

Maharakham University

Annual Sustainability Report

2021-2022





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About Maharakham University



The historical development of Maharakham University, or MSU, may be traced back to March 27, 1968, when it was originally established as the College of Education, Maha Sarakham, for the purpose of extending higher education to the nation's Northeastern region. The college situated in an outer area north of Maha Sarakham, a small town right at the center of the region, to produce the quality teachers to serve educational institutions of all levels. The college's status was elevated when it became a regional campus of Srinakharinwirot University in 1974. At that time there were four faculties: Education, Humanities, Social Sciences and Science. The university finally gained independent status and became Maharakham University, Thailand's 22nd government university, on December 9, 1994, when the University Act was graciously authorized by His Majesty King Bhumibol Adulyadej and published in the Royal Gazette.

Maharakham University has since expanded rapidly in terms of both facilities and academic services and has become a comprehensive university, offering undergraduate and post-graduate degree programs in three academic clusters: Social Sciences; Pure and Applied Science; and Health Science. In response to this growth, in 1998, Khamriang Campus was set up in Kantarawichai District, approximately seven kilometers from the original campus. With 17 faculties, 2 colleges and 1 school currently operating, MSU has been widely recognized as one of Thailand's fastest-growing universities. The total enrollment has also increased, from fewer than 10,000 in its earlier years to more than 40,000 students at present. Many faculty buildings have been constructed on Khamriang Campus, now the administrative and academic center. Total area of main campus (Khamriang) is 1697600 m²


MSU At a Glance

 **Total campus area (m²)**
5,364,800 m²

 **Total campus ground floor area of buildings (m²)**
193,629


 **Total campus buildings area (m²)**
652,018

 **The ratio of open space area to total area**
95.8%


 **Total area on campus covered in vegetation and water absorption (%)**
4,227,372


 **Total number of academic and administrative staff**
3,562


 **Total number of regular students**
41,903

 **Electricity usage per year (k-WH)**
19,114,977 (k-WH)

 **Recycling program for university waste**
75%

 **Consumption of treated water (m³)**
674,746 m³

 **Number of courses to sustainability offered**
51

 **Total research funds dedicated to sustainability research (\$)**
2,433,943



FACULTY OF INFORMATICS
MANABIRAKHIM UNIVERSITY

Manabirakhim University
Faculty of Informatics

UI Green Metric Ranking at Mahasarakham University



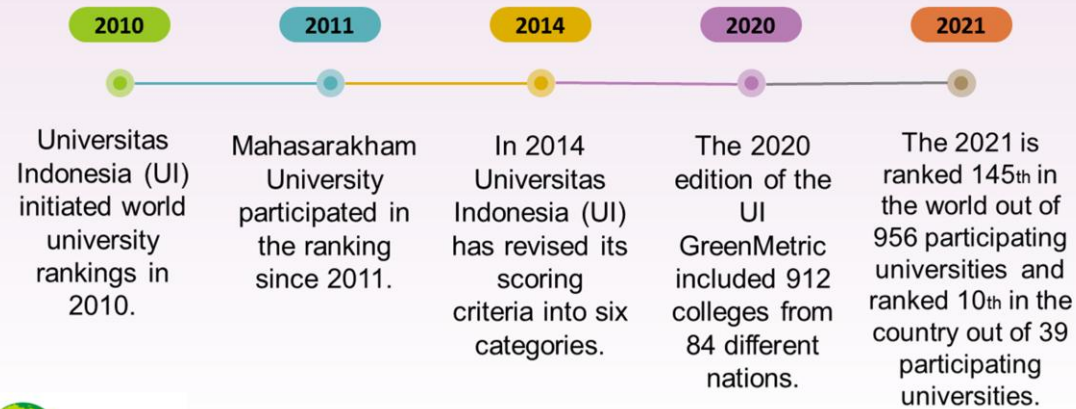
Universitas Indonesia (UI) initiated world university rankings in 2010, later known as UI GreenMetric World University Rankings, to measure campus sustainability efforts. It was intended to create an online survey to portray sustainability policies and programs for universities around the world

The conceptual framework of Environment, Economy, and Equity served as a general foundation for our rankings. The rating criteria and indicators are meant to be universally applicable. The indicators and weightings were created with as little bias as feasible. Data collection and submission are simple tasks that take a modest amount of staff time to complete.

