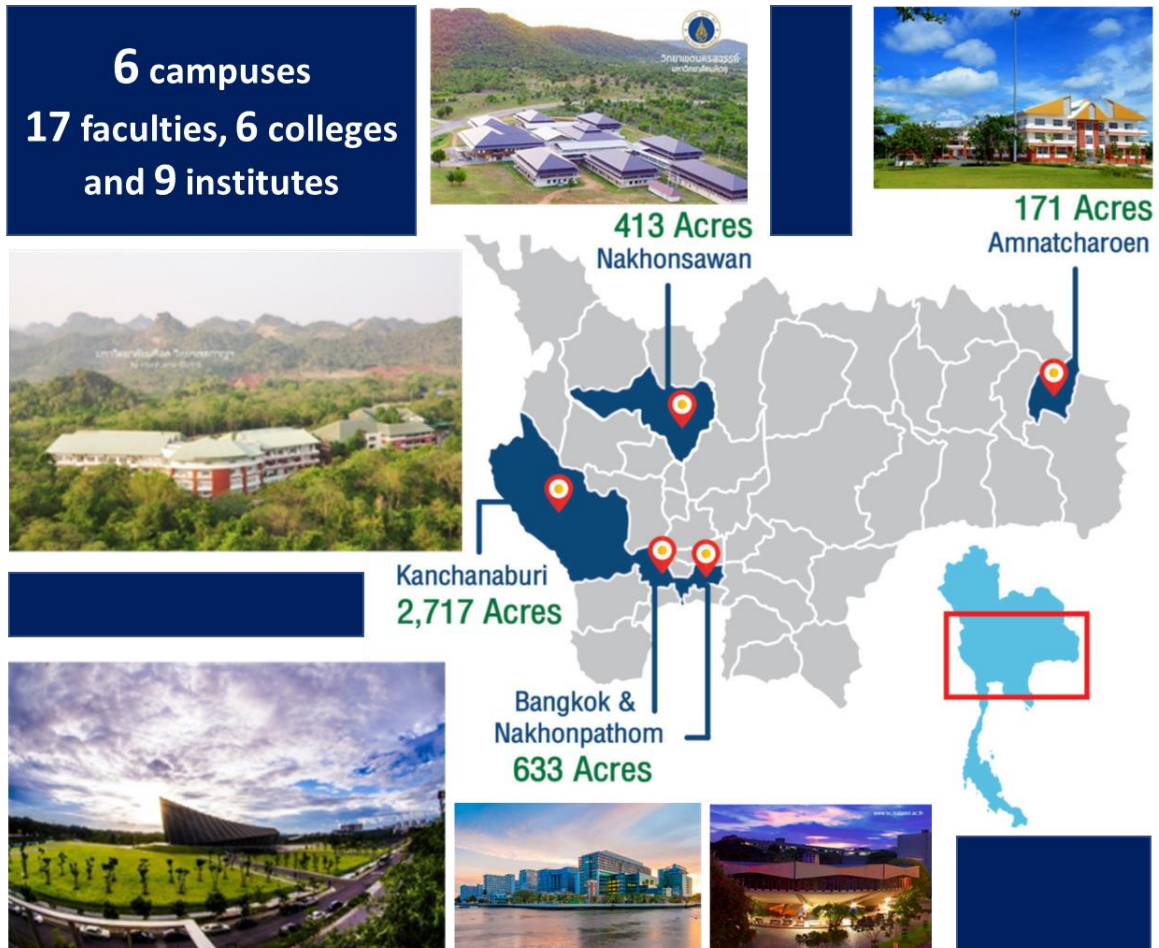
*“True success is not in the learning,
but in its application to the benefit of mankind”*

H.R.H. Prince Mahidol of Songkla

1.2 Organization structure



Mahidol University is a union of Faculties, Colleges, Schools, Institutions, and Service centers. The University is governed through its central bodies; principally the Office of President, Mahidol University Council and the General Board of the Faculties, Department and Personnel that are advised and supported by an extensive network of committees, boards and organizations. The University consists of 6 campuses, 17 faculties, 6 colleges and 9 institutes.



Mahidol University

Comprehensive Education

HEALTH SCIENCES

- Faculty of Dentistry
- Faculty of Medical Technology
- Faculty of Medicine Ramathibodi
- Faculty of Medicine Siriraj
- Faculty of Nursing
- Faculty of Pharmacy
- Faculty of Physical Therapy
- Faculty of Public Health
- Faculty of Tropical Medicine
- Faculty of Veterinary Science
- ASEAN Institute for Health Development
- Institute of Nutrition

SCIENCE & TECHNOLOGY

- Faculty of Engineering
- Faculty of Information and Communication Technology
- Faculty of Environment and Resource Studies
- Faculty of Science
- College of Sports Science and Technology
- Institute of Molecular Biosciences

SCIENCE & TECHNOLOGY

- National Doping Control Center
- National Laboratory Animal Center

ARTS, HUMANITIES, SOCIAL

SCIENCES AND BUSINESS

- Faculty of Liberal Arts
- Faculty of Social Sciences and Humanities
- College of Management
- College of Music
- College of Religious Studies
- Mahidol University International College
- College for the Disabled
- Institute for Innovative Learning
- Institute for Population and Social Research
- National Institute for Child and Family Development
- Research Institute for Languages and Cultures of Asia

POSTGRADUATE EDUCATION

- Faculty of Graduate Studies

PROVINCIAL CAMPUSES

- Amnatcharoen Campus
- Kanchanaburi Campus
- Nakhon Sawan Campus

College of Management

- College of Music
- Mahidol University International College

Mahidol University International

- Demonstration School
- Institute of Human Rights and Peace Studies

Support and Facilities

- Library and Knowledge Center
- Institute for Technology and Innovation Management

- Siriraj Hospital
- Ramathibodi Hospital
- Chakri Naruebodindra Medical Institute
- Dental Hospital
- Maha Chakri Sirindhorn Dental Hospital
- Hospital for Tropical Diseases
- Golden Jubilee Medical Center
- Livestock & Wildlife Hospital
- Prasuarthon Small Animal Hospital

- *Social Engagement*
- *Mahidol Event*
- *Mahidol Alumni*

Siriraj Piyamaharajkarun Hospital

- Ramathibodi Elderly Care and Hospice

Mahidol Channel

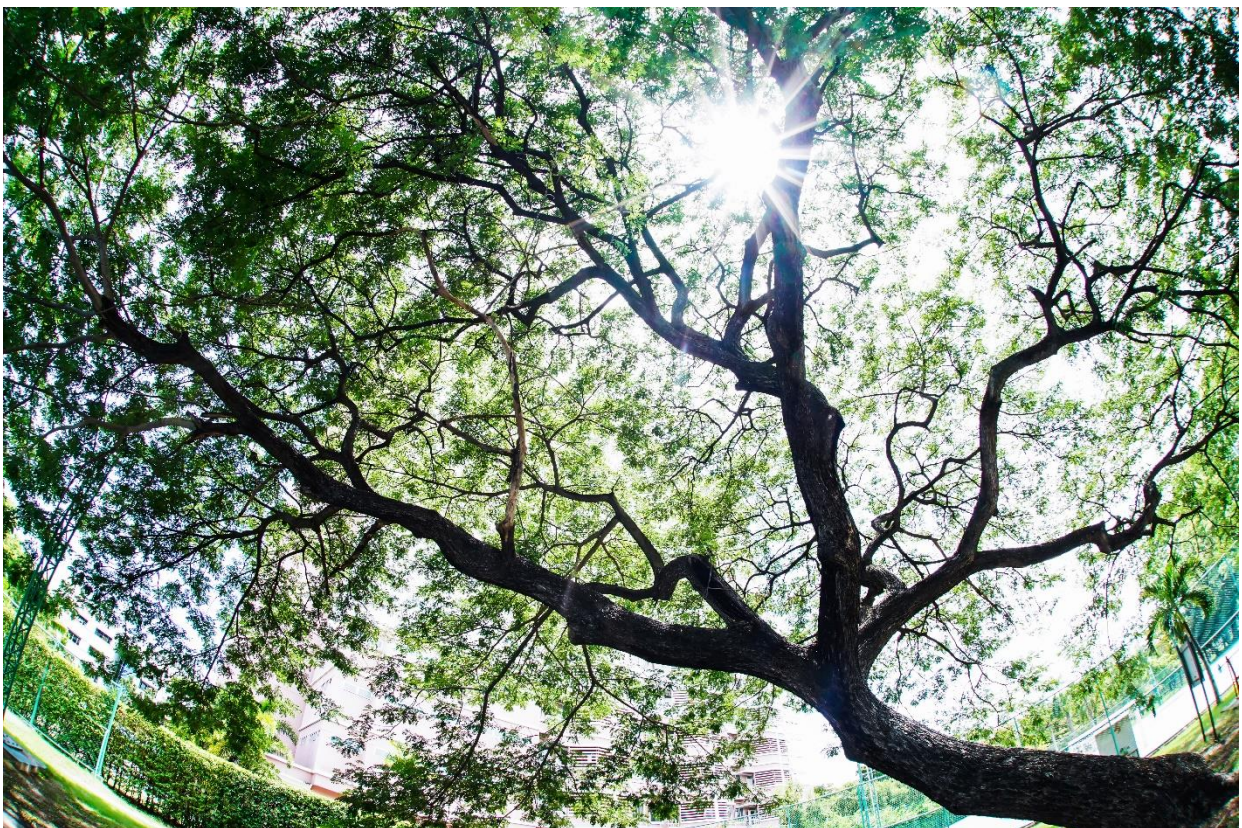
- Mahidol University Foundation
- Prince Mahidol Hall
- Sireeruckhachati Nature Learning Park
- Archive and Museum Division
- Prince Mahidol Award

1.3 Approach to sustainability

In order for effectively response to the United Nations 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs) and the 20-year National Strategy of Thailand visioning *“Thailand as a developed country with security, prosperity, and sustainability in accordance with the principles of the Sufficiency Economy Philosophy”*, the Mahidol University Strategic Plan 2018-2037 was developed, and set the critical strategies to be the self-sufficiency and sustainable organization. The extensive initiatives have been developed and implemented towards good administration and governance, human resource with global competency, financial security, information technology-based business intelligence, green university and global branding under the sustainability way.

Mahidol University has driven the eco-university policy for sustainable development in campus and in the surrounding communities by creating a balance of economic, social and environmental dimensions leading to efficient use of resources, social equality and improved quality of life of faculty, staff, students and the surrounding communities. Our targets and commitments indicate the issues that we are aware of any possible direct and indirect impacts upon our activity implementation.

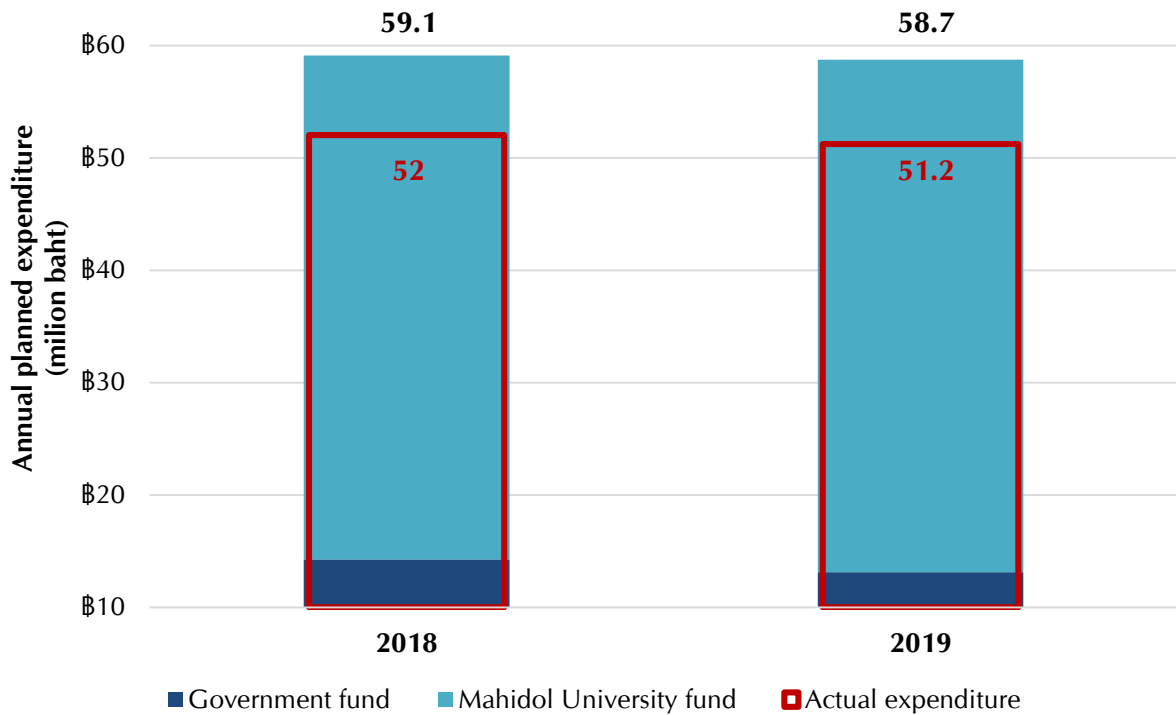
This report is intended to demonstrate our contribution to the United Nation’s Sustainable Development Goals (SDGs) achievement throughout extensive activities. This report, we monitor and measure performance against a broad spectrum of sustainability aspects. Our most significant aspects have objectives for improvement, progress against which is included in the following section.



Aspect	Details and Boundary	Scope
Energy and carbon	To reduce the fossil fuel energy consumption and carbon emissions	Internal
Water	To conserve water through efficient use, management, and recycling	Internal
Waste	To minimize and efficiently manage waste through reduction, reuse and recycling.	Internal
Biodiversity and ecosystems	To be a leading organization within the sector in limiting negative impacts and, where possible, having positive direct and indirect impacts on biodiversity and natural ecosystems	Internal
Transportation	To provide viable and accessible sustainable transportation modes for students and staffs which results in a reduction of energy consumption and carbon emissions.	Internal and external
Engagement	To facilitate opportunities where staff and students can develop and share their knowledge, skills and experience to engage with and contribute effectively to enhance the sustainability aspirations	Internal and external
Financial sustainability	To strengthen our finances by sustaining an annual surplus enabling investment in our people and estate	Internal
Procurement	To positively influence the sustainability of our supply chain	Internal
Health and Safety	To improve health quality and safety management for our people	Internal
Education, research and innovation	To ensure our students are equipped with skills required to deliver change needed in industry and business.	Internal
Implementation toward SDGs	To embed sustainability into our activities, innovative and research-rich curriculum	Internal and external

1.4 Financial statement

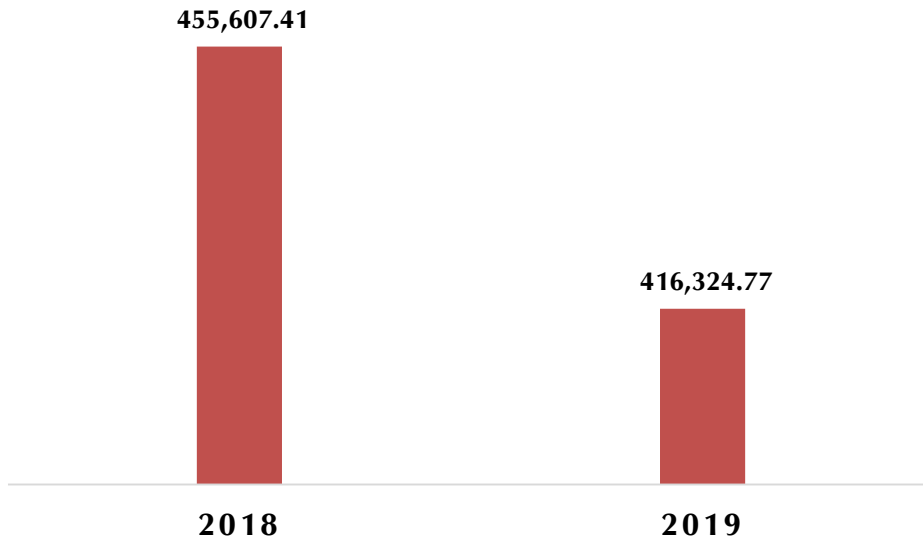
Mahidol University's financial statement data is accessible¹. In fiscal year 2019, approximately 58,752 million Baht was provided to be Mahidol University's budget, of which 78% came from the University's own budget and 22% supported by Thai government. The university's budget was allocated to all faculties and support the activities enhancing excellence in management for sustainable organization. Approximately 2% of the University's annual expenditure was declined in 2019 when compared to 2018.



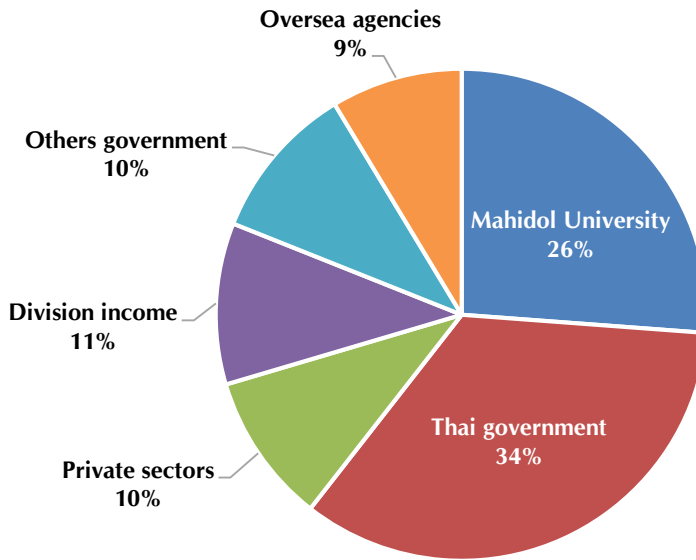
Annual expenditure of Mahidol University in 2018 and 2019

As for research fund, in 2019, Mahidol University sponsored researchers and sought external research funding of approximately 1,642.4 million Baht to generate more research outcomes with high quality. The University utilized research grants from different sources including University's own budgets and external funds. On average, our academic staff were given supported amounting 400,000 Baht per person by various sources of research funding each year.