The 2010 edition of the UI GreenMetric included 95 institutions from 35 different countries, including 18 from the United States, 35 from Europe, 40 from Asia, and 2 from Australia. 912 colleges from 84 different nations took part in 2020. This demonstrates that UI GreenMetric is the first and only university rankings system in the world that considers sustainability. The rankings are intended to support scholarly discussions on campus greening and sustainability in education. Encourage social change spearheaded by universities with an eye on sustainability aims, serve as a tool for higher education institutions (HEIs) all over the world to analyze their own on-campus sustainability, Governments, local and international environmental organizations, and the general public should be made aware of campus sustainability initiatives.

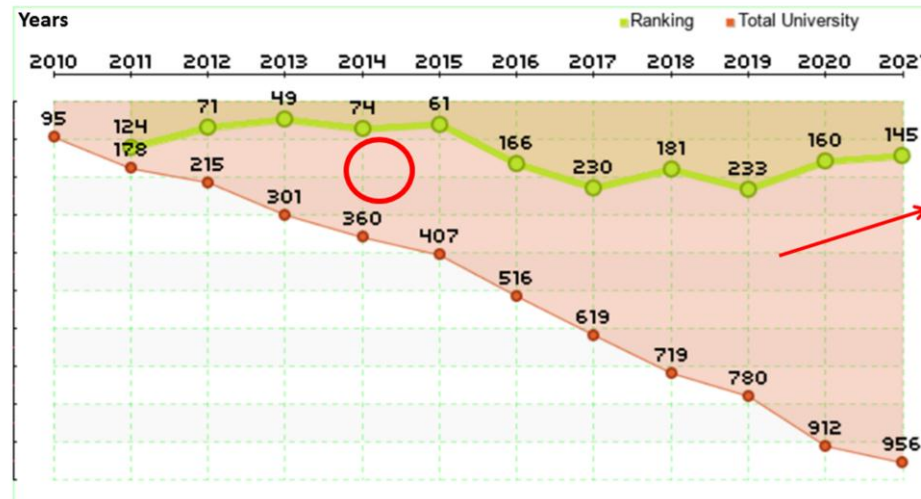
University may use the UI GreenMetric Planet University Rankings as a tool to address the sustainability issues our world is now experiencing. To assess, monitor, and evaluate their sustainability strategy plan, several institutions employ the UI GreenMetric questionnaire. Universities can cooperate to minimize harmful environmental effects. Since UI GreenMetric is a nonprofit organization, many colleges are able to take part in the rankings without paying anything.

Ecological preservation is valued at Mahasarakham University. Participating in UI GreenMetric World University Rankings is so appealing. It has participated since 2011 and has continued to do so, which has helped the university create its policies to become more effective at being green.



www.greenmetric.ui.ac.id

MSU World rankings history 2011-2021





MAHASARAKHAM
UNIVERSITY



Maharakham University and the UI Green Metric Ranking 2022



Setting and Infrastructure (SI)

Number of Campus sites

Maharakham University is located in Maha Sarakham province, the heart of North East Thailand. The university has five campus sites:

1. Main campus (Khamriang)
2. City campus
3. Na-Sinuan campus site
4. Na doon campus site (Walairukhavej Botanical Research Institute)
5. Ban-kerng campus site (Walairukhavej Botanical Research Institute)

1. Maharakham University (MSU) was originally established as the College of Education in 1968. The college's status was later elevated when it became a regional campus of Srinakharinwirot University in 1974. At that time there were four faculties: Education, Humanities, Social Sciences and Science. The university finally gained independent status and became



2. Maharakham University in 1994. The original campus “City campus” covers 589,600 m² with the buildings of the 4 faculties (Faculty of Education, Faculty of Cultural Science, Faculty of Tourism and Hotel Management, and Faculty of Veterinary). In 1998, Khamriang Campus was set up in Khamriang sub-district, Kantarawichai District, approximately seven kilometers from the original campus, with the area of 1,697,600 m² . Fifteen faculties and two colleges are located in this campus with all administrative buildings.



3. Na-sinuan campus site covers forest and planted vegetation areas of the university with the area of 1,400,000 m² . It is used for farming of livestock, crop, and fruits and vegetables to provide educational service (mainly for the Faculty of Technology and Faculty of Veterinary), research activities, and academic services to the society and local communities.



4. Na doon campus site is in Nadoon district with the area of 1,200,000 m² . Over 80% of the area is the forest which is used by both community and university. Asarn house museum, a learning center of sufficient economy, guesthouse, a laboratory building for medical plants were constructed and used for all missions of the university (provision of education, innovation from research work, academic services, and development of Isan arts, culture, and traditions).



5. Ban-kerng campus site is in Ban-kerng sub-district with the area of 437,600 m² . It is a wet land surrounded by Chi river so a diversity of plants were found. This campus provides not only the academic activities but also the trip for hiking and camping.








Main campus setting

Total area of the main campus (Khamriang) is 1,697,600 m²



Total campus buildings area is 651,503 m²

Building City campus site	Bulding Main Campus (Khamriang)	Building Na-sinuan campus site	Bulding Na doon campus site
			
Area: 182,041 m ²	Area: 436,650 m ²	Area: 29,540 m ²	Area: 2,790 m ²

Building Ban-kerng campus site

Area: 482 m²

Building name	Total Area
Building City campus site	182,041 m ²
Bulding Main Campus (Khamriang)	436,650 m ²
Building Na-sinuan campus site	29,540 m ²
Bulding Na doon campus site	2,790 m ²
Building Ban-kerng campus site	482 m ²
Total	651,503 m²

The ratio of open space to total area : 96.36%

Total campus area (m²) 5,324,800

Total campus ground floor area of buildings (m²) 193,629

Total Area on Campus Covered in Forest Vegetation (meter²)

- (1) City campus site
 Total area: 65,682 m²
 Total distance/circumference: 1.58 Km



(1) City campus site

- (2) Main Campus (Khamriang)
 Total area: 246,532 m²
 Total distance/circumference: 2.65 Km



(2) Main Campus (Khamriang)

- (3) Na-sinuan campus site 3.1
 Total area: 269,083 m²
 Total distance/circumference: 2.44 Km



(3)Na-sinuan campus site 3.1

- (4) Na doon campus site
 Total area: 1,175,061 m²
 Total distance/circumference:7.64 Km



(4) Na doon campus site

- (5) Ban-kerng campus site
 Total area: 123,124 m²
 Total distance/circumference: 1.47 Km



(5) Ban-kerng campus site

campus site	Area on Campus Covered in Forest Vegetation (m ²)
(1)City campus site	65,682
(2)Main Campus (Khamriang)	246,532
(3)Na-sinuan campus site	816,973
(4)Na doon campus site	1,175,061
(5)Ban-kerng campus site	123,124
Total area	2,427,372

Total area on campus covered in planted vegetation : 2,699,179 m²



Percentage of operation and maintenance activities of building in one year period

Total campus buildings area	436,650 m ²
Total operated building	347,302 m ²
Percentage building that operated and maintenance	79 %



Campus facilities for disabled, special needs and or maternity care

Maharakham University has operated in accordance with the ministerial regulations. The determining the facilities in the building for the disabled or the handicapped and the elderly B.E. 2548. Maharakham University designed various buildings to serve the disabled or handicapped and the elderly to participate activities in the university. In conjunction with section 55 and section 80, the second paragraph requested the Constitution of the Kingdom of Thailand provided that the disables have the right to receive public facilities, and the other help. Therefore, the university has done in order to be in line with the ministerial regulations and university policies.