¹O18: The annual expenditure report of Mahidol University 2019, <https://tinyurl.com/y28km64z>

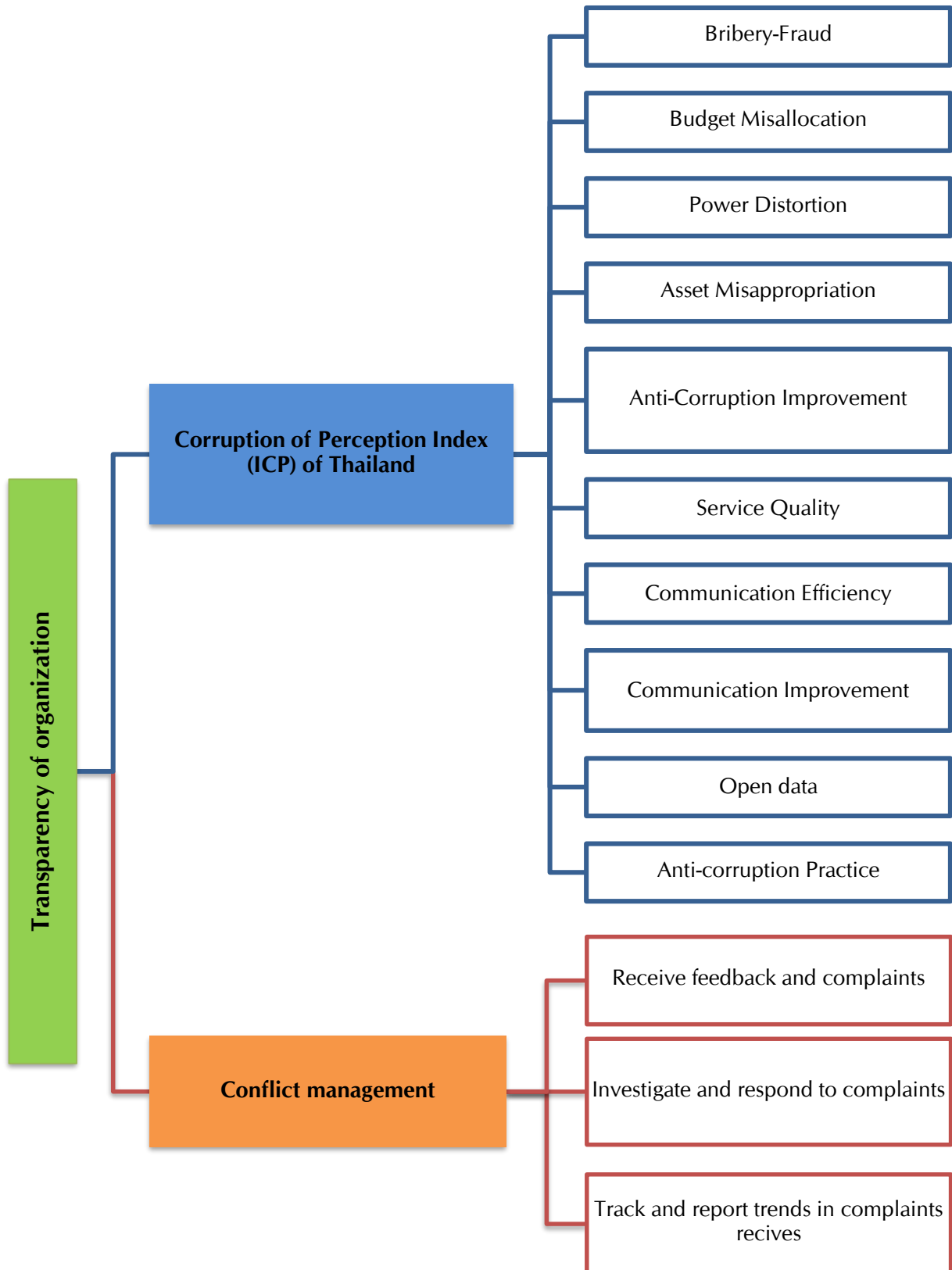


Research fund per person of academic staff (Baht/person/year) in 2018 and 2019



Proportion of research fund categorized by funding sources in 2019

1.5 Integrity and transparency

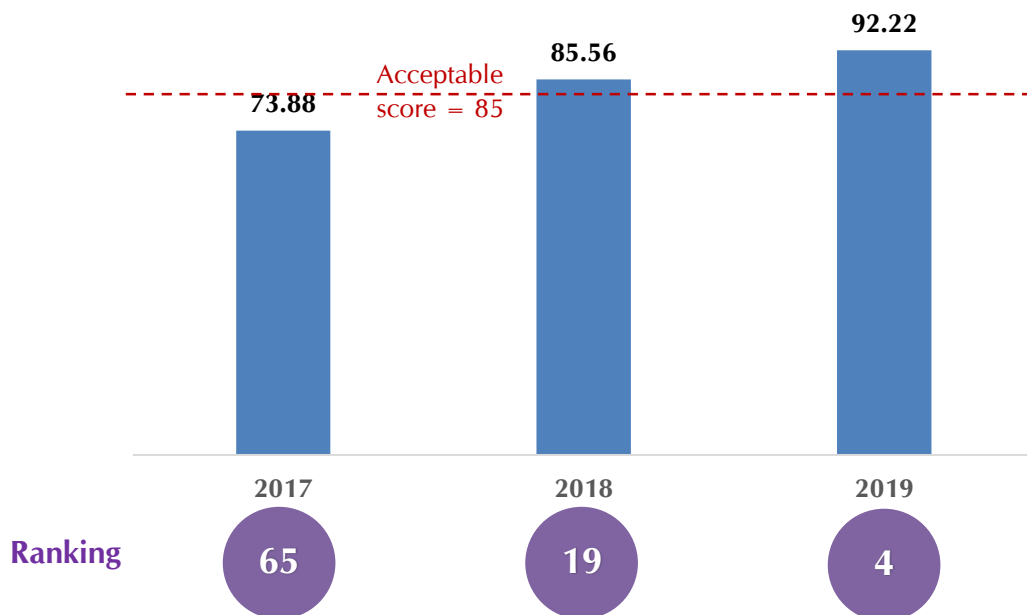


Implementation of Integrity and Transparency Assessment (ITA)

Mahidol University commits to operate under right and good governance following indicators of integrity and transparency assessment (ITA) under evaluation of the Office of National Anti-Corruption Commission. The assessment tools including Internal Integrity and Transparency Assessment (IIT), External Integrity and Transparency Assessment (EIT), and Open Data Integrity and Transparency Assessment (OIT) were adopted with evidence-based approaches for ensuring that policies and procedures are in place to support morality, transparency and impartiality. Our staff and stakeholders can access available resources online² for the good governance approach and transparency system. We disclose our progress on our operation and strategies including account statement, services, procurement, human management, complaints, and anti-corruption activities; updated annually, which is available on our webpages³ and details the commitments we made.



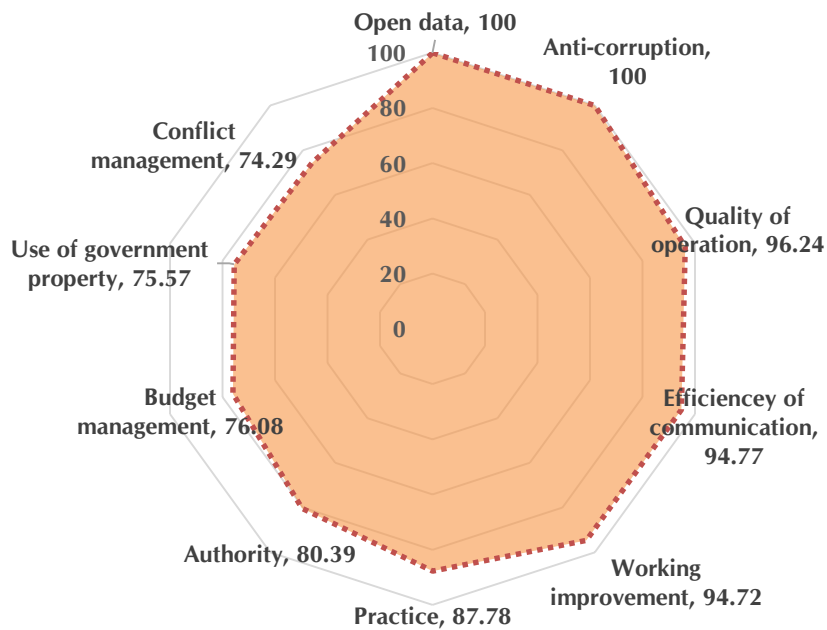
In 2019, ITA Score of Mahidol University is 92.22 of 100. Our position in Thailand's ranking is upgraded from 19th to 4th.



ITA score and ranking of Mahidol University in 2017-2019

² Good governance under ITA, <https://mahidol.ac.th/th/governance/>

³ Open Data Integrity and Transparency Assessment (OIT). Mahidol University, <https://mahidol.ac.th/th/ita63/>



Proportion of ITA Score of Mahidol University in 2019

Procurement

Mahidol University is passionate about embedding sustainable procurement. We make training workshops and resources available for all staff to promote sustainable procurement system under the policy of Government Procurement and Supplies Management Act B.E. 2560. We also concern the whole life cost, environmental and social impacts of our supply chain. The 'Green Procurement' and 3R principle (Reduce Reuse Recycle) were adopted in supplier selection. These sit alongside guidance on minimizing the resource consumption and pollution, as well as respond to climate action in procurement.

The e-Procurement System⁴ was developed for announcement and advice to the suppliers in order to send their offering through e-market or e-bidding. All of procurement status can be assessed online throughout the transparency system under the policy of Government Procurement and Supplies Management Act B.E. 2560. In 2019, there were 146 Term of References (ToR) and 932 procurement contracts related to the University's activities.

⁴ e-Procurement System, Mahidol University, <http://eprocurement.mahidol.ac.th/>

Anti-corruption activities

According to anti-corruption, moral and transparency in operation, and conflict of interest policy, Mahidol University specifies that the administrators, committees, experts, advisors, executives, and staff of the University must strictly follow the policies. The anti-corruption activities educating the regulation and the guideline of Mahidol university include:

- Good governance manual of Mahidol University
- Mahidol University Regulations on Appeal and Petition 2009
- Mahidol University guideline on Complaint management 2017
- Mahidol University Anti-Corruption Policy
- Measures for the Protection of Information Responders from Unethical Misconduct 2016
- Announcement of Mahidol University on Executive Ethics 2016
- Announcement of the Faculty of Tropical Medicine on Corporate Governance Policy
- Mahidol University Policy on Conflict of Interest 2016
- Human resource strategy plan in accordance with the manual and operating standards

Mahidol University promotes the core value of “I Integrity” and strengthens the right attitude for creating the proper organization culture. We organized the symbolic campaign of anti-corruption and mortality which was participated by students, staff, and others around 1,000 people on the International Anti-Corruption Day 2019.



“I Integrity” event on Corruption Day 2019

In order to prepare our staff to understand the evaluation processes of integrity and transparency assessment (ITA), in the academic year of 2019, we organized the training on ITA information in many topics such as “Guidelines for assessing morality and transparency in government agencies' operations”, “Principle, approach, indicator and time scale of ITA evaluation”, and “Organic Act on State Audit B.E. 2561” instructed by the government officers.



ITA information workshop

NO Gift Policy



We enforced “NO Gift Policy” by preventing all kinds of risk, fraud, and bribery. The University Executives, Deans, Directors of Department, and Head of Division in all levels were requested not to accept New year gifts.

1.6 Complaints and appeals

As we are committed to improve our practices to anti-slavery, anti-corruption and human trafficking in our organization and supply chains, the conflict management system was implemented by the ombudsman committees who play the role in complaints and conflict management following ‘Complain Management of Mahidol University B.E. 2560’ policy. All of our stakeholders can send their feedback and complaints via online form^{5,6}, e-mail, complaint box, or direct contact at ombudsman committees office of Mahidol University. The statistic of complaints and comments from our stakeholder was annually reported online⁷.

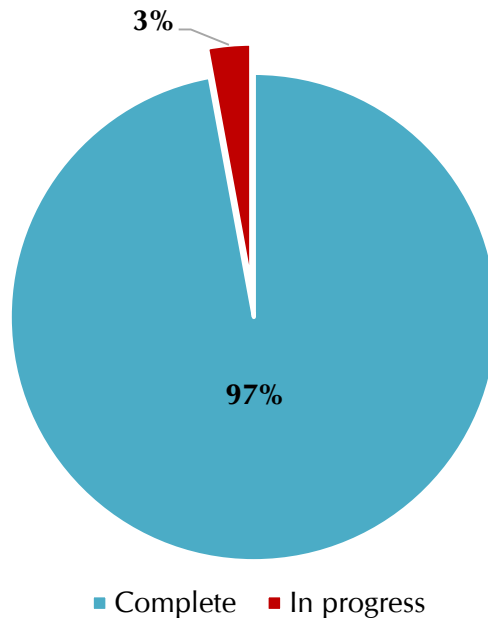
⁵ Complaint channel online, <https://op.mahidol.ac.th/la/complaint/>

⁶ Feedback channel online, <https://mahidol.ac.th/th/2019/feedback/>

⁷ Statistic and status of complaints, <https://op.mahidol.ac.th/la/ombudsman-cc/#1590051538053-ab0065b8-a2b8>



Number of complaints received in 2018 and 2019



Proportion of complaints management in 2019

Risk Management Policies

As always, Mahidol University concedes the uncertainty of future changes, as well as the risk and opportunity. In order to deal with any circumstance or uncertainty which may arise to cause damage and affect the achievement of Mahidol University objectives, we adopted the risk management practices as follow:

- Operate the risk management throughout the organization according to good and universal practices by adopting standards of education quality, research studies, health services, and academic services in order to add value to the organization.
- Build awareness of all executive and staff on management and deal with any circumstances, either risks or opportunities, which may affect the achievement of the University's objectives and its work units; the management must be at an acceptable level
- Track and review risky situations regularly in line with the changing internal and external environment.
- Consider risk management as part of regular work procedures.

Enterprise Risk Management

The University provided risk management system based on the COSO- Enterprise Risk Management-Integrated Framework (COSO ERM) comprising of five processes:

1. **Objective setting:** to align with the University strategies, objectives and risk minimization.
2. **Event identification:** to determine which significant risks may affect the objective of the University and faculties. (Strategic Risk-Operational Risk-Financial Risk-Compliance risk: SOFC)
3. **Risk assessment:** to evaluate risks by considering the impact and likelihood, reviewing the existing controls (Control Self-Assessment) before estimating the risk level (very high, high, medium or low) and then prioritize them.
4. **Risk Response:** to assess alternative mitigation (accept/reduce/avoid/ transfer), which is an appropriate measure to reduce potential risks, by using available resources wisely.
5. **Monitoring:** to review the effectiveness of the risk management plans every 3 months, and revise the plan if necessary.



Risk assessment system of Mahidol University

All department must reveal the risk management results on a quarterly basis. Risk management summary will be also reported to the Audit Committee to ensure the effectiveness of the risk management system. Activity evaluated to be at high and very high-risk levels were significantly prioritized by the Risk Management Committee.

In 2019, Mahidol University identified possible significant risk in five events related to corruption or conflicts of interest that persons profit linked to the public. The detail of risk management and occurring events can be accessed via the open data⁸.

⁸ The risk management and occur events in 2019: https://op.mahidol.ac.th/rm/wp-content/uploads/2020/03/3.2_O37_-2_-Risk-response2563.pdf

The significant risk events on corruption or conflict of interest

Event in risk	Management plans
Risk level: Highest	
Bribery-Fraud	<ul style="list-style-type: none"> ● Record daily account into the Enterprise Resource Planning (ERP) system ● Regularly deposit money to the bank in the next day after receipt and send the deposit slip to the financial accounting staff ● Daily report the income statement ● Separate staffs of the financial operation to account keeper and accounting manager ● Automatically offer the receipt or certification of donation
Procurement corruption	<ul style="list-style-type: none"> ● Assign the committee to approve the parcels appropriately in procurement contract ● Systematically assess the transparency in the whole supply chain of procurement ● Select the best choice of beneficial procurement by thorough comparison
Risk level: High	
Operations that do not comply with good governance	<ul style="list-style-type: none"> ● Develop a framework for driving the governance system ● Develop prevention and anti-corruption plans
Plagiarism in research and fraud in research funding management	<ul style="list-style-type: none"> ● Organize seminars on ethics in research ● Organize a workshop on Turnitin program applying to Internet-based plagiarism detection for students and staff ● Assign the appropriate committee to regulate the research working ● Regularly inform the regulation, rules, and the fraud in research statement as well as the impact to committees, researchers, and public ● Prevent publication of student's thesis without consent of the author ● Control the research account by third-party staff who responsible to the Head of Finance and Supplies ● Track and reviews the research progression in order to develop plan and operation implementation
Fraud implicitly assumed to conflict of interest and corruption making or the related petition	<ul style="list-style-type: none"> ● Encourage personnel to operate under standard, moral, ethics, regulation and rule as well as promote the comprehensive practices of staffs ● Develop the effective regulation system to anti-corruption ● Track and investigate the operation based on evidences

1.7 University rankings, standards and certifications

University Rankings

In 2019, Mahidol University was determined to be high-ranking in Thailand, Asia and at the global level.



The 2nd among Thai Universities, 97th among Asian Universities and the 611th in The World Ranking by Webometrics Ranking of World Universities Via Website 2020



The 1st among of Thai Universities and the 493rd of the World University Rankings by NTU Ranking 2019



The 2nd of among Thai Universities, 48th among Asian Universities, and the 252th in the World University Rankings by QS World University Rankings 2021



The 1st among Thai Universities, 81th among Asia and the 522th in the World Ranking by U.S. News & World Report 2020



The 1st among Thai Universities, 122th among Asian Universities by Times Higher Education World University Ranking (THE) 2020



The 1st among Thai universities and the 75th in the world Green University by UI Green Metric Ranking 2019

List of certificated courses

In accordance with the University's educational strategies, we had adopted the international standard to assess our organized programs for outcome-based education development. In 2019, 17 courses of Bachelor Degree, 11 courses of Master Degree, and 7 courses of Doctoral Degree were accredited by international standards as show in the table below.

List of certificated courses under evaluation by international standards

Course	Accreditation
International program	
Bachelor of Business Administration Program in International Hospitality Management	UNWTO.TedQual AUN-QA
Bachelor of Science Program in Information and Communication Technology	AUN-QA
Bachelor of Business Administration Program in Business Economics	AACSB
Bachelor of Business Administration Program in Finance	
Bachelor of Business Administration Program in International Business	
Bachelor of Business Administration Program in Marketing	IFoA
Bachelor of Science Program in Actuarial Science	
Bachelor of Science Program in Prosthetics and Orthotics	ISPO
Bachelor of Prosthetics and Orthotics Program (Blended distance learning)	AUN-QA
Master of Science Program in Immunology	
Master of Public Health Program	APACPH AUN-QA
Master of Business Administration Program	AACSB
Master of Management Program	
Master of Science Program in Social, Economic and Administrative Pharmacy	AUN-QA
Master of Science in Pharmacy Program in Clinical Pharmacy	
Master of Music Program	MusiQuE
Doctor of Philosophy Program in Physical Therapy	AUN-QA
Doctor of Philosophy Program in Biochemistry	
Doctor of Philosophy Program in Clinical Epidemiology	
Doctor of Philosophy Program in Management	
Doctor of Philosophy Program in Sustainable Leadership	AACSB
National program	
Bachelor of Applied Thai Traditional Medicine Program	AUN-QA
Bachelor of Technology Program in Medical Educational Technology	
Bachelor of Science Program in Occupational Therapy	WFOT AUN-QA
Bachelor of Nursing Science Program, Ramathibodi School of Nursing	AUN-QA
Bachelor of Nursing Science Program, Faculty of Nursing	
Bachelor of Music Program	MusiQuE
Bachelor of Science Program in Prosthetics and Orthotics	ISPO
Bachelor of Science Program in Radiological Technology	AUN-QA
Master of Arts Program in Rehabilitation Science for Persons with Disabilities	
Master of Science Program in Anatomy	
Master of Management Program,	AACSB
Master of Arts Program in Music Education (Special Program),	MusiQuE
Doctor of Medicine Program	WFME
Doctor of Dental Surgery Program	AUN-QA

2. Stakeholders, supports and engagement

2.1 Students

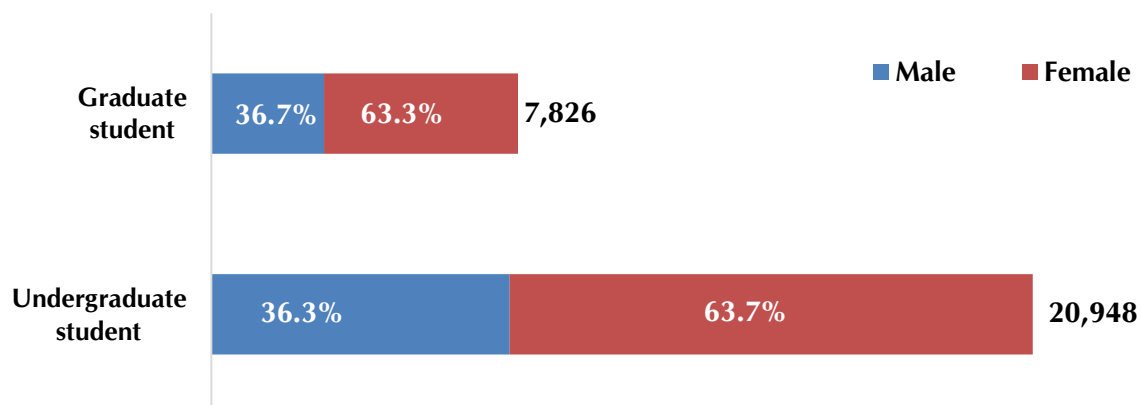
In the academic year 2019, Mahidol University had 20,948 students with 98% Thai students and 2% International students.

Number of undergraduate students in 2019 categorized by gender

	Male		Female		Total Number
	Number	%	Number	%	
Bachelor Degree					
Thai student	7,276	36.5	12,636	63.5	19,912
International student	197	46.4	228	53.6	425
Certificated student					
Thai student	129	21.5	470	78.5	599
International student	6	50.0	6	50.0	12
Total	7,608	36.3	13,340	63.4	20,948

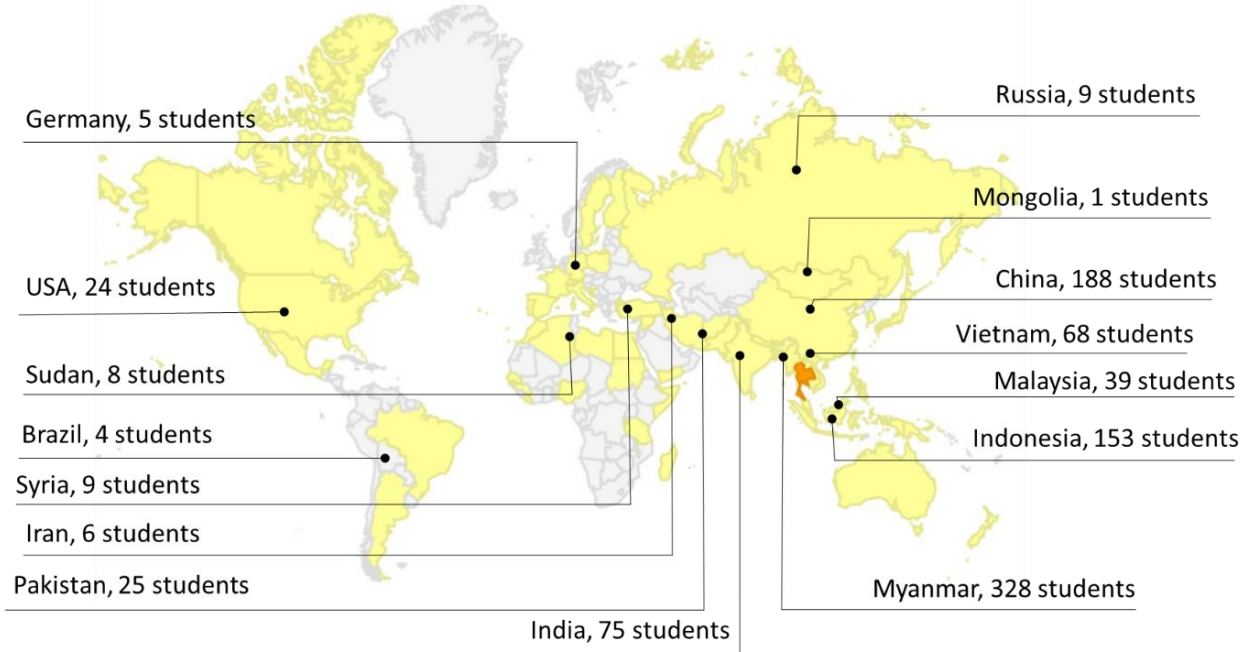
Number of graduate students in 2019 categorized by gender

	Male		Female		Total Number
	Number	%	Number	%	
Diploma					
Thai student	25	38.5	40	61.5	65
International student	10	71.4	4	28.6	14
Higher diploma					
Thai student	233	50.1	232	49.9	465
International student	0	0.0	1	100.0	1
Master Degree					
Thai student	1,265	32.0	2,685	68.0	3,950
International student	354	42.1	486	57.9	840
Disability student	15	62.5	9	37.5	24
Doctoral Degree					
Thai student	772	37.3	1,300	62.7	2,072
International student	198	50.6	193	49.4	391
Disability student	4	100.0	-	-	4
Total	2,876	36.7	4,950	63.3	7,826



Proportion of male and female students in 2019

Mahidol University is recognized throughout the world for the quality of its teaching, with international-standard research determining the courses. In 2019, we welcome 1,119 international students from 61 countries over the world to our University. Following map below is show the popularity of international student in Mahidol University by country of origin.



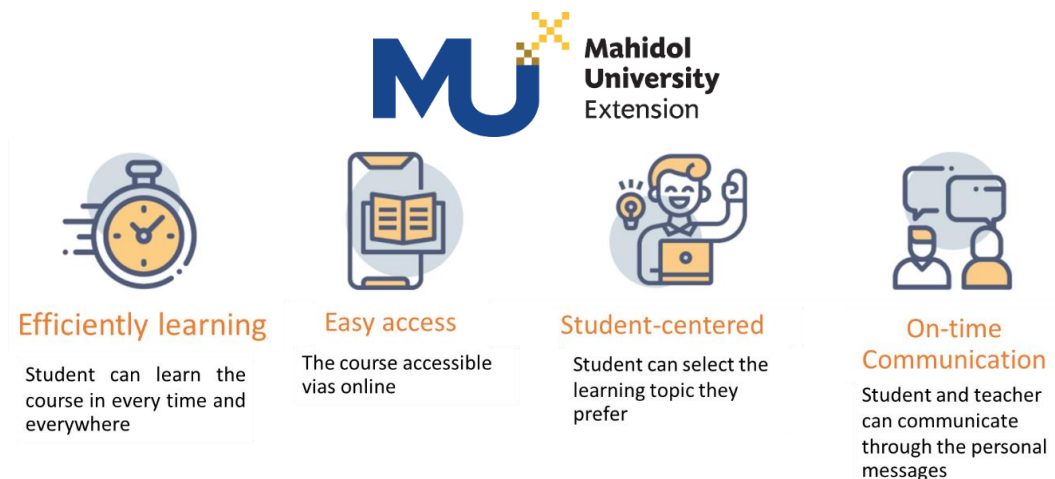
Map of international students' mother countries (yellow area)

Interdisciplinary Curiosity

In depth of knowledge in specific fields and understanding of technical details are required for student's achievement in their career and personal life. All of our study programs is built upon the foundation of expertise, using active project-based learning and practical assignments to ensure that students can implement their knowledge in real-world scenarios.



We focus on work-integrated learning with local and international enterprises, to make sure that our students have the knowledge and experience which industries need. All of our students take part in common core classes, exposing them to a broad range of topics and developing interdisciplinary curiosity. Many of our faculties have created multidisciplinary programs, allowing students to incorporate interests from several fields and acquire the skills to pursue careers in new industries. Our range of online MOOC and SPOC courses delivered through our MUx platform support active engagement and life-long learning, spreading knowledge and skills beyond our campuses and making sure that personal and professional development are available to anyone, anytime, anywhere. Currently, we provide 33 courses from 10 faculties that are accessible via online⁹.



We aim to develop students' skills they need to overcome global challenges, explore new opportunities, and grow as globally competent citizens. We focus on student centered and active learning so that all graduates have the professional skills they need for their work, as well as creativity and adaptability necessary for the changing world.

We engage all of our students in social and community outreach, working with local people on projects to address environmental issues and support social and economic development around campus. We develop the 'Soft Skills' activities to build a strong community within and beyond the university, and expose students to diverse points of view.

All of undergraduate students and graduate students receive activities transcript which reflects their breadth of experience.



⁹ MUx system website, <https://mux.mahidol.ac.th>

All educational activities are performed with the purpose of promoting Mahidol University graduates' skills. The required characteristics of the 21st century graduates have been imposed as: T-shaped breadth and depth, globally talented, socially contributing in order to cultivate them to be future social transformation leaders. Many active learning options available for all of our student through the volunteer and co-curricular activities (i.e. MU HIDEF programs, 21st century skills). Moreover, students can access the available information of events and activities as well as their activities transcript on website¹⁰.



- Health Literacy
- Internationalization
- Digital Literacy
- Environmental Literacy
- Financial Literacy
- Critically thinking & Problem solving
- Creative & Innovation
- Communication & Collaboration
- Leadership & Management skills
- Social skills

Number of training programs and student activities in 2017-2019

Training program / activities	Number of programs		
	2017	2018	2019
Research skills	4	10	1
Leadership skills	13	15	18
Entrepreneurship skills	-	-	5
Health literacy	-	-	5
Digital Literacy	-	-	2
Creative & Innovation skills	-	4	11
Language & communication skill	3	8	11
Communication and Technology Literacy	3	5	4

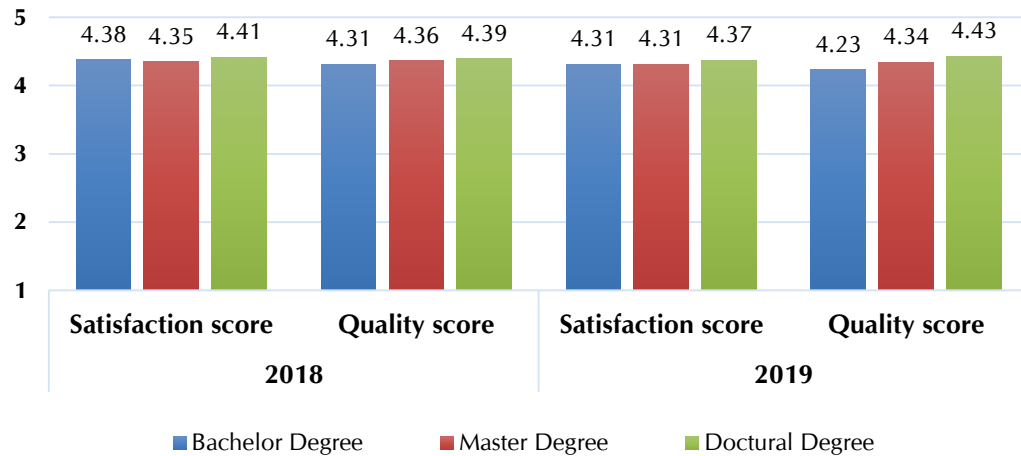
In 2019, we organized 58 internal training programs and activities that were participated by 5,668 students. The training programs, for instance, had purpose of developing multiple skills of students.

As we concern that social skill is essential for effective interaction with others, communication, attitude and work ethic, we support our students participating in many activities to communicate with groups such as student clubs. Many extracurricular clubs would plug diverse students into a student network of like-minded groups, individuals, and possibly even for their future connection. Currently, we are supporting 23 student clubs participated by a total of 20,505 students.

¹⁰ MU activities transcript: <https://smartedu.mahidol.ac.th/ActivityTranscript/modules/student/studentPublicEvent.aspx>

Graduate and job satisfaction

In 2019, the corporate KPI scoring under strategy to be *Excellence in outcome-based education for globally- competent graduates* of our students and their employers (only in the graduated student of Bachelor Degree) showed high score of satisfaction and quality of personal skills after graduation in Mahidol University.



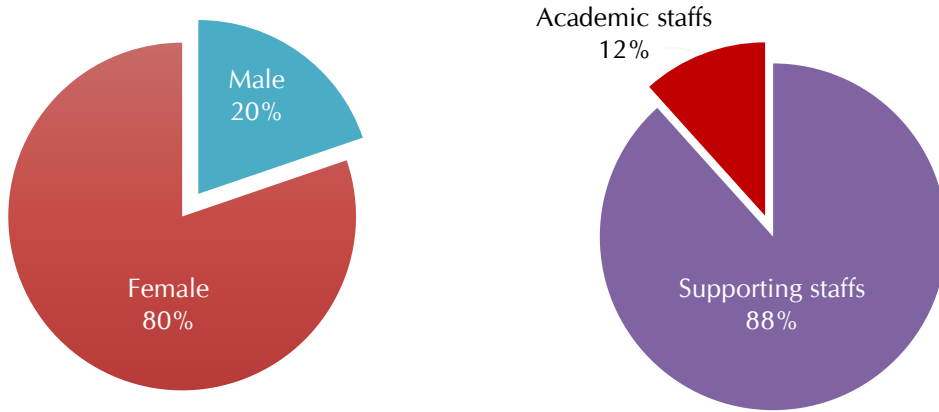
Corporate KPI Score of satisfaction and quality of students after graduation

2.2 Staff

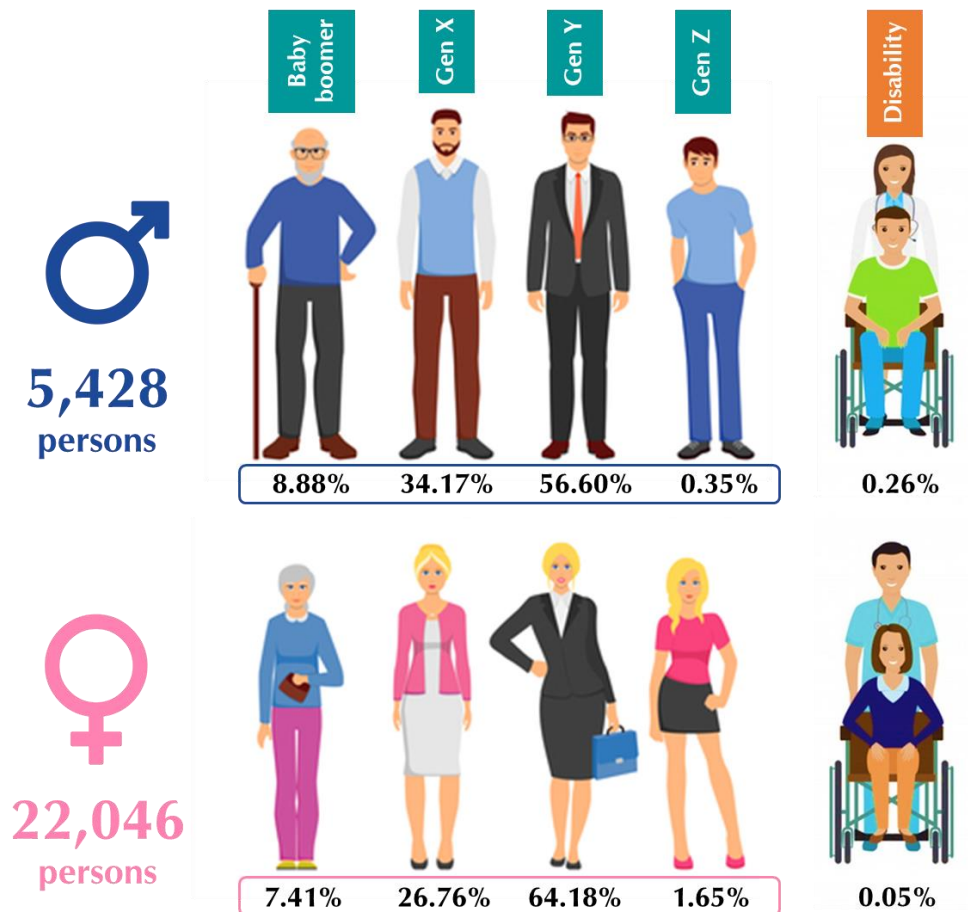
In 2019, Mahidol University had a total number of 27,474 staff members comprising 24,272 supporting staffs and 3,202 academic staffs, and these figures included 5,428 males and 22,046 females.

Number of supporting and academic staffs in each position

	Male	%	Female	%	Total
Supporting staffs	3,998	16.5	20,274	83.5	24,272
Expert/Senior expert	4	12.9	27	87.1	390
Senior experienced/Senior professional	234	11.7	1761	88.3	10068
Experienced/Professional	84	19.1	356	80.9	14197
Operational staff	3,676	16.9	18,130	83.1	91
Academic staffs	1,430	44.7	1,772	55.3	3,202
Professor	55	47.8	60	52.2	115
Associate professor	292	45.6	348	54.4	640
Assistance professor	416	44.7	515	55.3	931
Lecturer	646	45.1	785	54.9	1,431
Researcher	21	24.7	64	75.3	85
Summary	5,428	19.8	22,046	80.2	27,474



Proportion of staff categorized by gender (left) and role (right)

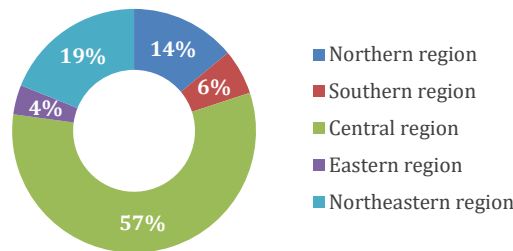


Percentage of staff categorized by gender, generation, and disability

New hires and turnover in 2019

		Rate	Total number
New hires	Male	385	2,120
	Female	1,735	
Turnover	Male	306	1,497
	Female	1,191	

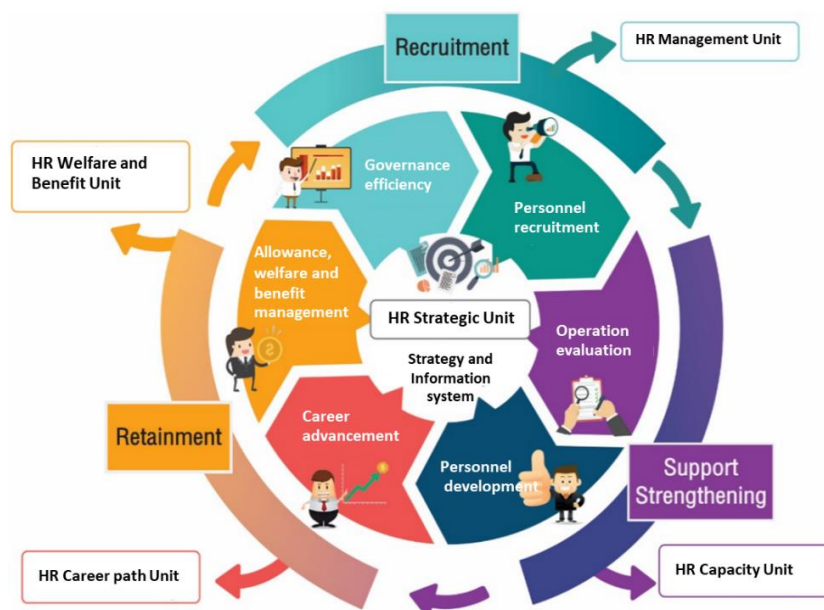
The rate of new hires (2,120 persons) was higher than the turnover rate (1,497 persons) in which the number of females (81.8%) was higher than male (18.2%). New hires were mostly from the central region (57%).



Proportion of new hire staff categorized by their birthplace

Workforce Planning

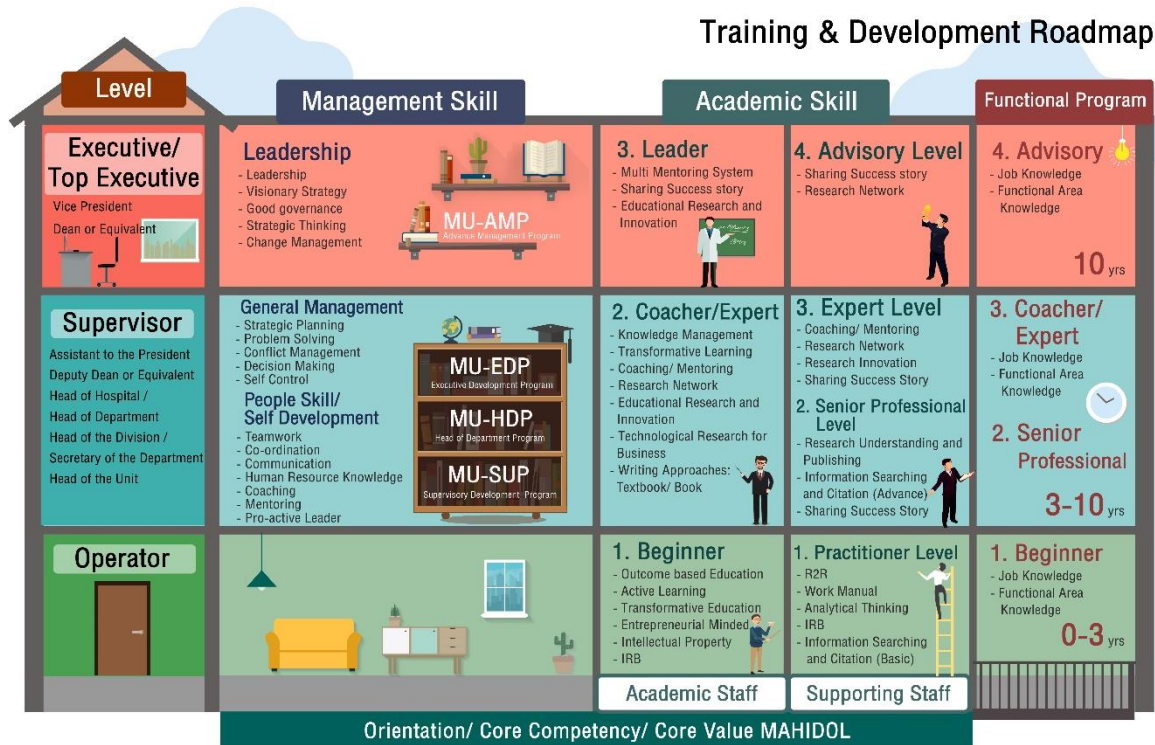
As we always realize the potential of human resources is important for our strategy’s achievement, all of the administrators at each level were encouraged to apply adaptive management due to Mahidol Core Value as well as create strong interconnection among work units. We have implemented the strategy on good governance under the systematic regulation tracking on our staffs by the Human Resource Management Unit. To push the University towards the imposed visions, sustainable management strategies have been developed in order to set up efficient corporate management systems in compliance with the University’s goals.



Workflow of Human Resource Management, Mahidol University

Workforce Development

To develop performance and promote lifelong learning of both academic staff and supporting staff, we develop the “Training Road map” for our staff to improve their working potential and succeed on their career path according to our core value as to be a sustainable organization.



We also motivate our staff to continuously develop themselves by the guidance of individual development plan. The training information center which facilitates the staff to access opportunities including inhouse-training or public training online¹¹ where our staff can develop and share their knowledge, skills and experience was provided to engage with and contribute effectively.

To implement the strategy of internationalization, we had instituted the English language skill requirement of our staff including academic and supporting staffs. We also provided training courses and resources for all of our staff to meet the essential skills of international communication. In 2019, we prearranged the English language training courses participated by 149 supporting staff who came from 38 work units.