1. Ramp for the disabled
2. Toilet for the disabled
3. Lift button for the visually impaired



Security and safety facilities

Maharakham University concerned the safety for the staff and students, therefore the administrative have plan to improve in the safety in the university:

1. Fire department
2. CCTV Installation Project
3. Fire Alarm Improvement System Project, Gudrang Dormitory
4. Fire Doors Setting Project at Chunchom and Nadoon Dormitory
5. Fireman
6. Security guard



Health Infrastructure Facilities for students, academics and administrative staffs' wellbeing

Sudhavej Hospital is a public hospital under the Faculty of Medicine,

Maharakham University. Sudhavej Hospital is providing diagnosis, treatment, medical services and public health to the general public and also to people who are eligible for universal health insurance, social security, officially, and life insurance, etc. Sudhavej Hospital is open in everyday and official time. Sudhavel Hospital divided in 2 places: (1) Primary Care Center in Khamriang Campus, and (2) Sudhavej Hospital in City Campus. Sudhavej Hospital, Faculty of Medicine, Maharakham University has opened a service to treat emergency patients and inpatients for 24 hours, providing general medical examination services, and specialized clinics with the expert doctors and medical staff with the tool and modern equipment. Currently, Sudhavej Hospital, Faculty of Medicine, Maharakham University had 200 beds and 400 more will be available in the future.



Conservation: plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities

Maharakham University has policies and budget support for the conservation of plants, animals and wildlife, genetics, food resources and safe agriculture for the medium and long term. Under the Biological Diversity Day Project and an exhibition of plant genetic conservation projects under the Royal Initiative Khok Dong Keng forest area and the 30-year academic conference and exhibition project of the PHOE-Essential Benefits to the Public (2020-2022) by assigning the Walailukhavej Research Institute to operate with the following objectives

1. To make the community and related people aware of the importance and value of The importance of biodiversity at the local level and plant genetic conservation projects under the Royal Initiative
2. To foster cooperation between communities and local authorities in the management of biodiversity conservation at the local level. and plant genetic conservation projects under the Royal Initiative
3. To disseminate biodiversity activities at the local level and make sustainable use of biodiversity components. and the Plant Genetic Conservation Project under the Royal Initiative



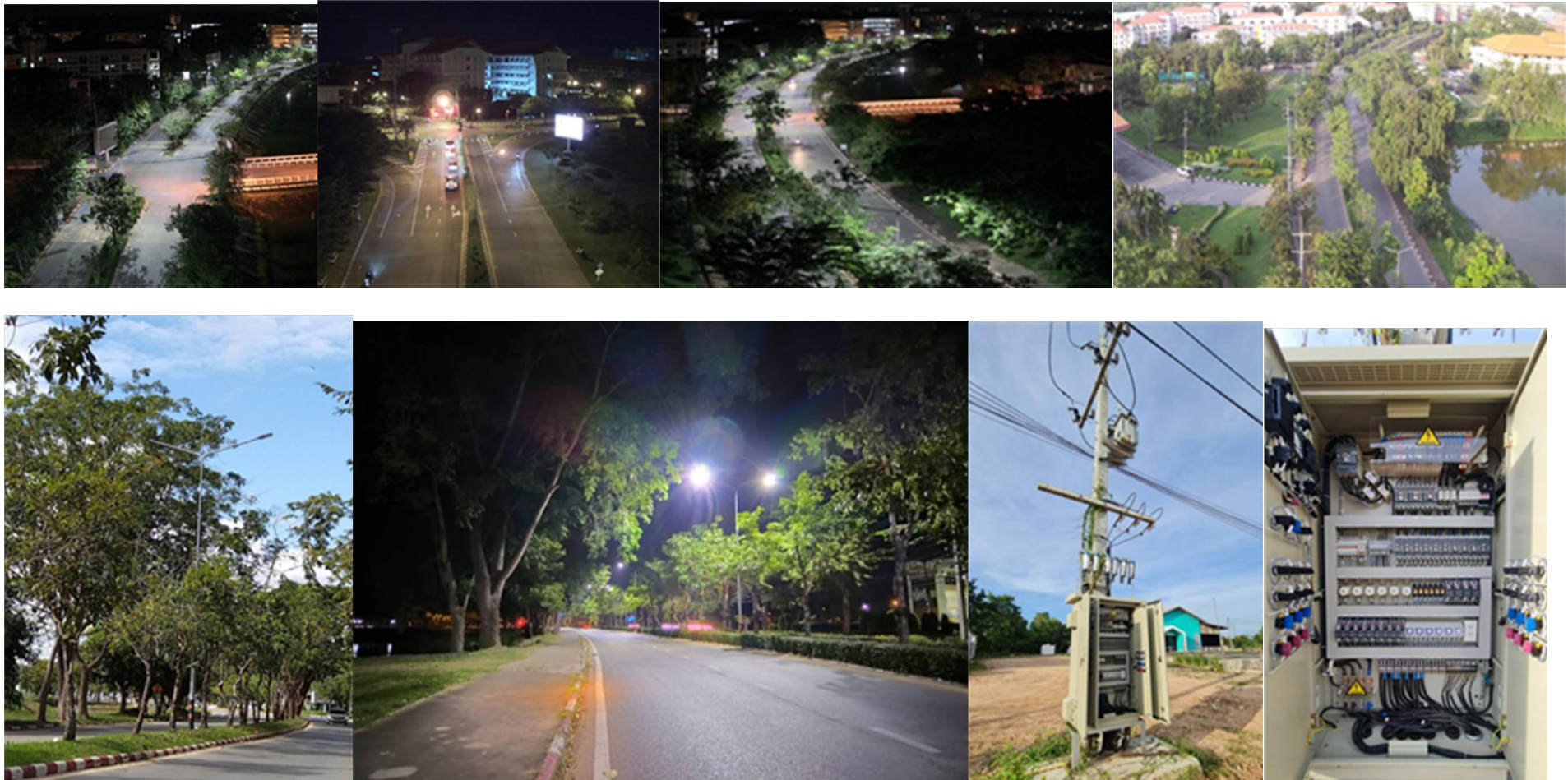
Energy and Climate Change (EC)