¹¹ Training information center website, https://muhr.mahidol.ac.th/Registration/project/training_i.php

English language skill requirement

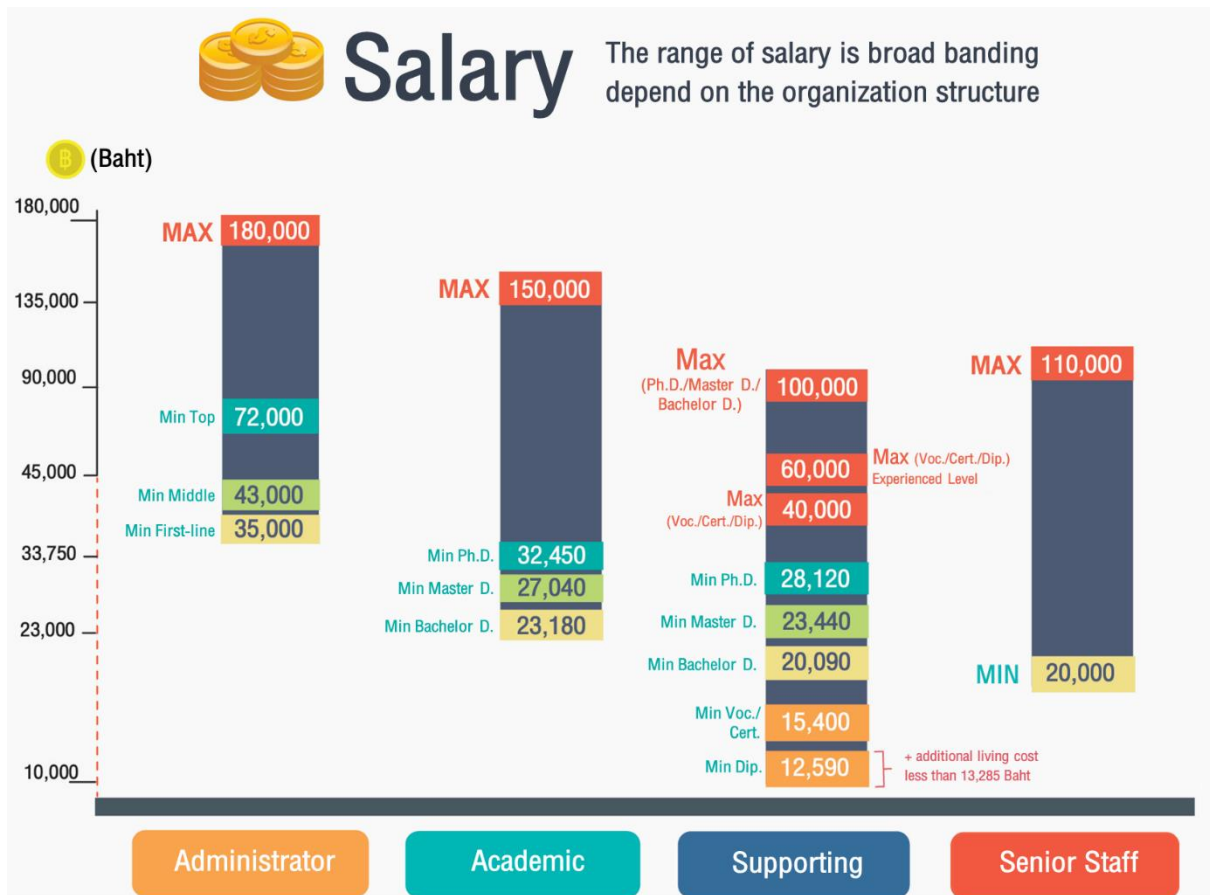


English Proficiency Criteria	Type	Type	Position
	Academic staff	Supporting staff	International Relations Department
IELTS (Academic Module)	6	3	4
TOEFL iBT (Internet Based)	79	29	40
TOEFL-ITP	550	390	433
TOEFL-CBT	213	90	120
TOEIC	✗	400	500
MU GRAD TEST	80	36	48
MU-ELT	✗	56	70

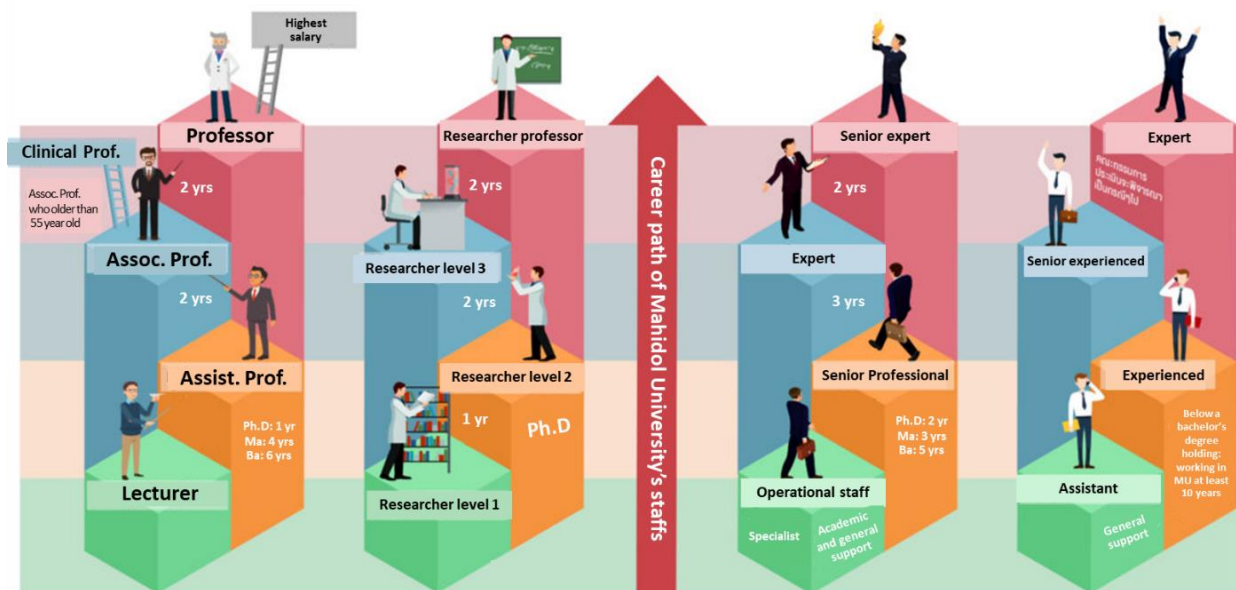
English test centers

- 01** MU GRAD TEST (Computer Based) / TOEFL ITP
 Language Center, Faculty of Graduated Studies, Mahidol University
www.grad.mahidol.ac.th/grad/mutest
- 02** TOEFL iBT
 International College, Mahidol University
www.ets.org/toefl
- 03** TOEIC / MU-ELT
 Faculty of Liberal Arts, Mahidol University
www.la.mahidol.ac.th

Generally, our staffs are hired at a starting salary at the bottom of the relevant salary scale up to their education background. The additional living cost is temporarily provided for the staff who receive the minimum salary that cannot meet the basic utilities. This starting base salary may be adjusted up based on relevant work experience. It may also be adjusted under any of the conditions including for staffs who possess particular knowledge or ability, associated with high demand in the job market, and specific qualifications.



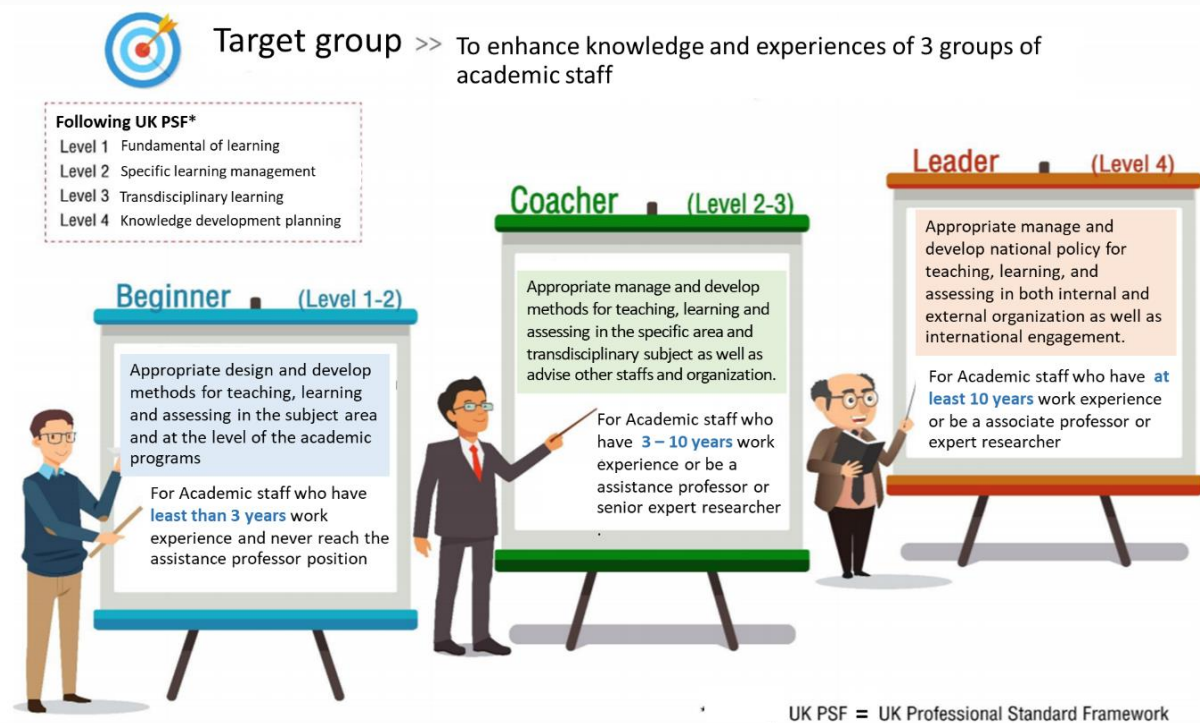
Salary by employee level of Mahidol University's full-time staff



Career path of academic (left) and supporting staffs (right)

MU-Talent workforce

Mahidol University realize that capability personnel is powerful in driving our good governance as well as technology and innovation development. We commit to find and support the group of talented staff who have high potential for career growth. In 2019, We organized the staffs' performance development program for academic staff by providing online coaching of teaching and researching courses in collaboration with Macquarie University. The Mahidol - Macquarie Center for International Education (MCIE) was established with the purpose of improving our personnel in compliance with the Professional Standard Framework. However, this framework will be evaluated by the academic staffs in 2020.



Target groups and requirements of MU-Talent program

2.3 Communities

Life-long learning

The new educational strategies have created clear direction for the development of Mahidol University study programs in response to online learning programs using Massive Open Online Course (MOOC) and Small Private Online Course (SPOC) which allow external students to participate in some undergraduate classes with regular students. This will enable the external students to use their study records gained from those online courses for credit transfers in universities, in order to develop their potential and encourage lifelong learning to reduce social inequality. We also offer the Mahidol Apprenticeship Program Curriculum¹² for people who want to take individual courses at their convenience and accumulate credits for use towards a future degree. These courses are not requiring the previous degree and the transcript will be approved by Mahidol University that can be later transferred to degree program.



iNT service and MU Roadshow

Institution for Technology and Management (iNT)¹³ was established with the purpose of translating our outcome of research and technology to public use as well as promote the innovation and technology sharing, deep diving, and transferring as the intellectual property to create the entrepreneurial ecosystem under Thailand 4.0 policy on sustainable technology and innovation development. The iNT plays a role as the brand creator and server for technology and innovation development. We also provide research and academic service for startup and co-working business who need to develop their business ideas based on research and academic databases.



¹² Guest courses list, <https://graduate.mahidol.ac.th/MAP/MAP-C.php>

¹³ iNT website, <https://int.mahidol.ac.th/>

Under organization of iNT, we provide the MaSHARES co-working space for sharing ideas and developing technology and innovation facilitated by basic tools (such as projector, flipchart, board) and advanced tools (such as Hexagon Arm Scanner, MDX-40A, 3D-printing).



MaSHARES co-working space

Fitness and Sport facilities

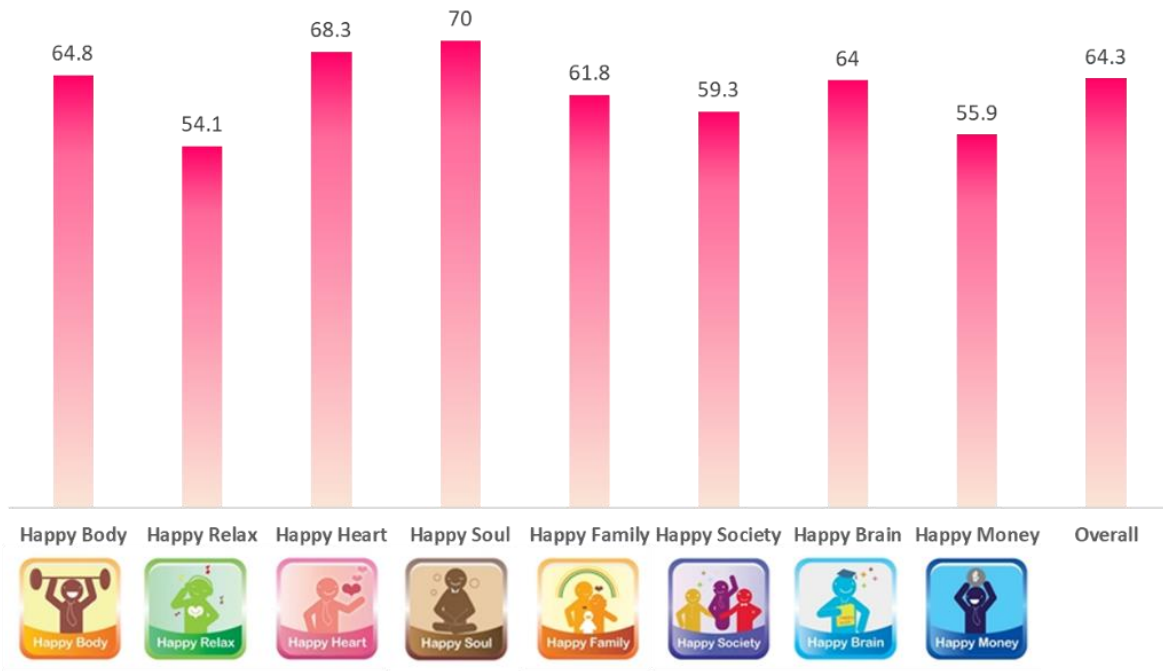
We have provided accessible recreation and sports facilities to promote healthy lifestyles and wellbeing for our students and staff as well as local people nearby. In Salaya campus, we have created the sport complex services consisting of multi-purpose buildings, indoor stadiums, and outdoor fields and courts for 11 types of sports such as football, athletics, basketball, futsal, volleyball, swimming pool, petanque, sepaktakraw, hoop takraw, badminton and tennis. We have supported health-promoting activities, sport learning, and sport competition for students, staffs, and outsider organized by the Office of sports and fitness activities which take the role as the center of exercise.



Fitness and sport facilities in Salaya campus

Happy University

In 2019, the corporate KPI scoring under the strategy to be ***Excellence in management for sustainable organization*** of our staff and organization unit through the system of Happinometer online¹⁴ shows that overall happiness score of staff is 64.3 in a scale of 100.



The Happinometer score by online questionnaire 2019

In 2019, 27 out of 36 work units had acted to strengthen bond and happiness in organization. Some examples are, the **‘Refreshing Core Value & Team Engagement’** workshop organized by the Faculty of Nursing that aimed to encourage the reception of organization culture and value following core missions and vision, the **‘Happy Retirement with Provident Fund’** program organized by the Mahidol University International college which aimed to instruct about financial management and planning for our staffs as well as inform about the provident fund as an option, and the **‘Happy Room’** organized by Faculty of Social Sciences and Humanities that provided the accessible space for all of staff to rest and relax.

¹⁴ Happinometer online, <http://www.happy.mahidol.ac.th/index.php>

Mahidol Engagement

The University is determinedly connected with place and people, playing a significant role in driving economic, social and cultural movement. The University aims to change lives through education, people empowerment and opportunities for communities and nation. Our approach to community engagement is to expose our facilities and skills to communities, and develop partnerships that not only improve the life quality but improve the learning for our students. We use our University to provide consultancy services, internships, placements and work experience, and develop continued professional opportunities for local businesses. Our organization on education engagement includes the MUSC Centre of Excellence in STEM Education which is the cooperative center of Science Technology Engineering and Mathematics Education (STEM) Education by integrating multidisciplinary sciences and research knowledge to delimit the technology disruption, emphasizing on school students.



STEM camp organized by the Faculty of Science, Mahidol University

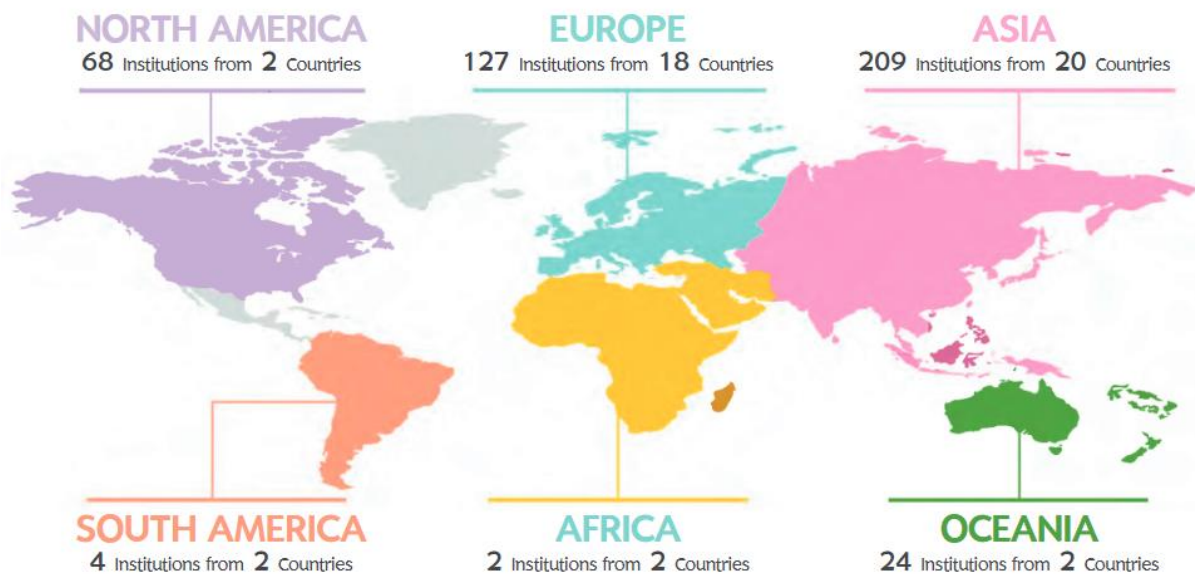
We promote the importance of volunteering in enhancing life quality of communities as well as community-based and employer-led learning and curriculum engagement. For example, in 2019, we organized the mobile health services volunteered by the Faculty of Nursing, the mobile veterinary medical services volunteered by the Faculty of Faculty of Veterinary Science, and the mobile health check by the Faculty of Public Health.



Volunteer activities of mobile health services

2.4 Internationalization

Mahidol University determinedly believes that international engagement and research experiences are vital for an individual's academic, professional and personal development. These opportunities will help generate valuable study and research skills, as well as conduct the soft-skills such as creativity, flexibility, independence, and problem solving, which are essential for the global working competency. To successfully deliver these experiences to students and academic and support staffs, the University has implemented globalization strategies. A number of international collaborations by region is shown in the figure below.



We take active roles in many of the key academic networks in the Asia-Pacific region. We are the Secretariat of the ASEAN University Network (AUN) Health Promotion Network, and the Convener of AUN Human Rights Education. Through our involvement in these AUN Networks, as well as our broader work with the AUN, we contribute our expertise towards research, educational, and social development in the ASEAN region. In connecting with the broader region, we are an active member of the Asia-Pacific Association for International Education (APAIE), having been a member of the Board of Directors since 2009, and hosting the 2012 APAIE Conference and Exhibition in Bangkok. We also take active roles in many other regional and international academic networks, including the European Association for International Education (EAIE), the Association of International Educators (NAFSA), the Australia International Education Conference (AIEC) and the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net).



ASEAN University Network (AUN)

In addition to our interdisciplinary research collaboration, we also work to support innovative research in Thailand and beyond. As a member of the Thai Research Universities Network, we host the Health Collaborative Research Cluster to strengthen expertise and development in key fields to the Thai economy and society. We currently host 10 World Health Organization collaborating centers which support the spread of clinical best practice across Southeast Asia through education, training and research.

Since 2003, we have continuously hosted the Prince Mahidol Awards which recognize global breakthroughs in Medicine and Public Health every year, with several awardees having gone on to win the Nobel Prize.



Price Mahidol Award 2019 event

Our aim for the future is to move beyond the agreements, to build stronger relationships with selected Strategic Partners in 8 key areas following the picture below;



We have been engaging with other international universities to promote sustained high-potential research collaboration with some of our key strategic partners, as well as facilitate exchange of academics, researchers, and graduate students throughout the operation of Joint Research Units. For example, the Mahidol Oxford Research Unit (MORU) has been working for 40 years to develop treatments for tropical diseases, and has created a strong bond in this field with Oxford University. More recently, the Medical Informatics Research Unit (MIRU), in collaboration with Bremen University, has been developing interdisciplinary research using ICT to support medical research and treatment; and the Mahidol University-Osaka University Collaborative Research Center for Bioscience and Biotechnology is supporting innovative research across Asia.

Our International Centers, including those in collaboration with key partners such as Chiba University, Osaka University, and Kyoto University, support long term collaboration in research, mobility, and transnational education and provide a constant connection with our partners.

List of collaboration courses

Cooperative university	Course name
Double Degree (Cotutelle program)	
University of Sussex, Brighton, United Kingdom	B.Sc. in Bioinnovation (International program, Multidisciplinary Curriculum)
Curtin University Australia	B.Sc. in Actuarial Science (International program)
University of Technology Sydney	B.Sc. in Materials Science and Nanoengineering (International program)
University of Sussex, Brighton, United Kingdom	B.Sc. in Biomedical Science (International program)
State University of New York, College of Environmental Science and Forestry	B.Sc. in Bioresources and Environmental Biology (International Program)
Curtin University, Australia	B.Sc. in Industrial Mathematics and Data Science (International Program)
Mahidol University - University College London (UCL)	M.Sc. in Computer Science (International program) (Special program)
International Medical College (IMC), MIB GmbH, Muenster, Germany	M.Sc. in Implant Dentistry (International program)
Osaka University, Japan	M.A. in Applied Linguistics (International program) (Regular and Special program)
Ateneo de Manila University, Philippines Gadjah Mada University, Indonesia Purbanchal University, Nepal Colombo, Sri Lanka	M.A. in Human Rights and Democratisation (International program)
Mahidol University - Miami University, USA	M.A. in Population and Social Gerontology (International program)
The Graduate School of Global Environmental Studies, Kyoto University, Japan	M.Eng. In Environmental and Water Resources Engineering (International program)
Toulouse University, Toulouse School of Management, France for dual degrees	M.M. Program (National and International program)
Liverpool John Moores University, University of Taipei, National University of Singapore, University of Chichester, University of Montana	Ph.D. in Sports Science (International program)
The University of Glasgow, United Kingdom	Ph.D. in Biomedical Sciences (International program)
Chiba University, Japan	M.A. in Applied Linguistics (International program) (Regular and Special program)
Joint Degree	
The University of Glasgow, United Kingdom	Ph.D. in Biomedical Sciences (International program)
Tokyo Medical and Dental University, Japan	Ph.D. in Medical Sciences (International program)

International exchange

Mahidol University welcomes the overseas students who are willing to join the short-term learning or research development. Mahidol University accepts many kinds of inbound international students and greatly values their participation and contributions in promoting the international profile. Inbound exchange students can engage with their division of interesting for a fixed period of time, from one trimester up to one academic year, as part of the study abroad programs at their home universities. Credits earned can be transferred to an ongoing degree program at another institution. Apart from their selected courses, academic schedule, visiting students are also encouraged to take the Thai Language and Culture course.



We provide the assistance and advice for visiting international students by establishing the Student, Academic and International Services (MUSAIS). International student can take opportunities and facilities that we offer, and ensure that they can overcome any problems which they are concerned. In case of short-term exchange program, overseas students can access the information including accommodation and transportation in the campus, student guide and safety handbooks, and online application¹⁵. We also organized the events and activities to encourage the engagement among Thai and international students. In 2019, the events and activities organized by MUSAIS were shown in the table below.

Events and activities organized by MUSAIS in 2019	Participants number
The English Communication Skills Development for MUSAIS I	10
Study Abroad Fair 2019	125
Authentic Chinese Cooking Class	41
Taiwanese Tang Yuan, Secret Recipe	30
MU Open House	100
Research & Post Graduation @University of Hong Kong	12
Halloween Party	66

We also enjoy exchange agreements with over 100 partner universities, representing more than 20 countries throughout the world. Participating in an exchange program is an excellent opportunity for our students not only to expand their educational experiences through having an integrated, international curricular experience but also to engage in cultural exchange which will further develop their cross-cultural sensibilities. Students can choose to study abroad for either one semester or one academic year at our partner universities and receive credit towards their degree at Mahidol University.

¹⁵ MUSAIS online system, <https://op.mahidol.ac.th/ir/musais/>

In 2019, Mahidol University was a host to 87 short-term exchange international students from 30 partner universities in 10 countries. While, our students were supported to participate in short-term outbound exchange in 54 partner universities in 18 countries.

The number of exchanged students in 2019

Region	Country	Inbound		Outbound	
		Undergraduate student	Graduate student	Undergraduate student	Graduate student
Asia	China	10	1	28	-
	Japan	16	15	71	4
	Singapore	6	-	1	-
	South Korea	6	-	2	1
	Taiwan	10	-	29	3
	Indonesia	1	-	20	-
	India	-	-	1	-
	Malaysia	-	-	2	-
	Philippines	-	-	2	-
Europe	Italy	-	-	-	1
	Germany	1	4	11	2
	Spain	6	-	-	-
	UK	2	-	2	1
	Iceland	-	-	1	-
	Norway	-	-	4	-
Australia	Australia	9	-	3	1
	New Zealand	-	-	4	-
America	USA	-	-	-	2

Capacity Building

As we know that education is the key to sustainable development, we work with partners to support the spread of skills in key areas through our capacity building scholarship programs. These scholarships provide financial and academic supports for students to undertake postgraduate education, before returning to their home countries to work in health, education, humanitarian, and governmental sectors. Since 2013, we have provided scholarships for over 290 postgraduate students to study fields ranging from Medicine and Public Health to Human Rights, in collaboration with international organizations and governments from around the world.



Moreover, we also provided the long-term scholarship for 5 Cambodian students supported by Thai Royal Scholarship under Her Royal Highness Princess Maha Chakri Sirindhorn Education Project to the Kingdom of Cambodia and 9 Myanmar students supported by Mahidol -Norway Capacity Building Initiative and MU-NORTH scholarship. Three of our postgraduate students were supported by Mahidol - Liverpool Ph.D. Scholarships to study in Liverpool University.

2.5 Occupational health, safety and environment



We prioritize the safety, occupational health and environment of students, staff and clients as well as the University environment and surrounding communities. We have established the Center of Occupational Safety, Health and Environment Management (COSHEM) in order to implement the management system of safety, occupational health and environment in accordance with laws and international standards for the well-being of Mahidol University students, staff, and other stakeholders.

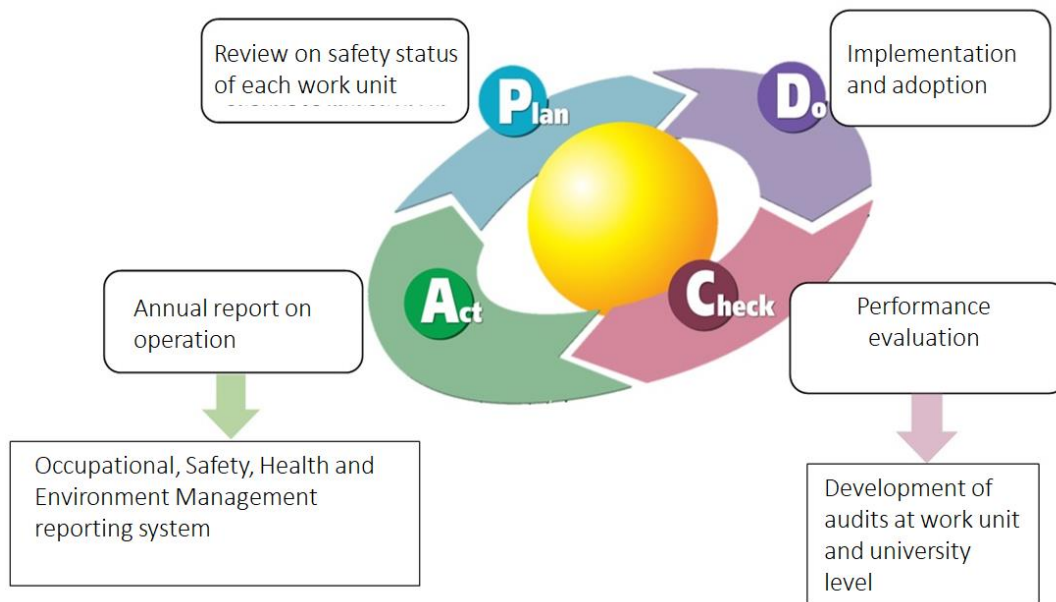
Notification and policies on occupational health and safety management

Mahidol University's Policy/Notification/Management

- Mahidol University's Notification on Learning and Evaluation of Laboratory safety (MU LabPass) 2012
- Mahidol University's Notification on Chemical waste management Policy 2012
- Mahidol University's Notification on Policy and Practical guideline in Occupational Health, Safety, and Environment 2014
- Office of the President, Mahidol University Policy on Occupational Health, Safety and working environment 2017
- Mahidol University's Notification on Occupational Health, Safety and working of suppliers 2019
- COSHEM Standard
- Enhancement of Safety Practice of Research Laboratory (ESPREL) under strategy of Mahidol University Management for Sustainability

Regulation/Policy references

- Occupational Safety, Health and Environment Act B.E. 2554
- Hazard Substances Act B.E.2535
- ASHRAE Standard 62 (American Society of Heating, Refrigerating and Air-conditioning Engineers)
- Singapore Standard SS554:2009, Code of practice for Indoor air quality for air-conditioned buildings
- Enhancement of Safety Practice of Research Laboratory in Thailand (ESPREL)



Occupational health, Safety and Environment management by PDCA system

As we know, raising awareness in occupational health, safety and risks is important for every organization to prevent accidents caused by poor risk management systems possibly leading to loss of life and property, Mahidol University has announced occupational health and safety policies to promote on the safety management activities in accordance with safety standards covering all operations within the University.

In 2019, we received the report on occupational and safety during 464 days of staffs' working. There was no accident occurred in the University since academic year of 2018. However, we still employ the safety committee with members from various fields to review and evaluate occupational safety, health and environment at work. The risk of accident and unsafety condition as well as management approach was evaluated and reviewed for guidelines of the adaptive risk management.

MU Business Continuity Plan (BCM plan)

As being aware of uncertainty, Mahidol University has prepared the MU Business Continuity Plan in response to management and operation under crisis or threatened situation as follows.

- Flooding
- Fire incident
- Earthquake
- Storm
- Drought
- Sabotage / riots
- Epidemic event

The resource and operation factors: workplace, essential equipment and tools, information technology system and database, major personnel and suppliers are considered to be controlled by the Business Continuity Strategy. In order to cooperate and communicate in the University network immediately, call tree system was set for contacting the responsible administrator team to notify or deal with the threatened situation. These urgent situations may result in discontinuity of University operations regarding services, students, staffs and the loss of life and property in particular. Additionally, in case of the worst situation, it might affect the community, the environment and society as a whole. The business continuity plans are therefore essential for the University to encounter the aforementioned chaos, enabling the important operational tasks and return to normal in a timely manner.

Six areas of the University; Salaya, Bangkoknoi, Phaya Thai, Kanchanaburi, Nakorn Sawan, Amnatchareon, were provincially divided to continue the management by the policies and practical actions in response to the crisis. The effect of crisis on operational continuity of the University including teaching and learning, healthcare service, research, laboratory, animal caring, communication, cash flow management and physical management are evaluated to determine the appropriate plans. The students and staff can access the emergency guideline via our website¹⁶.

¹⁶ Emergency guideline for MU student, https://op.mahidol.ac.th/rm/emergency_for_mahidol_university_student

We continuously operate the University system in different situations under many measures, for example:

- Real-time measurement of PM 2.5: the Air Quality Monitoring Mobile Unit organized by Faculty of Environment and Resource Studies



Air Quality Monitoring Mobile car at gate No.3 of Salaya campus

- Long-term environmental management: vertical green area management, Bus-to-tram route for save energy, air quality control, etc.
- Occupational and health management: Postponing of academic activities and staff operation due to poor air quality based on Thailand's Air Quality Index (AQI).
- Workplace and staff management: providing the safety and prevention equipment such as N95 mask, air purifiers during a period of high AQI, especially for staffs who are allergic or having pregnancy.
- Communication to community: providing real-time AQI report¹⁷ by our PM 2.5 detector.

Furthermore, in order to manage the risk of the pandemic disease, we have established the COVID-19 prevention measures and policy including:

- Apply computer-based teaching, training, examination, and learning by integrating artificial intelligence and learning analytics, augmented reality and virtual reality, tele-teaching and tele-medicine, online conference, etc.
- Prepare workforce to be flexible for the changeable situation, e.g. work flexibility, workforce safety, employee wellbeing, e-Recruitment
- Prepare the Infrastructure system due to new normal lifestyle
- Provide the emergency budget for students and staffs
- Organize the body temperature test before entry into buildings
- Provide the prevention facilities such as alcohol gel, hand sanitizer, etc.
- Report the real-time incidence case in the University
- Provide COVID-19 insurances for all of students and staffs
- Publish the essential information such as announcement on COVID-19 situation¹⁸, news and appropriate practices¹⁹

¹⁷ Real-time air quality report and the related announcement website: <https://mahidol.ac.th/aqireport/>

¹⁸ News and information about COVID-19, https://op.mahidol.ac.th/rm/covid-19_of_mahidol

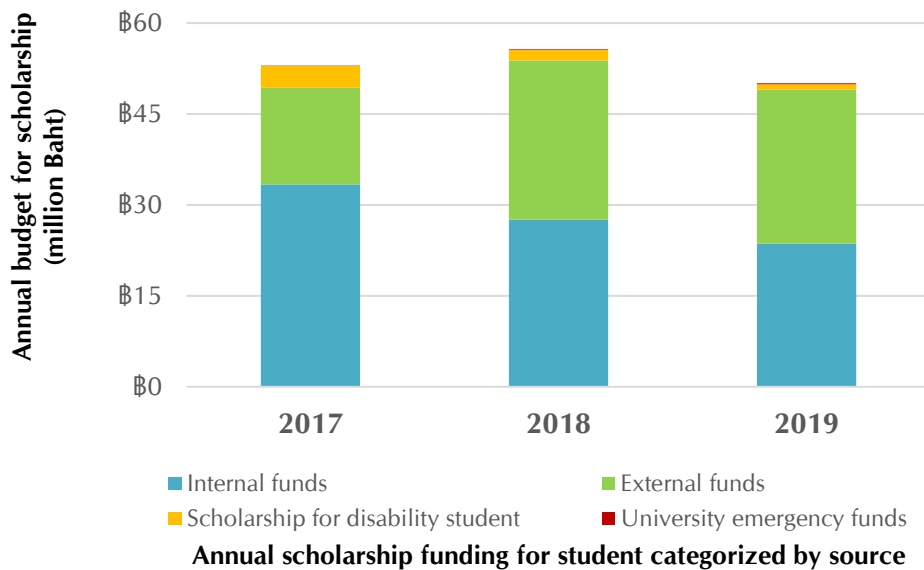
¹⁹ Guideline and announcement of MU about COVID-19, <https://mahidol.ac.th/th/announcement-covid19/>

2.6 Welfare and benefits

Student scholarship and loan

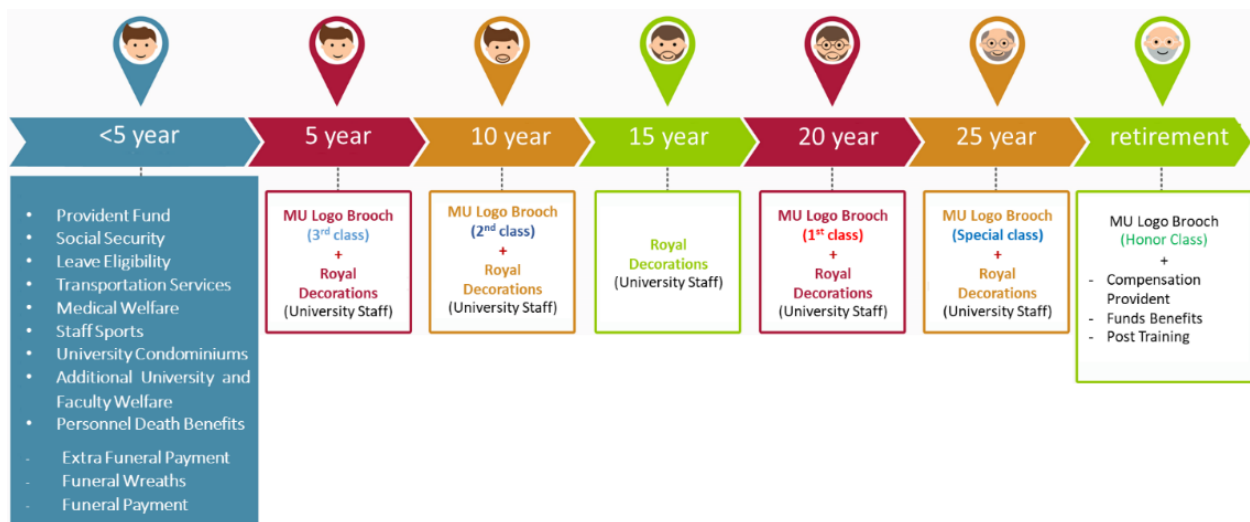
Mahidol University is willing to minimize educational limitation under the university policy for students who are facing financial difficulties but with outstanding or having positive behaviors. Various scholarships are initiated from internal funds by the Division of Student Affairs, and external funds by Thai governments and private companies. In the worst case, students that are highly affected their studies such as their parent death or their house burned down will be supported by ‘University emergency funds’. Moreover, students who cannot afford the basic necessities for good life quality can require for supported money from the Division of Student Affairs. Students can loan between 500 -5,000 Baht per person and are required to pay back within 6 months. The educational loans by government which includes tuition fees and living expenses are also available via the ‘Student Loan Funds’.

We had support and sought external funding for our students. Many students were supported by research grants from different sources including the own University’s budgets and external funds. In 2019, approximately 50 million Baht was raised for financial aid of 1,927 students. 1.9% of scholarships provided were for disabled students.



Financial support and welfare for staffs

In accordance with Mahidol University’s welfare and benefit policy, we basically provide financial supports to our full-time staffs in term of welfare and benefits. The University’s funding process includes selecting a good staff working at least consecutive three years without disciplinary punishments with good conduct and performances to gain praise as outstanding persons to receive Mahidol University brooches or royal decorations awarded.



Mahidol University brooches and royal decorations awarded

The minimum benefits available for full-time employees²⁰

Health care

20,000฿ or 200,000 ฿/year or 50% co-pay supporting for medical treatment and annual health check
 13,000฿ supporting for maternity expenses and 50% of salary in 90 days during parental leave period
 40,000฿ supporting for personnel death (exclude lethal caused by working)

Financial service

3% of staff's salary supporting to the accumulated account for provident fund
 1 to 10 time of the last salary compensating for terminated and retired staff (disability and invalidity coverage)
 400฿/month for inherit right allowance include to adopted child

Leave and vacation

60 days/year for Sick leave
 45 days/year for Personal leave
 90 days for Maternity leave
 15 days/time for Parental leave
 10 days/year for Vacation leave
 120 days for Ordination leave
 3 months for Meditation leave
 4 years family responsibility leave (without salary)
 Military service leave

²⁰ MU Staff's welfare and benefits, <http://op.mahidol.ac.th/hr/document/handbook/2019/handbook-07-welfare.pdf>



Generally, sickness and physical health promotion of staffs and their families will be supported by the 'Mahidol's welfare fund'. In emergency case, staffs can request for loan under the fund which is an additional welfare managed by the appointed committees. The provident fund is continuously supported retired staff. Social security fund is also available for the university's staff coverage to part-time and temporary staff. The financial aid and compensation funds will be provided for staff's family, in case of their death.

Currently, we establish the "MU-Flexible Benefit" to be an option for our staff. All of our staff can require 1 of 9 supplement services each year based on their annual medical expenses budget. Beyond medical services such as sport and fitness activities, physical therapy and other maintenances are also included.

MU-Flexible Benefit

- Available for staff who is approved to be fair/good/very good level in the annual assessment
- The staffs can require one option per year.

1 200,000/yr

FlexBen: 5,000

Annual medical expenses budget = 195,000

2 20,000 /yr

FlexBen: 5,000

= 15,000 + Co-pay

3 University staff who changed from the government staff

FlexBen: 5,000

= Retirement pension

Welfare & Benefit

Life insurance

Health checking / vaccine

Sport/ Fitness club
Running/cycling event by MU

Health care / Medical services

Dental care

Eyesight disorder care / LASIK

Medicine/ Medical cost

Physical therapy

Air purifier/ maintenances

จัดทำโดย กองทรัพยากรบุคคล มหาวิทยาลัยมหิดล ดูรายละเอียดเพิ่มเติมได้ที่ <https://op.mahidol.ac.th/hr/welfare/flexible-benefit>

MU-Flexible Benefit promotion

Affordable housing for student and personnel

Affordable housing is widely available both off and on campus, including shared housing, private flats or condos, and boarding houses. Mahidol University has several dormitories for local and international staffs and students. Moreover, affordable off campus housing is also widely available near all campuses. In general, average monthly rent is about 5,000 – 6,000 Baht for a 20-30 square meters furnished single room with air conditioning, bathroom and other facilities such as 24-hrs security guards, coin operated washing machine and water vending machine. Water supply will be charged in range of 25-27 Baht per unit, while electricity bill per unit is approximately 6.5-8 Baht.



Condominium building at Salaya campus, Mahidol University

2.7 Healthcare services

Mahidol University has originally focused on medical programs and expanded remarkably in recent decades. We have potential to provide professional medical treatment for our students, staff, and other people.