Energy Efficient Appliances Usage

Maharakham University has implemented a government policy to reduce electricity bills. Renovations have been completed in the central cafeteria (Little Market), Dome 1 and Dome 2, with an automatic lighting control system capable of setting the time on and off and selecting the blue lanterns according to the needs of the high bay lanterns. 60 200W LED bulbs with lumens $\geq 20,000$ lm (130lm/watt) (LED High Bay) 100w LED 100w Lamp with $\geq 9,500$ (95lm/w) white light, 41 bulbs



The second project, the university, has improved the lighting of the roads along the path to Mahasarakham University. Change LIGHT LUMINAIRE 196-200 W. Luminaire luminaire greater than or equal to 28,560 lm-34,000 lm 4,000° 6,500°K/ Ra>70 / 100,000 Hr IP 65 288 lamps and automatic lighting control with solar circuits.



The university carried out the design and installation of indoor lighting systems, has an automatic control system using a computer, controls the opening and closing of the sky lamps inside the building, the amount of blue lamps used in the project.



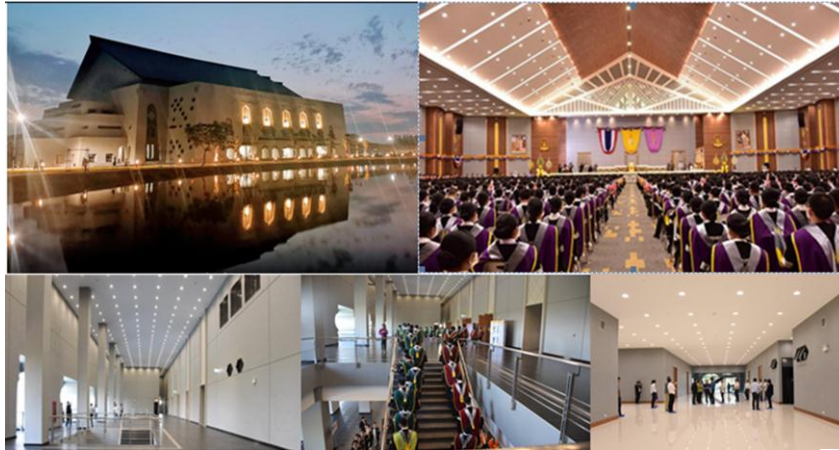
Maharakham University was changed the lamps to LED lamps 100%, and for the air condition, the university selected R410A and R32 to save the energy and environment together with inverter control system, and the university energy consumed measurement

Appliance	Total Number	Total number energy Efficient appliances	Percentage
LED Lamp	134,257	134,257	100 %
Air conditioner	5657	5635	99.61%
Average Percentage			99.87%