For our students and staff, we have provided the health care service under Rule and procedure of Mahidol University student health care service and allowance disbursement B.E.2559²¹. Our students and staff can access the medical care and services in 6 health service centers, 2 medical centers, 2 clinics, 3 hospitals and 7 partnered health service centers nearby the campus²². In addition, as we are concerned with the risk of communication disease in our community, we have published the Guidelines for Communicable Disease Prevention on student of Mahidol University B.E.2558 for appropriate practices.

²¹ Rule and procedure of Mahidol University student health care service and allowance disbursement according to B.E.2559 and the related announcements: <http://www.orsa.mahidol.ac.th/main/service/health/th/>

²² Health care services for MU students and staffs, <https://mahidol.ac.th/th/new-current-student/student-health-care/>

For our services, we currently organized 2 medical schools, 8 hospitals, 1 dental hospital, 2 veterinary hospitals to offer medical education, research facilities and health care service to the public. As fully equipped medical units, 4,000 beds are available for hospitalized patients.

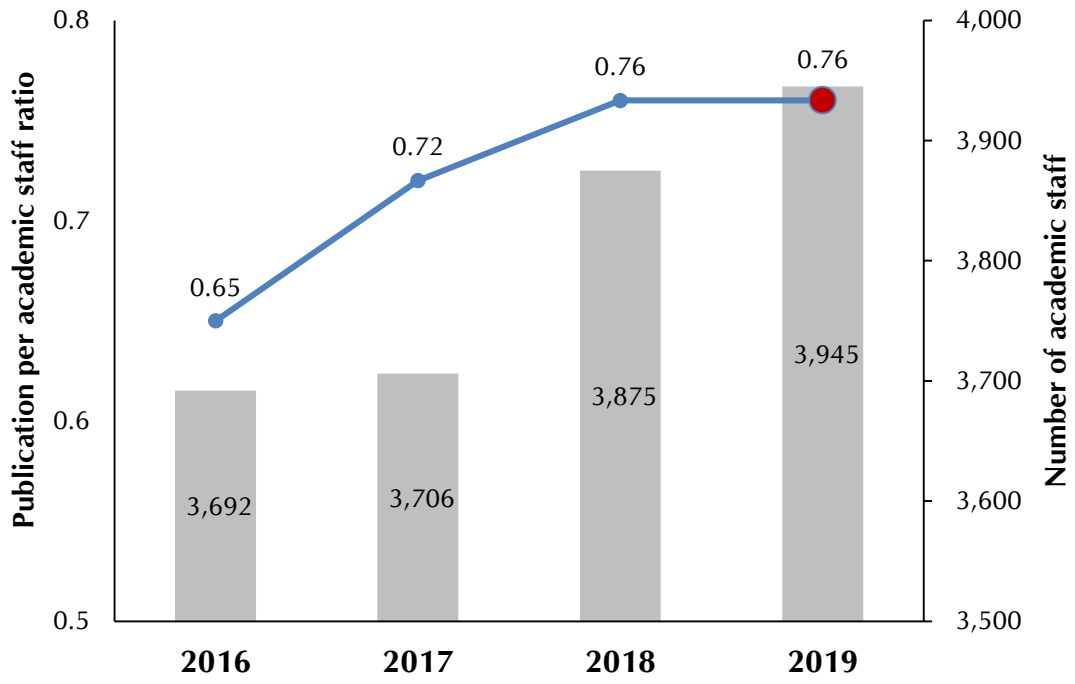
3. Education, research and innovation

According to our vision, Mahidol University intends to be a world-class University and encourages research programs emphasizing on technology development, innovation and entrepreneurship; that is the hub of technology and innovations which play a vital role in development of important economic infrastructure at the national and regional levels. Besides, we commit to create value from innovations, enhancing researcher potential for both basic and applied research as well as transferring knowledge, technology and innovations to community and commercial sector for the betterment of Thai Society.

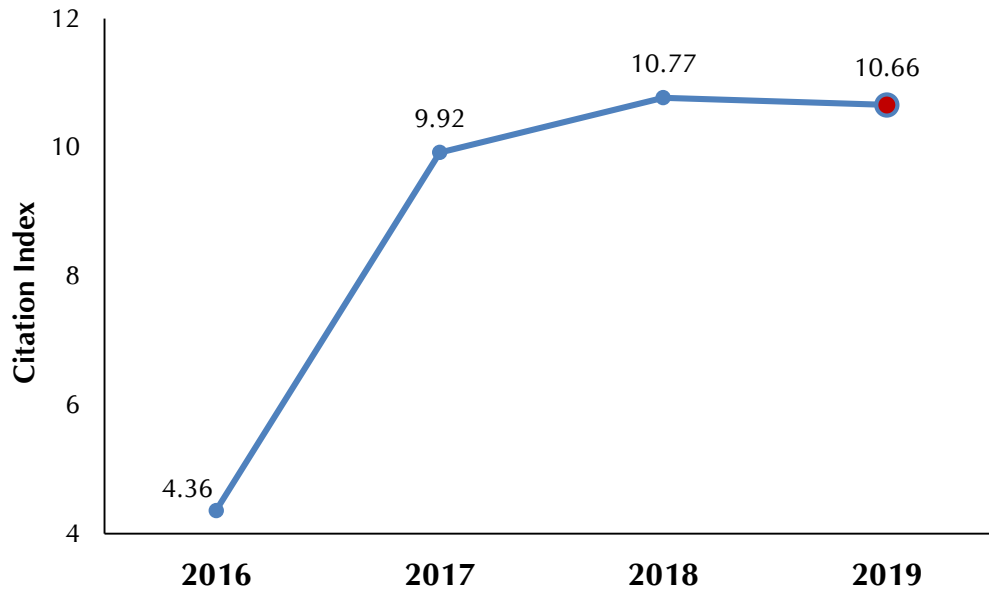
We have provided over than 85 undergraduate courses and 261 graduate courses for those who are interested in a variety of fields. The course numbers we managed during 2017 to 2019 are summarized in the table below

Academic year	Number of courses	Thai program	International program	Total
2017	Undergraduate program	53	35	88
	Graduate program	20	241	261
2018	Undergraduate program	54	35	89
	Graduate program	97	164	261
2019	Undergraduate program	54	31	85
	Graduate program	97	164	261

Apart from the education service, we commit to expand our in-depth knowledge from effective research and academic activities through international publication. In 2019, it was found that the publication driven by our University is stable when compared to the previous year. We continuously publish the research outcome to the international databases by 0.76 publication per academic staff and average of Citation Index during 4-year period was 10.66 times per publication.



Ratio of publication per academic staff



Citation Index in 4-year period

It is important that our research goes beyond the laboratory, to create positive impacts on people's lives. Mahidol University has established a strategic functional framework in implementing research plans set in the University Strategy on Excellence with the intention to conduct research that will benefit the academic sector, Thai people and the world society. Our research outcomes have been transferred to government and private sectors for contribution to technology and knowledge development. There were 431 research projects conducted in 2019 that were operated under the cooperative contracts with the external sectors, for example:

- The Artificial hip joint technology for the elderly research project by the Faculty of Medicine Siriraj
- The workers' well-being development project by Healthy Workplace for All: Thailand Centre for Happy Worker Studies, Research Institute for Languages and Cultures of Asia
- Smart home development for the elderly under Thailand 4.0 project by the Faculty of Engineering
- Efficacy of Bios7 on glycemic control, lipid profiles and body composition in overweight/obese adults with impair fasting glucose by the Institute of Nutrition

We also provided financial supports to many researches under the established funding e.g. 11 research projects supported by the Pre-seed Fund, 2 research projects supported under the Mobility Talent project, and 2 research projects supported by the Research Gap Fund to drive future research work.

Translational and transformative Research

As we dedicate to develop innovative solutions to many of today's most important challenges. Our research supports innovation in technology, clinical practice, and social justice, and therefore places our students in a pioneering research environment. Our research mostly focuses on 3 key areas including Medicine and Health Sciences, Innovative Technologies, and Resilient Societies. Besides, it is crucial to collaborate the research and academic activities with wide range of partners, including government and industry sector. The sophisticated structure of engagement promotes interdisciplinary collaboration, and certifies that our findings contribute to social and economic development, locally and internationally. In 2016 to 2019, our research outcomes were transformed to be intellectual property as shown in the table below.

Number of registered intellectual property

Year	Patent	Petty patent	Copyright	Trademark
2016	4	16	796	-
2017	5	16	119	-
2018	8	8	555	11
2019	3	6	48	4

4. Infrastructure development

4.1 Greenhouse gases

Global warming affects every part of the world through changes in climatic systems, increasing the occurrence and severity of natural disasters such as heat waves, storms, floods, and plant and animal extinctions, all of which have effects on the environment, natural resources, and human livelihoods. Creating awareness on such issues is therefore one strategy in solving the problems associated with global warming effectively.

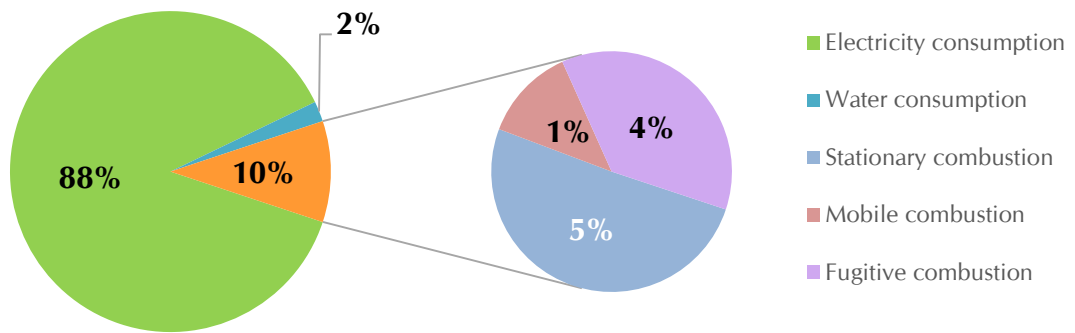
The Energy Management Committee of Mahidol University recognizes the adverse impacts of energy and resource consumption resulting in the emission of Greenhouse Gases or GHGs, especially Carbon dioxide (CO₂), Methane (CH₄), and Nitrous Oxide (N₂O) which are a major cause of global warming. Therefore, it is essential to promote guidelines to reduce Greenhouse Gas emissions and introduce energy saving initiatives across all Mahidol University units. Since 2015, we have adopted the GHGs Emission Inventory Program to estimate the emission from activities in the University.

Amount of GHGs emission in all of our work units were calculated following the Thailand Greenhouse Gas Management Organization (TGO)'s guideline by the Division of Physical Systems and Environment to serve as basis for suggesting and implementing the environmental measures and policies. Besides, we also encourage our work units to participate in the 'Carbon Footprint for Organization' based on the guideline of organization's carbon footprint approach by TGO. Since 2016, there were 7 work units that participated in the carbon footprint inventory of TGO.

In 2019, the inventory result shows that the largest source of GHGs emission is the electricity usage (87.8% of overall emission). The emission of mobile combustion, electricity, and water consumption were reduced from the 2018 levels. Despite, the GHGs emission increasingly emitted by the stationary and fugitive combustion result to 1.9% overall emission increase from the previous year.

Greenhouse gases emission inventory and methods in 2019

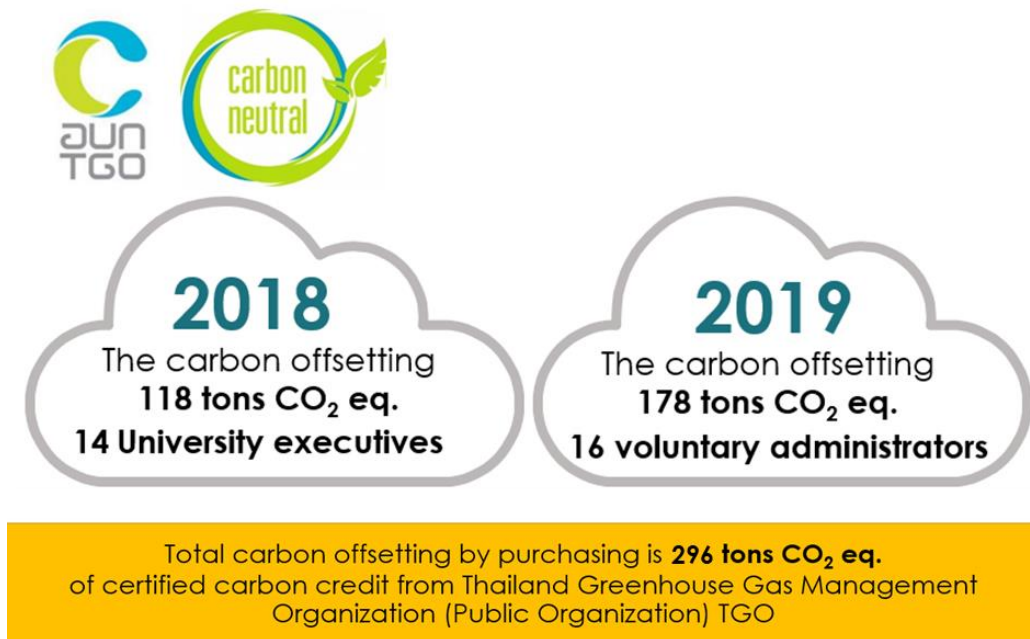
Type	Source of GHGs emission	GHGs emission (ton CO ₂ eq)	GWP source
Scope 1	Stationary combustion	9,622.80	IPCC Vol.2 table 2.2, DEDE, PTT, AR5
	Mobile combustion	2,383.68	IPCC Vol.2 table 3.2.1, 3.2.2, PTT, DEDE, AR5
	Fugitive emission	6,994.06	IPCC 2013, AR5; IPCC Fourth Assessment Report, 2007, IPCC Fifth Assessment Report, 2014 (AR5), TGO 2019, Ecoinvent 2.0
Scope 2	Purchased electricity	163,688.09	Thai National LCI Database, TIISMTEC-NSTDA (with TGO electricity 2016-2018)
Scope 3	Purchased water	3,813.34	Thai National LCI Database, TIISMTEC-NSTDA (with TGO electricity 2016-2018)
Total emission		186,501.97	



Proportion of GHGs emission of Mahidol University categorized by source

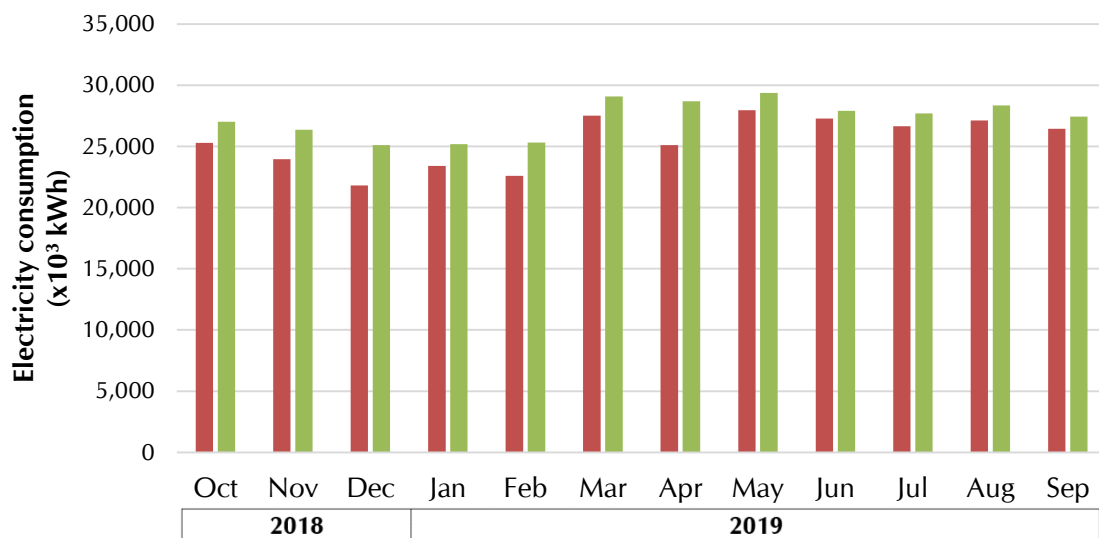
The Carbon neutral project

In 2018, the Low Carbon Administrator Project was launched to encourage our administrators to reduce their GHGs emission in their daily life. The project intended to offset the amount of GHGs annually emitted by activities of executive directors who volunteered to participate in this project. All executive directors were asked through questionnaire on their daily activities. Then, their answers were reviewed and calculated referring to a methodology of TGO. In 2019, there were 16 voluntary administrators who participated in this project. The total amount of GHG emission was 169.06 tons CO₂eq and the carbon offsetting of such emission was conducted by purchasing 178 tons CO₂eq of certified carbon credit from TGO.



4.2 Energy

Mahidol University has committed to increase the effort in efficient energy usage. Because the major energy consumption of Mahidol University is electricity usage, we have continuously monitored and reviewed the University electricity consumption to improve the adaptive management of energy sector. Energy consumption was calculated by using the record from the University's energy suppliers, and was verified against the University's own monitoring systems. In fiscal year 2019, we found that the total electricity consumption was 0.07% higher than in the previous year. The result shows that electricity was remarkably used during summer semester in March, April, and May.



Electricity consumption of Mahidol University in 2019 (Fiscal year)

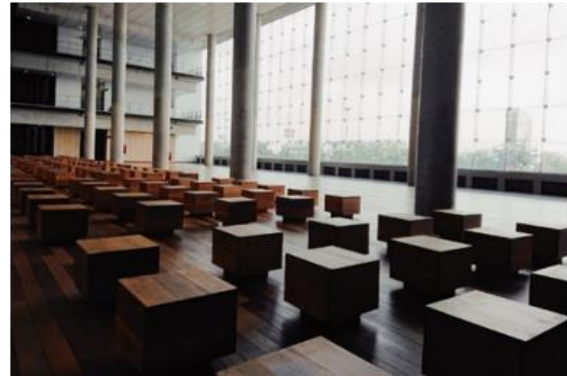
However, we were aware of the principle of saving energy as recognized responsibility of all executives, staff, and students. All levels are required to implement and cooperate with the measures and report results to the energy management working group owing to ensure their action plan achievement in accordance with Mahidol University Announcement on Energy Saving Policy²³ and Energy Saving Measures to Reduce Greenhouse Gas Emissions²⁴. Moreover, we also adopted the 'Green Office' principle in order to reduce our environmental impact by using the energy and resources efficiently.

²³ MU Announcement on Energy Saving Policy, <https://www.mahidol.ac.th/sustainable/pdf/policy-energy.pdf>

²⁴ More details about the MU energy measures, <https://www.mahidol.ac.th/sustainable/pdf/policy-2-7-energy.pdf>

The energy measures were implemented by many campaigns and activities for example:

- Campaign for promoting walk up and down instead of using elevators
- MU light out campaign that encouraged students and staff to switch off their lights for 60 minutes
- Campaign to switch off and unplug the electronics appliances after uses
- Improvement of illumination system by high-efficient appliances such as replacement of fluorescent with LED light, natural light integration, individual task lighting, motion sensor lighting, etc.
- reducing energy loss by green building design such as cutting direct solar heat by using reflection glass wall and eaves.



Improvement of illumination system



Green design building



MU Green library project



MU light out

Renewable energy

As we realized the renewable energy is an option for sustainable resource management, we conducted a study to identify opportunities for utilizing renewables in the University's areas and buildings. We have adopted the renewable energy technologies and innovation such as using solar power, bicycle electricity generator, or biodiesel extracted from used cooking oil.

Currently, many work units partly generated their own energy supplies by solar power under solar roof project. For example, the solar energy was used to heat water instead of using electricity in the Faculty of Medicine Ramathibodi Hospital; the solar cell installed on walk way in Kanchanaburi campus can generate the replacement of electricity around 70.4 kW, and the solar rooftop on the building of the Faculty of Social Sciences and Humanities can replace the electricity usage around 20 kW.



Available solar rooftop in Mahidol University

- **Developing the infrastructure to reach the goals as zero carbon emission**

In 2021, the solar rooftop and smart electricity development project will be launched in Salaya campus by 15 year-contracted with an external supplier. The solar panel will generate at least 12 MW with storage capacity of 500 kWh. Furthermore, the smart electricity system will be implemented in Salaya campus. The electricity supply from solar energy is expected to reduce around 35% of the total electricity utilization from fossil fuel. The program will save the university's budget about approximate 2.4 million Baht per month or 419 million Baht in 15 years.

Moreover, in the new building area of Chakri Naruebodindra Medical Institute, the Solar panel installation project has been operated in 2018 and they are expected to be supplemental at maximum of 3.3 million MWp which can reduce the electricity cost around 4 million Baht annually



Solar panel installation model of Chakri Naruebodindra Medical Institute

4.3 Transport

We provide public transportation both inside and outside the campus areas. The on-campus 16 electricity-trolleys are available, and are divided into 4 routes in Salaya campus. For transportation between campuses, 9 shuttle buses are operated for students and staffs to transport into our 4 units; Salaya campus, the Faculty of Science (Phaya Thai campus), the Faculty of Medicine Siriraj Hospital, and the Faculty of Public Health. We also provide a bus terminal in Salaya campus to encourage students and staffs to use public transportation. With this terminal, staffs and students can park their own cars in a parking area located nearby the terminal and take a shuttle bus or electricity-trolleys to other places.



Shuttle bus terminal (left) and electricity-trolleys station (right) in Salaya campus

Mahidol University has attempted to push towards development of wellbeing, physical and mental health, preventive actions and improvement of social connectedness and quality of life. We have intended to promote walking and cycling as primary means for commuting in campus. Vehicle lanes are reduced from 6 lanes to 3 lanes while sidewalks are expanded to encourage people to walk and use a bicycle instead of motorized vehicles.

To reduce energy consumption from fossil fuel, we encourage our students and staff, and then expand to local community to use non-motorized vehicles by improving the campus environment to become more convenient for cyclists. Cycling lanes are improved and bicycle racks are provided around the campus. Around 8,000 bicycles were used in Salaya campus. Also, there are public bicycles available at the bicycle service center for our students and staff. The cycling lanes and pedestrian walkway system were comprehensively developed. Along the sidewalks on campus, lots of big trees are grown to provide shade for pedestrians and cyclists making them feel more refreshed and comfortable. The parking areas were constructed and adjusted into green open spaces. Many outdoor spaces were created to support various kinds of activities and gatherings enhancing liveliness and variety to campus life.



Sidewalks in Salaya campus

4.4 Water

Water reduction and efficient management are becoming our high priority. In Salaya campus, total water consumption is approximately 4,716,530 cubic meters or 12,922 cubic meters per day.

Water consumption source of Mahidol University, Salaya Campus in 2019

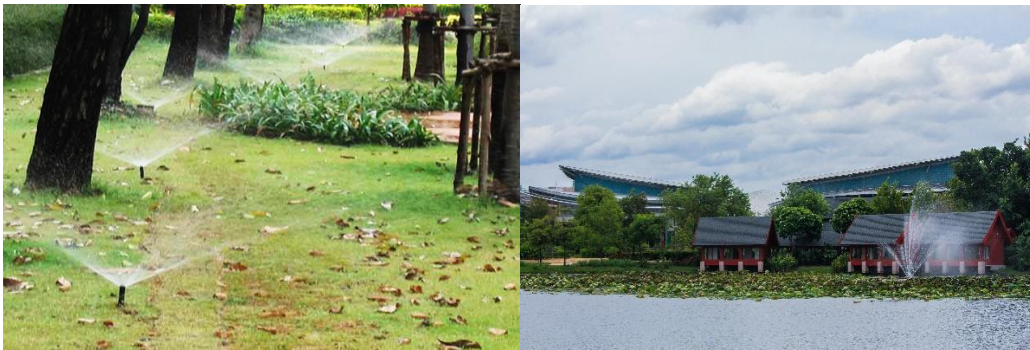
Water Source	Water use (m ³)
Municipal water (Tap water)	1,117,995 (23.70%)
Recycled water from wastewater treatment system	365,000 (7.74%)
Surface water in our reservoir	3,233,535 (68.56%)
Total water consumption	4,716,530 (100%)

In Salaya campus, there was 1,117,995 cubic meters of tap water consumption that is supplied by the Provincial Waterworks Authority. However, we concern to reduce the amount of water input from suppliers. The wastewater treatment plants were installed at our campuses. An efficient technology of wastewater treatment, activated sludge, was applied and continuously monitored. Thus, our wastewater treatment system could produce 365,000 cubic meters of recycled water that can save the water cost by around 10 million Baht/year and reduce GHGs emission by approximately 103.77 tons CO₂eq.

The large consumption is 3,233,535 cubic meters of water in our reservoir, that is recycle water from the system and rainwater accumulated and circulated for maintaining the recreation landscape in the university area



Wastewater treatment system of Salaya campus



Uses of recycled water from wastewater treatment system

In addition, the wastewater treatment plants were also installed on other campuses. An efficient technology of wastewater treatment was applied and continuously monitored by each responsible unit. Recycle water from the system was also used for non-drinking purposes such as filtering out smoke in machinery process, cooling down process, and cleaning.



Wastewater system of the Faculty of Medicine Siriraj Hospital



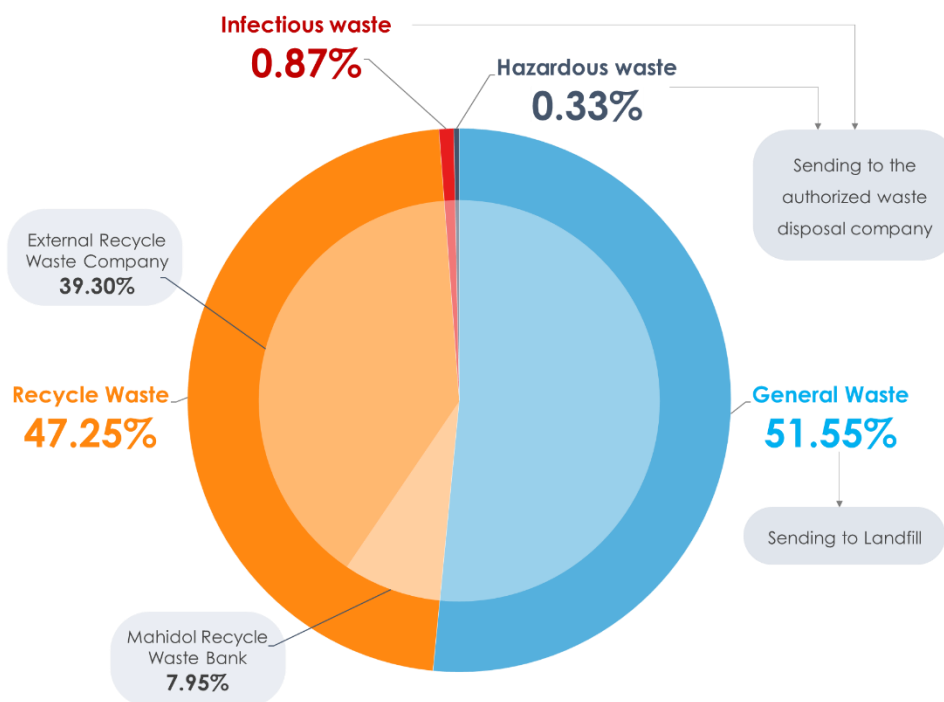
Other purposes of recycled water from wastewater treatment system

4.5 Wastes

We also concern the importance of sorting system in waste management. To reduce social and global burdens, we have promoted waste separation by providing waste sorting bins to increase the rate of material recovery, reuse and recycling of waste lightening the load to landfill and being a good example for public. In 2019, total generated waste in Salaya Campus is 2,424.90 tons as follow.

- 1,250.00 tons of general waste (51.55%)
- 1,145.83 tons of recycle waste (47.25%)
- 21.19 tons of infectious waste (0.87%)
- 7.88 tons of hazardous waste (0.33%)

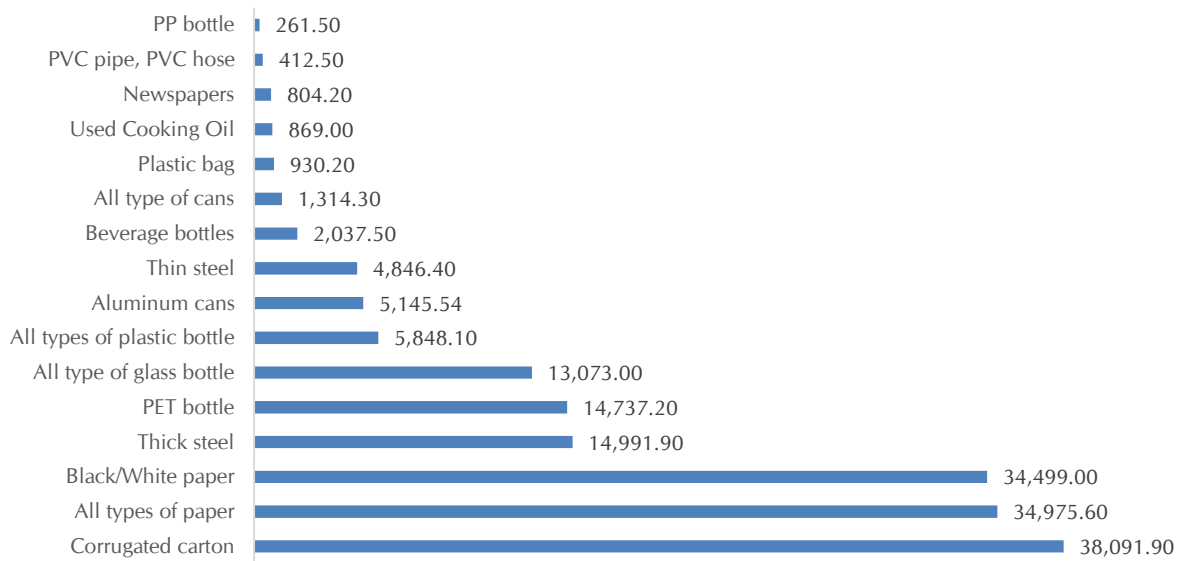
In addition, general waste is collected by the local municipality and sending to landfill. Infectious and hazardous wastes are collected by the authorized waste disposal company for further proper disposal. Moreover, 192.79 tons of recycle waste is deposited at the Recycle Waste Bank of Mahidol University to change their waste to money, while 953.04 tons is collected and separated by faculties and some staff to sell at an external recycle waste company.



Waste proportion in Salaya campus



Sorting bins provided for waste types separation in Salaya campus



Weight of recycled wastes collected by the Recycle Waste Bank in 2019 (tons)

Furthermore, shredded and decaying plants in Salaya campus are collected to produce the well-qualified organic fertilizer for sale as both liquid and solid form. In 2019, there were around 24.52 tons of powdered and granular fertilizers and 5,365 liters of liquid organic fertilizer generated from the university's organic waste.

Refill, Reduce, and Reuse

Mahidol University has been running a campaign on reducing the waste produced by our activities. We strongly commit to encourage our students and staffs to put the 3-Rs strategy: Refill, Reduce, and Reuse; into their daily practices. The University is working towards zero plastic society including encouraging our staffs and students to use their own cup replacing to the single-use cup by the cost discount promotion.



Refill, Reduce, and Reuse project advertisement

In addition, the Division of Physical systems and Environment has also aware of the long-term health problems from excess sugar consumption of staffs and students. Therefore, reduce sugary drinking integrated with plastic cup reduction camp were promoted under “Grab your own cup and taking the sweetness out” to create public relations media for environmental and health promotion. The campaign has started from communication within the university where we are collaborating with 44 beverage stores on Salaya campus.



Grab your own cup and taking the sweetness out campaign

Mahidol Eco Run event

In 2019, the Division of Physical systems and Environment has organized the “Mahidol Eco Run” activity on the World Environment Day to symbolize the environment-friendly running activity in the concept of "carry personal bottle and come to run", which all runners must bring their own glasses to get water at the drinking water service point without giving plastic bottles or cups. After the event, the runners will receive saplings at the finish line to bring back for planting.



Mahidol Eco Run

Recycling waste bank

Since 2016, Mahidol University has undertaken the recycling waste bank project. The “3R” principle of Reduce, Reuse and Recycle was applied and was transferred to communities. The Recycling Waste Bank network was in cooperation with PTT Global Chemical Public Company Limited and 21 local schools in Rayong province, 1 school in Chonburi province and more than 170 schools in Nakhon Pathom province under the project entitled “Think Cycle Bank” and “Sustainable Waste Management to Schools and Communities” to carry out the government's policy in promoting the efficient waste management system. In 2019, there was a ceremony to handover certificates to the networking schools participating in the Recycle Waste Bank project with Mahidol University with over 800 attendees.

The result of the recycling waste bank project, in 2019, was collection of 194.79 tons of recyclable waste deposited in the project. The revenue from recyclable waste sale was 157,890.30 Baht and that could reduce 150 tons CO₂eq of GHGs emissions from waste recycling.



Recycling waste bank network and events

Say NO to Plastic Bag

Since 2016, we have made the commitment with all of our suppliers to operate under 'Say NO to Plastic Bag' policy. All food shops and convenience stores in our area have stopped from giving customers plastic bags and foam boxes that are the main cause of producing a warming greenhouse effect.



Result of plastic bag reduction under Say NO to Plastic Bag campaign in Salaya Campus

Year	Reduction number of plastic bags	Reduction of GHG emission (ton CO ₂ eq)	Number of participating shops
2016	1,383,424	276.68	3
2017	2,706,000	541.20	5
2018	2,654,000	530.80	4
2019	1,107,573	221.51	4
Total	7,850,997	1,570.19	

Note: There were launched 2 new shops in May and June 2017 but one shop was permanently closed in December 2018.

Biodiesel station



As we promote the waste-to-energy concept, the biodiesel production from waste cooking oil has been launched nearby the central canteen of Salaya campus since 2017. In the production process, around 80% of 50 liters of waste cooking oil is extracted to be available biodiesel per time through the transesterification processes. This project is expected to be an energy supply for biodiesel vehicle in Salaya campus.

4.6 Green area and biodiversity

Mahidol University has established the biodiversity and ecosystem database for our estate. At least identified 280 species of plant and animal are living in Salaya campus. The complex of habitats includes 32.3% vegetation cover and 36.4% wetland area. Salaya campus ecosystem has potentially provided a wider range of available microhabitats, food and nutrients which offers rise to a greater variety of species to access.



Vegetation cover and wetland areas in Salaya campus

List of wildlife species in Salaya campus

Bird	Reptile and mammal	Plant
<i>Nycticorax nycticorax</i>	<i>Kaloula pulchra</i>	<i>Guaiacum officinale</i> Linn.
<i>Anastomus oscitans</i>	<i>Fejervarya limnocharis</i>	<i>Calophyllum inophyllum</i> Linn.
<i>Vanellus indicus</i>	<i>Calotes mystaceus</i>	<i>Cassia bakeriana</i> Craib.
<i>Cacomantis merulinus</i>	<i>Varanus salvator</i>	<i>Acacia auriculiformis</i> Cunn.
<i>Eudynamys scolopacea</i>	<i>Tamiops macclellandii</i>	<i>Cassia siamea</i> Lamk.
<i>Phaenicophaeus tristis</i>	<i>Callosciurus finlaysonii</i>	<i>Dolichandrone rpathacea</i> Schum.
<i>Centropus sinensis</i>	<i>Callosciurus erythraeus</i>	<i>Cordia sebestena</i> Linn.
<i>Tyto alba</i>	<i>Herpestes javanicus</i>	<i>Spathodea campanulata</i> Beauv.



Biodiversity of wild animal in Salaya campus

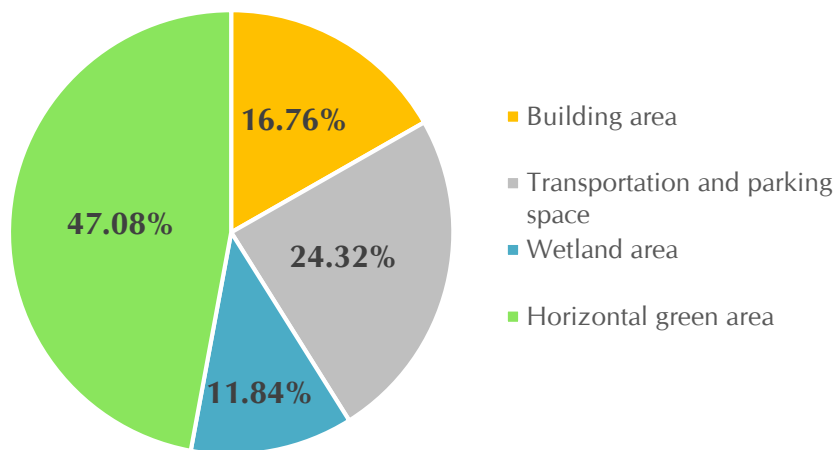
Beautiful green corner garden

To promote our students and staffs to live in good environment, the Division of Physical Systems and Environment has organized the beautiful corner garden contest since 2017 to encourage every work unit to improve their green space areas enhancing recreation activities. More than 3,000 square meters were created to be the green area of total 18 participating work units.

The green area created by the corner garden contest during 2017 - 2019

Year	Area (m ²)	Number of participating work unit
2017	3,123.3	16
2018	1,657.5	17
2019	1,144.8	16

4.7 Land use



Proportion of land areas in Salaya campus

Land use distribution in Salaya campus

Land use area	Area (m ²)	%
Mahidol University area	1,867,792	100.00
Building area	312,975	16.76
Transportation and parking space	454,312	24.32
Wetland area	221,080	11.84
Horizontal green area	879,425	47.08
Other green area including vertical garden and pedestrian and bicycle lanes	78,174	-

5. Implementation toward Sustainability Development Goals (SDGs)

Mahidol University recognizes and embrace our responsibility in the transition to a sustainable future. We have adopted 17 Sustainable Development Goals (SDGs) and 2030 Agenda for Sustainable Development to contribute the creation of a sustainable future through our research and academic activities. By this, the University encourage all of our work units to track and report their SDGs achievement. The examples presented here gives a gratitude of the kinds of responsibility action happening within our University that are setting us on a path to be a more sustainable future for all.

In 2019, there were 1,829 publications that relate to SDGs. By this, it was found that the major publications obviously related to SDG3: Good Health and Wellbeing (1,597 papers, 87%). However, we expect to produce more publications and academic activities in others SDGs in the near future.



SDG1: End poverty in all its forms everywhere



Philosophy of the Sufficiency Economy Project by Students

Although Thailand has made remarkable progress in social and economic development, moving from a low-income to an upper-income country in a few decades, some parts of Thailand still have more than 10% of poverty rate compare to 8% of the country average. Mahidol University academics have involved in shaping public knowledge on such issues in Thailand, particularly through our integration projects and research in local areas where the areas have advocated diligently for the urgent need to address people's poverty. For example, the 'sufficiency economy concept' was adopted and implemented as the fundamental of community development. 'Philosophy of the Sufficiency Economy Project by Students' aims to drive the community development including ecotourism, environmentally-friendly agriculture, and appropriate technology and innovation through cooperative activities between students and local people, particularly in Mahasawat, Salaya, and Khlong Yong districts.



SDG2: Zero Hunger



Low-carbohydrate rice

In accordance with our concern on food nutrition, ‘Rice is a medicine’ project was established by a program majoring in Agriculture Science for Well-being, Amnatcharoen campus. Two races of rice, Sinlek and RD43, which contain high ferret and low carbohydrate contents were developed for diabetic patients, pregnancy, and children. The organic rice farming is being operated under certification of Good Agricultural Practices (GAP) and Organic Thailand standards to produce healthy rice for the local hospitals. The rice product will be launched for both local and online markets resulting in revenue generation for the community and family. In addition, the project aims to be a sustainable agricultural prototype to educate and to encourage the entrepreneurial mindset for student and farmers.

Rama healthy farm project

Rama healthy farm or ‘Farm Srang Sook’ is the organic farming platform conducted in order to be a role model of organization-supported agriculture system. By collaboration between the Faculty of Medicine Ramathibodi Hospital and the Thai Health Promotion Foundation, the systematic farming and food production were developed for producing higher value product as well as connecting the supply chain including producer, consumer, and market system. Sustainable agriculture was also expected to be a learning module for students, local farmers, and people elsewhere.



Green Army, Green Farmers Project for efforts and people



The Faculty of Medical Technology has initiated the cooperation project on agriculture and food safety. The military area was used as a production base area to comply with the government policy to promote large-scale agriculture, including organic and sustainable agriculture, enhancing health quality of life for local people. This project was in cooperation with a variety of stakeholders including both public and private sectors together with farmers and local people to be a model for promoting the complete production of agriculture and food safety along the value chain in areas where the military is responsible.



SDG 3: Good Health and Well-Being

Bangkok Noi Model



Thailand is now entering into aging society, posing a necessity to create the masterplan to respond the new transition effectively. The information gathered from local area is needed for development of appropriate solution to solve the root cause of the problem. To promote well-being and health promotion to the society by using the knowledge for implementing sustainable wellbeing into the neighboring communities called “Bangkok Noi”, the Faculty of Medicine

Siriraj Hospital has set up the collaboration project with alliance and stakeholder networks to develop a role model of the semi-urban community which is in the transition of aging society to improve the health quality of people in Bangkok Noi district.

We have established an information gathering system for healthcare solution, strengthening the cooperation and learning process in the communities, and promoting and persuading all departments in the Faculty to launch the project or research which focus on healthy community of Bangkok Noi district in order to make the communities being able to take care of themselves. Since 2015, the project has connected with 28,003 people under IT database development available for healthcare service and education. Our connection has provided many community-based rehabilitation activities and public training programs for Bangkok Noi communities.



Ramathibodi Comprehensive Tumor Biobank



The Ramathibodi Comprehensive Tumor Biobank aims to support in-depth research on biomolecular oncology through collaboration among clinical medical professors, professors, researchers and medical scientists owing to accelerate the development of diagnostic and treatment innovation for cancer patients. Multidisciplinary research and clinical analysis data as well as collection of clinical samples obtained from Ramathibodi Cancer Registry are expected to develop more effective medical care options.