Smart Building Implementation

Total Building Area: 652,018 m² = 60.42%

[1] Chalemphrakiat Building on the Auspicious Occasion of Her Royal Highness Princess Maha Chakri Sirindhorn's 60th Birthday (2 April 2015)



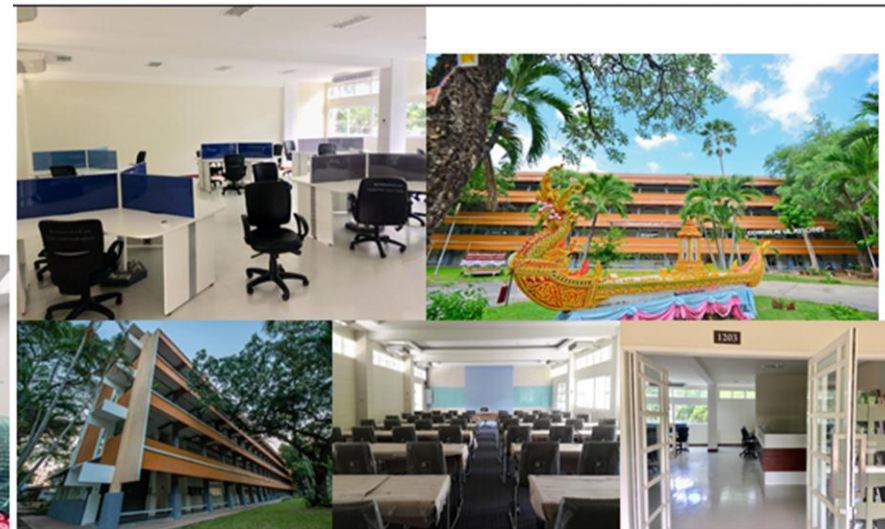
[3] Faculty of Medicine and Sudhavej Hospital



[2] Residential Staff of the Faculty of Medicine, Maharakham University



[4] Faculty of Fine Applied Arts and Cultural Sciences, Maharakham University



Renewable Energy Sources in Campus

Maharakham University had policy to renewable energy for the university's activities which the solar cell on the 6 buildings roof. The energy of the solar cell on the 6 roofs with a capacity of approximately 1MW, energy consumption of 2,880,000 kWh per year. Both 2 campuses: city campus and Khamriang campus was setting solar cell on the roof with 12 buildings: Gymnasium building, College of Music, the building of the Faculty of Informatics, the building of the Faculty of Education I, the building of Academic Resources Center (old building), the building of the Faculty of Science IV, the building of A and B. The generation system consists of a set of crystalline solar panels which is a new technology. And its high electrical efficiency (more than 18%) makes it suitable for roof mounting. The installed capacity of approximately 1 megawatt (DC) uses 2,857 solar panels, which are the source equipment used to generate electricity from the sun. And the electricity produced by the solar panels will be DC power and will be sent to Inverter to convert from DC power to AC electricity. AC electricity will convert the 22 KV to connect to the high voltage system within the university. Switch to suit the 400/230 VAC power supply

Maharakham University has Inverter system and electricity system which control by the Provincial Electricity Authority. All the electricity generated by the university had the prevent flowing back.

Wind power generated 900 w and useful for the project tanks.