Royal Dental Center of Her Royal Highness Princess Maha Chakri Sirindhorn Siam Boromrajakumari, Faculty of Dentistry Mahidol University

In order to improve life quality of people, the dental care mobile services have been organized since 1998 by the Royal Dental Center of the Faculty of Dentistry to support local people in countryside. The purpose of this center is to provide oral treatment to students and people in the rural area by providing oral health examination treatment. The center is also providing free treatments for cleft lip and palate disorders, and postoperative facial abnormalities and complex oral disease patients. Furthermore, organized activities support students and teachers to conduct the benefit research to analyze problems and factors involved in the occurrence of oral disease. During the past 20 years, 188,068 people have been treated by 472 volunteers, including 747 schools in Thailand, Cambodia and Lao.



Public education: How to choose a balanced diet based on cancer prevention

In 2020, the Faculty of Medicine was organized the health promotion event "How to choose a balanced diet based on cancer prevention" to provide information on choices of anti-oxidant foods for interested people in Ramathibodi Hospital.



Trans fat-free country

As we concern about food safety and public health, the research on “Thailand, Trans Fat – Free Country” was implemented by the Institute of Nutrition. The result found that concentration of trans fatty acids in various foods was above the WHO guideline value (> 0.5 gram/meal), increasing the risk of coronary heart disease. Such output has been successfully acknowledged by the national government. As the result, the Ministry of Public Health enacted the Notification no. 388 B.E.2561 (2018) on “Prescribed Prohibited Food to be Produced, Imported, or Sold”. The notification imposes prohibition of partially hydrogenated oil and food products containing partially hydrogenated oil for production, import and sale. Enactment of this notification will reduce concentration of trans fatty acids in foods below the WHO guideline value.



MU Friends



Mahidol University provides guidance and counseling services to provide assistance for students to relieve anxiety in their life including emotion, behavior, study, education, career, etc. The activities will help student to understand themselves and others to find a suitable solution. Our student can directly contact to the Mahidol Friends unit in each campus, via hotlines²⁵ or online channels²⁶.



²⁵ MU Hotline, 02-849-4502, 4512

²⁶ MU Friend on Facebook: <https://www.facebook.com/MahidolFriends/>

SDG 4: Quality education



Kids University

We believe that ensuring a quality basic education is the best hope for long-term sustainable development. The 'Kids University' project was organized by collaboration networks among the Institute for the Promotion of Teaching Science and Technology (IPST) in conjunction with the Office of the Basic Education Commission (OBEC), German Federal Academic Exchange Cooperation Organization (DAAD) and Mahidol University, in order to encourage primary and middle school students to participate in various science learning activities. The learning-by-doing activities on Science and Technology information were driven by our researchers and students to motivate the participating children for their creative and logic ideas development.

Foreign language skill for community



The community workshop on 'Liberal Arts youth teacher' project was organized by the Faculty of Liberal Arts to encourage our students to transfer their language and other knowledge to public. The foreign language skills such as English and Japanese, various arts and cultures, were provided to children and interested people in communities. This project not only contributed to knowledge development in society, but also build the good connection between the University and community as well.

Winter Camp: Teacher's Sleeping Bag Project



The Faculty of Graduate studies, Mahidol University together with the Buddharaksa Foundation, organized the project "Sleeping Bag Teachers" Winter Camp 2019, Class 2, between 16-20 December 2019 at Ban Phu Tor School, Uthai Thani Province. Graduate Studies led by Associate Professor Dr. Boonyarit Panyapinyo Phol, Associate Dean for Administration and Special Missions with graduate students joined the project. The aim of this project is to develop required skills including soft skills communication and language skills and leadership & management skills. Students also involved in enhancing, editing and developing education through hands-on experiences with local teachers and communities, and in addition, to promote and develop students' potential to have creative volunteerism.

Center of Excellence for Stem Studies, Faculty of Science, Mahidol University



The Center of Excellence for Stem Studies, the Faculty of Science Mahidol University, or MUSC-STEM EDUCATION Center (MUSC-Science Technology Engineering and Mathematics Education: MUSC-STEM) under the International Cooperation with the Euro-Asia Collaboration for Enhancing STEM Education (EASTEM) is funded by Erasmus + Program consisting of a cooperative network of 15 institutions with knowledge, expertise and experience in STEM education in Europe. Mahidol University has supported the Faculty

of Science. The purpose of the Center of Excellence for STEM Studies (MUSC-STEM), also known as "Project for Knowledge Enhancement and Academic Exchange in Science and Technology", is development of new learning processes and extension of educational management processes. The goal is for students to learn and to be able to integrate scientific knowledge, technology, engineering processes and mathematics by connecting and solving problems in real life and future careers. The 21st Century Science for Learning Project has organized activities for 1 kindergarten, 16 secondary schools and 1 tutoring institution with a total enrollment of more than 2,138 students.



MUSC-STEM EDUCATION Center

SDG 5: Gender equality



Siriraj Daycare service

We concern that parental care of kids is an important issue for working potential and education. Nowadays, our personnel do not have time to take care of their children and hold down their job at the same time. Therefore, Siriraj Daycare Center is set up to support personnel's welfare and promote breastfeeding for newborn. With well-equipped and professional staffs, Siriraj Daycare has operated with the purpose of taking care children aged between 3 months to 3 years, providing basic knowledge of the development of behavioral pediatric for the public and communities. The children are provided with a variety of activities that include songs and storytelling. For toddlers, the center implements fun and recreational tasks which improves their intellectual growth and development. Our service is provided for around 50 children each year.





SDG 6: Clean water and Sanitation

Drinking water production factory of Institute of Nutrition



In Thailand, resource allocation for drinking-water and hygiene provided for sanitation is a challenging issue. As a role model of research and education institute, the Institute of Nutrition has established a prototype of drinking water production factory since 1997 in collaboration with the Food and Drug Administration and Japan International Cooperation Agency (JICA) in order to develop the insight technology and innovation for water production sector. The prototype factory is currently consisting of softening, reverse osmosis, deionization system that is available for public training and visiting. The factory can generate clean drinking water with a capacity of 1,600 liters/hour that supplies all of our students, staffs, and the surrounding community.

Wastewater treatment System

In Salaya campus, the wastewater treatment plant is an aerobic process using activated sludge with designed capacity of 3,000 cubic meters per day. The treated wastewater is disinfected by using bio-chlorine. The influent input is from 17 faculties, approximately 1,000 cubic meters per day. The treated water entirely reused in the surrounding area for plant watering and shuttle bus. Recently, the recycled water supply system was expanded to wastewater treatment plant office, shuttle bus parking, the Faculty of Veterinary Science, the National Institute for Child and Family Development, the College of Religious Studies, and the National Laboratory Animal Center for plant watering, equipment washing, stables washing, animal cages washing, and bus washing. In 2019, the total volume of recycled water from treatment system is 7,266 cubic meters that can save the water cost by around 196,182 Baht and reduce GHGs emission by approximately 8.2 tons CO₂eq.



SDG 7: Affordable and Clean Energy



As we commit to contribute to the efficiency of energy consumption, we have constructed our buildings and facilities under environment-friendly and cleaner technology application. Many buildings of Mahidol University have been awarded the Energy Awards such as following:

The Mahidol Learning Center (MLC) has been awarded the Thailand Energy Awards and the ASEAN Energy Awards in Tropical Building category, that are designed to be seamlessly integrated into its environment being well-ventilated, well-lit and giving the impression of a 'light' structure in the vicinity of gardens and indoor trees with outdoor trees and shading panels providing natural cooling of the building and reducing energy use.



Furthermore, materials with natural textures and features, such as raw bricks, the earthy feature of which offers the feeling of a natural embrace and blend into nature, were selected as well as those with economical characteristics in terms of both durability and lower maintenance. Also, the building provides wheelchair ramps for people with disabilities and stairs for comfortable pedestrian access in order to reduce the cost of elevator usage.



Aditayathorn building has been awarded the Thailand Energy Awards in the energy conservation in building control category, that is designed to be modern building, beautiful, energy-efficient building related to compliance with the strategy of Eco university. The building is a Tropical Architecture which is east facing for morning light, natural ventilation, heat protection material, and peacefulness increase with a pool at center. This integrated design into natural and environment provides reducing energy consumption and maximize efficiency.

SDG 8: Decent work and Economy Growth**Mahidol Startup Boot Camp**

Innovation and technology currently play a vital role in diversifying the Thailand economy and creating more high value jobs. Mahidol University has supported innovation and creativity through entrepreneurial education. Students can develop ideas through interdisciplinary project work, bringing a range of expertise and interest to the table, and can take their projects to the next level through our start-up boot camps, training days, and pitching workshops. To

promote collaboration and exchange of ideas, and to support our student entrepreneurs, we have 7 co-working and maker-spaces across our campuses, with facilities to develop multimedia and interactive projects and presentations, as well as designing innovative prototypes and establishing start-ups.

SDG 9: Industry Innovation and Infrastructure**Smart Community**

Mahidol University commit to build resilient infrastructure, through co-location arrangements, as well as promoting inclusive and sustainable industrialization and foster innovation due to rapid urbanization of Thailand. We have collaborated with AMATA corporation to establish the 'Smart Community' consisting of Edu-Town and Medi-Town for enhancing education and medicine industries. The sustainable development program was implemented in 5-years period under 4 plans: short-course training for human resources, collaborative research for technology and innovation development, health care service for society wellbeing, and internationalization. This project aims to improve the organization to be resilient against the global mega forces.

SDG 10: Reduce Inequalities



Disabled student service



Mahidol University opens up to all people in society for education. As we concern the education obstacle of disabled person they facing, the disability quota admission is provided for disable person who is willing to learn in our university. The Disability Support Services (DSS) unit of Mahidol University has been set up for helping and supporting disabled students to have equitable access to university educational systems same as others, reducing barriers and providing personal essential support services to help disabled students achieve their educational goals. Further, the unit creates communities that disabled students can live along with other students. In 2019, we have allocated 9% of student scholarship to support our disable students.

The Pilot Project (non-degree): Flexible Education program for people with disabilities



Nowadays, it is difficult for people with disabilities to enter the educational system or even come to study, resulting in failure to graduate at a higher level. Ratchasuda College, Mahidol University cooperation with several companies such as Central Group, PTT Group, Home Pro and Vulcan Coalition (Ava Advisory) have the idea to develop a proactive education management model. The aim of this project is making young people ready to enter higher education (Pre-college program),

and provide more opportunities for youth with disabilities by using technologies to help and design courses to drive the needs of youth with disabilities. Furthermore, this project's purpose is to create more educational opportunities, develop learning competencies and vocational skills for people with disabilities that respond to the labor market and learners' needs. Its main goal is to incentivize lifelong learning for people with disabilities and assist those people with disabilities who leave the education system to effectively return to the education and employment system.



SDG 11: Sustainable Cities and Community

Bicycle-Friendly University



Mahidol University commits the use of sustainable modes of transport, and encourages staff and students to use active modes of transport, such as walking and cycling, and public transport. We promote bicycle to be the University culture by improving the infrastructure and developing the available public bicycle system e.g. bike storage, bike maintenance station, bike rent hub. The scene of students riding bicycles along cycling lanes becomes a familiar picture for everyone.

Sireeruckhachati Nature Learning Park

Sireeruckhachati Nature Learning Park is situated in the compound of Mahidol University. “Sireeruckhachati” Nature Park started off as “Sireeruckhachati” medicinal plant garden which has been initiated since 1982. The objectives are conservation of Thai medicinal plants for the study, self-learning and research and development as well as the green and recreational area for students and staffs in Salaya campus. Sireeruckhachati Nature Learning Park is Thailand’s largest herb garden comprising of more than 800 types of herb plants. Significantly, Sireeruckhachati Nature Learning Park is developed with the ‘Universal Design’ concept. Aside from those who have keen interests in medicinal herb plants, Sireeruckhachati Nature Learning Park also focuses on quality facilities, a spacious location and friendly environment to facilitate elderly and disabled people in particular, as part of a strategy to serve visitors of sectors of society.



Siriraj Bimuksthan Museum



Siriraj Bimuksthan Museum is located in the richly-historic area. As a former location of the rear palace, it was later developed into Thonburi railway station and Siriraj Hospital as well as the Bangkok Noi community. Regarding the vivacity of the lifestyle in this area, Siriraj Hospital has gathered the exhibitions of this community's backgrounds in the Thonburi Railway Station Building (former) in accordance with conservation and education about the original culture for public.

SDG 12: Responsible Consumption and Production



Organic farm

Since 2008, the organic farm of Salaya campus has established which aims to optimize land development inside the campus to grow chemical-free vegetables for staff, student and local people. The area of 6,400 square meters was used as the vegetable crops growing organically. The crop fertilizer input was completely supplied by at least 1 month fermented organic fertilizers such as mixture of leaves matter, rice husk, and egg hormones. The organic farming system also presented as the organic cropping model for visiting student or interested people. Products from the organic farming can be purchased in the organic farm shop in Salaya campus.



SDG 13: Climate Action**Greenhouse gas mitigation research**

Various human activities are the major cause of greenhouse gasses emission, especially agriculture, in spite of Thai government having promoted large-scale rice production for enhancing the rice export potential. The environmental and society impacts should be identified for long-term management. The research project focusing on 'evaluation and comparison of environmental and economic aspects between individual and large-scale farmers for alternative mitigation options' was developed under the Faculty of Environment and Resource Studies with the purpose of advising the appropriate decision making and measures planning to reduce greenhouse gas emission, minimizing costs, and maximizing obtained yields. This project will be proving the co-benefit of large-scale farming under Thai economy strategy.

Knowledge management for rice varieties and network management of young smart farmer to cope with climate variability

Rice varieties and the Young Smart Farmer's network management manual was developed by the Faculty of Environment and Resource Studies to support the agricultural activities under changing of the environment. This manual is expected to be available for the local farmers to effectively manage their rice varieties across regions in Thailand. It also suggests the process of establishing and managing a network of Young Smart Farmer's rice varieties to support environmental change and implement the public policy by participation of farmer group in order to sharing and exchanging knowledge together.

Adapting to Climate Change: Facing the Consequence

The International training topic “Adapting to Climate Change: Facing the Consequence” was organized by the Faculty of Environment and Resource Studies with aims to share knowledge and experience in the application of methods and tools for adaptation to climate change. This training focuses on policy and technology on environmental disaster management, prevention and communication for disaster warning in communities. The program was participated by 17 participants, representing both public and private environmental agencies from Argentina, Congo, Ecuador, Kyrgyzstan, Moroccan, Myanmar, Nigeria, Nepal, Oman, Palestine, Panama, Samoa, Sri Lanka, Suriname, Sudan, Turkey and Uganda with support from Thailand International Cooperation Agency (TICA).



SDG 14: Life below water



Coastal Vulnerability, Resilience and Adaptation in Thailand



The Faculty of Environment and Resource Studies, Mahidol University, is conducting a 3-year research project entitled “Thai Coast: Coastal Vulnerability, Resilience and Adaptation in Thailand”, funded by Newton Fund of the United Kingdom. Two coastal areas in Southern Thailand, Nakhon Si Thammarat province and Krabi province were used as study sites. The project aims to establish causal links between climate change, coastal erosion, and flooding; to assess the interaction of natural and social processes, and enhance coastal community resilience and future sustainability. Thai-coast research will benefit the government and policymakers to plan for potential impacts caused by climate change and develop resilient strategies.

SDG 15: Life on Land



Wetland Management Research and Training Center

Appropriate wetland management plays an important role in food and water security, poverty reduction, sustainable social and economic development and national security. An integrated research that creates public awareness, increases knowledge and understanding and expertise about ecosystem and wetland management of personnel in various sectors is particularly an urgent task. By this, Wetland Management Research and Training Center (WMRTC) was officially established in 2005 in the Faculty of Environment and Resource Studies to conduct researches and organize training courses concerning wetland conservation and management in Thailand and the Asian region. The current task of the center is to enhance wetland conservation in Ban Khun Samutchin province and Samut Prakan province in Thailand. The task is to track changes in sediment elevation in the wetland area. This operation was in collaboration with the US Department of the Interior, United States Geological Survey and Thailand National Wildlife Research Center.

Hornbill Conservation and Research



Hornbill is one of critically endangered species that become community flagship for forest conservation. To enhance potential and continuity of scientists, students and researchers on Hornbill, the Faculty of Science has joined in the Hornbill Research Foundation with others partners to study on "Ecosystem of Hornbill". The study area was in Khao Yai National Park in Nakhon Ratchasima province, Huai Kha Khaeng Wildlife Sanctuaries in Uthai Thani province and Budo-Sungai Padi National Park in Narathiwat province. Moreover, to enhance the public awareness on hornbills and wildlife species, we have annually organized a public event for sharing knowledge and research experiences of hornbills.

Power Green Camp 13

To raise awareness of youth on the important of environment and ecology, the Faculty of Environment and Resource Studies cooperates with Banpu Public Company Limited to organize the environmental science youth camp activities which aims to provide opportunity of outdoor learning for high school students. The program's learning is through experience and learning by doing in conjunction with reflection and discussion, concept exploration. The main objective of this camp focus on youth learning, training skills of public mind, thinking, being rational, think critically through a scientific learning process, and cultivate young people to recognize the importance of the environment. The participants were expected to obtain academic experiences through team working on the special project and public presentation. In 2019, 69 of high school students, grades 4 and 5, had participated in this camp.



SDG 16: Peace, Justice and Strong Institution



Field trip of APMA and MAHR programs



Mahidol University promotes sustainable peace in diversity. The equal justice and access to justice for the most vulnerable groups in society are very important for peace building. In academic year of 2019, we organized the field trip of APMA and MAHR programs providing an overview of Thailand's legal framework regarding indigenous rights for the students. The field trip provided our students to learn more about development and human rights of vulnerable groups. The students freely discussed with the Lahu Indigenous Peoples and Myanmar migrant workers, people living with HIV/AIDS network, government and foundation staffs. This activity was also expected to encourage our students to create inclusive society for sustainable development.

SDG 17: Partnerships for the Goals**Medical research-to-products platform**

The medical research-to-product platform was established in order to adaptively support the efficiency of medical system in Thailand. As in the research sector, the Faculty of Medical Technology cooperated with medical industries to develop higher technologies for medical products due to disease occurrence. Then the products were widely expanded by collaboration with the government units such as Ministry of Public Health. Examples of products from cooperative research include Lep M-Plus and Lep G-Plus which are used for Leptospirosis rapid test, and Y-Blue Kit which is used for bacteria contamination test on the object surface. This collaboration benefits to expand the research outcome, and also maintain the cost and quality of medical products.

**Training courses on Medical Technology and Public Health for medical personnel from the Lao PDR**

Thailand and Laos PDR have had bilateral relations for a long time. As part of Her Royal Highness Princess Maha Chakri Sirindhorn's initiative on health of Laos PDR people that is essential for sustainable development, the training course on Medical Technology and Public Health was initiated to promote medical knowledge and health promotion skills for medical personnel of Laos PDR government. This program not only enhances the efficiency of health care in Laos PDR, but contribute the sharing of technology and co-organization between Thai and Laos's people.



ASEAN Centre for Sustainable Development Studies and Dialogue (ACSDSD)

ACSDSD is operated in conjunction with the Centre for Sustainable Leadership, College of Management, Mahidol University in Bangkok. ACSDSD is a new ASEAN body launched by the ASEAN Leaders at the 35th ASEAN Summit in Bangkok, Thailand on 3 November 2019.




ACSDSD play a catalytic role in promoting sustainable development cooperation in the region and enhancing the complementarities between the ASEAN Community Vision 2025 and the UN 2030 Agenda for Sustainable Development, also known as the “Complementarities Initiative”. It serves as a regional platform to encourage research and studies as well as capacity building of government and non-governmental organizations in ASEAN, and promote dialogue and cooperation on sustainable development within ASEAN and external partners.

National Cancer Control Program (2018 - 2022)

The Strategy and Planning Division, the Ministry of Public Health, reported that cancer is the number one cause of death and is steadily increasing. Lecturers from the Faculty of Medicine Ramathibodi Hospital, the Faculty of Medicine Siriraj Hospital, the Faculty of Tropical Medicine and the Faculty of Engineering comprise a committee for the preparation of national cancer prevention and control plans, according to the Ministry of Public Health order No. 1212/2561 dated 28 September 2018, jointly formulated the National Cancer Prevention and Control Strategy. Based on information from the Division of Strategy and Planning, the Ministry of Public Health it was reported that in the year 2014, Thailand had 70,075 people who were considered having cancer. Cancer is among the top 5 major problems in the country: liver cancer, lung cancer, breast cancer, cervical cancer. And colon cancer and rectum account for 51.86% of all cancers.







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Editorial team
Associate Professor Kitikorn Charmondusit, Ph.D.
Vice President for Environment and Sustainable Development

Dr. Allan Sriratana Tabucanon
Faculty of Environment and Resource Studies

Sustainable Development Office
Division of Physical systems and Environment

999 Phuttamonthon 4 Road, Salaya, Nakhon Pathom 73170 Thailand
Phone: 0-2441-4400 Ext.1120-1125
Fax : 0-2441-9720

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