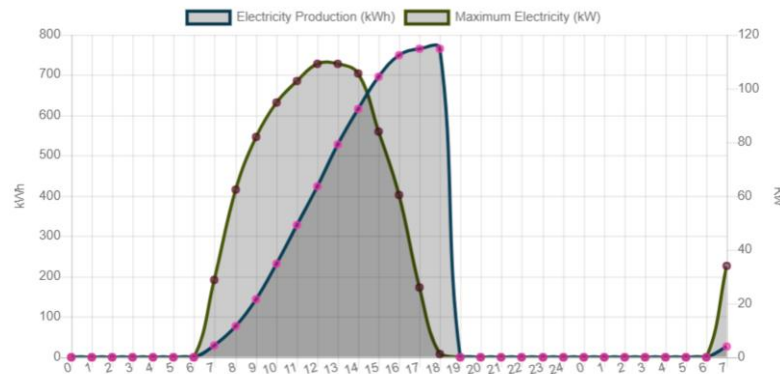


Electricity Usage

Maharakham University has conducted an audit and recorded the amount of electricity supplied to Maharakham University. In 2020, the electricity consumption was 21,888,497 kilowatt-hours, and in 2021, the electricity consumption was 20,117,257 kilowatt-hours. The amount of electricity in 2021 decreased compared to the year 2020 by 1,771,240 kilowatt-hours, and in 2022, the amount of electricity used was 20,133,600 kilowatt-hours. The electricity consumption increased slightly by 16,343 kilowatt-hours compared to the year 2021, or 0.08%, due to the fact that the university opened a full course of teaching, thus increasing the energy consumption.



Maximum Power and Energy Generation (48 Hours Backward)



ratio of renewable energy production divided by total energy usage

No	Renewable Energy	Production (in kWh)
1	Solar Power	2,880,000.00
2	Wind Power	900.00
	Total	2,880,900.00



Solar Power







Biomass






Wind Power


Elements of Green Building Implementation as Reflected in All Construction and Renovation Policies


<p>[1] Chalemphrakiat Building on the Auspicious Occasion of Her Royal Highness Princess Maha Chakri Sirindhorn's 60th Birthday (2 April 2015)</p>	<ul style="list-style-type: none"> •Energy Efficiency and Renewable Energy •Water Efficiency •Environmentally Preferable Building Materials and Specifications •Indoor Air Quality 	<p>[2] Faculty of Pharmacy, Mahasarakham University</p>	<ul style="list-style-type: none"> •Energy Efficiency and Renewable Energy •Water Efficiency •Environmentally Preferable Building Materials and Specifications •Waste Reduction •Indoor Air Quality
	 <p>Faculty of Pharmacy was changed the lamp from Fluorescent to LED T8, air condition convertor, and the energy consumed measurement</p>		
<p>[3] Residential Staff of the Faculty of Medicine, Mahasarakham University</p>	<ul style="list-style-type: none"> •Energy Efficiency and Renewable Energy •Water Efficiency •Environmentally Preferable Building Materials and Specifications •Waste Reduction •Indoor Air Quality 	<p>[4] Faculty of Medicine and Sudhavej Hospital</p>	<ul style="list-style-type: none"> •Energy Efficiency and Renewable Energy •Water Efficiency •Environmentally Preferable Building Materials and Specifications •Waste Reduction •Toxics Reduction •Indoor Air Quality •Smart Growth and Sustainable Development
			

Greenhouse gas emission reduction program

	Emission Data	Description
Scope 1	<p>Mobile combustion</p> <p>: Burning of fuels by institution-owned transportation devices</p>	 <p>Promote and learn about the management of the electric motorcycle service system and the battery swap charging station network.</p>  <p>Free bicycle lending</p> <p>Students Affairs Division, <u>Maharakham University</u> opened the Bicycle Service Center for lending at the Meeting Room II, Student Development Building, <u>Maharakham University</u>, these bicycles provided for MSU's student and staff only</p>

	Emission Data	Description
Scope 2	<p>Purchased electricity</p> <p>: Indirect GHG emissions result from the generation of the electricity purchased and used by the institution</p>	 <p>Rooftop PV System</p> <p>Promote the renewable energy in the university both in city and <u>Khamriang</u> campus. The university set solar cell to reduce the cost of electricity during the peak times from 09.00-15.00 and together with the <u>reduce</u> the demand charge, and peak cut in the daytime. This project set the solar cells system (Rooftop PV system) connected with the electricity distribution system of the Electricity Authority (Grid Connected PV system), it means that when electricity is produced, it will be paralleled to connect to the electricity grid system.</p> <p>The renewable energy promotion project in the university designed for Photovoltaic (PV), it consists of solar panels (Poly Crystalline) 320 watt, the amount 2,880 panels which can produce 921.6921 kilo watts, and the Poly Crystalline 37 panel, it can produce the electricity 740 kilo watts to use in the university's buildings.</p> <p>Solar Generation Capacity of <u>Maharakham University</u> (City campus) is 416 KW and Solar Generation Capacity of <u>Maharakham University</u> (<u>Khamriang</u> campus) is 505.60 KW</p>

	Emission Data	Description
Scope 3	<p>Waste</p> <p>: Indirect GHG emissions resulting from the incineration or landfill of your institution's solid waste</p>	<p>Prepare the base for which to live is to put the dung into a cement pond about 20 cm high and soak it in water 2 times for 3 days each time in the cement pond and then drain the water. After that, let it rest for about 3 days to get the right humidity. If too much humidity results in suffocation of the earthworms and may die, approximately 0.5 kg of earthworm varieties are placed in the prepared cement ponds per ring of cement pond.</p>  <p><u>feeding</u> the earthworms by bringing food waste (Organic waste) such as vegetable scraps, fruit scraps or food scraps, put on the top with a thickness of not more than 10 cm at a time when the food is exhausted. (It takes about 7 days to decompose) to add new food.</p>

	Emission Data	Description
	<p>Commuting</p> <p>: Indirect GHG emissions resulting from regular commuting from and to institutions by students and employees (i.e., reducing regular commuting by using shared vehicles, carpooling)</p>	 <p>Free electric trams</p> <p>The Electric <u>trams</u> is a public transportation system to reduce the energy consumption in the university, it is a guideline for organizing the traffic system and solving traffic problems in the university, and as well as encouraging the alternative electric tram instead of oil in the university.</p>

Provide The Total Carbon Footprint

The total carbon footprint on our campus is 15,954.61 metric tons, consisting of the relevant calculations:

- 1) electricity usage per year at 12,051.97 metric tons
- 2) The number of cars entering university is 1,250.40 metric tons and
- 3) number of motorcycle entering university is 2,652.24 metric tons. When comparing the number of carbon footprint per the total population of the university, it is 0.35 metric tons per person.

Option 2: Recommended by UI GreenMetric

*CO₂ (electricity)

$$\begin{aligned} &= \frac{\text{electricity usage per year (kWh)}}{1000} \times 0,5986 \\ &= \frac{20,133,600 \text{ kWh}}{1000} \times 0,5986 \\ &= 12,051.97 \text{ metric tons} \end{aligned}$$

CO₂ (cars)

$$\begin{aligned} &= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,02 \\ &= \frac{2,605 \times 2 \times 5 \times 240}{100} \times 0,02 \\ &= 1,250.40 \text{ metric tons} \end{aligned}$$

CO₂ (motorcycle)

$$\begin{aligned} &= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0,01 \\ &= \frac{11,051 \times 2 \times 5 \times 240}{100} \times 0,01 \\ &= 2,652.24 \text{ metric tons} \end{aligned}$$

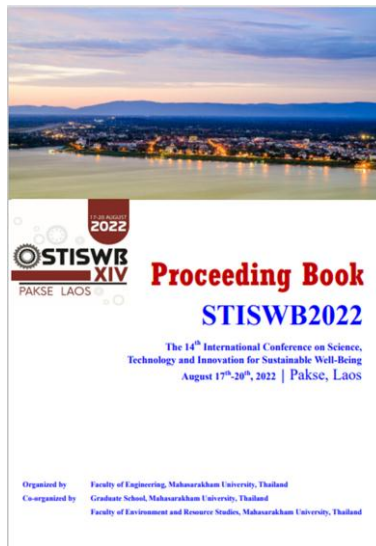
CO₂ (total)

$$\begin{aligned} &= 12,051.97 + 1,250.40 + 2,652.24 \\ &= 15,954.61 \text{ metric tons} \end{aligned}$$

Carbon footprint in 2022 = 15,954.61 metric tons

Impactful university program(s) on climate change

1. STISWB2022 The 14th International Conference on Science, Technology and Innovation for Sustainable Well-Being August 17th -20th , 2022 Pakse, Laos
2. American Corners Air Quality Learning Empowerment (ACAQLE) training program Between 23-25 May 2022 at the American Center for Information and Culture Faculty of Humanities and Social Sciences Maharakham University
3. ACAQLE Symposium Contest Program Held on 20-23 July 2022 at Furama Chiang Mai Hotel
4. Project to promote the use of renewable energy in government agencies - Maha Sarakham University, Kham Riang area
5. Project to promote the use of renewable energy in government agencies - Maha Sarakham University in urban areas

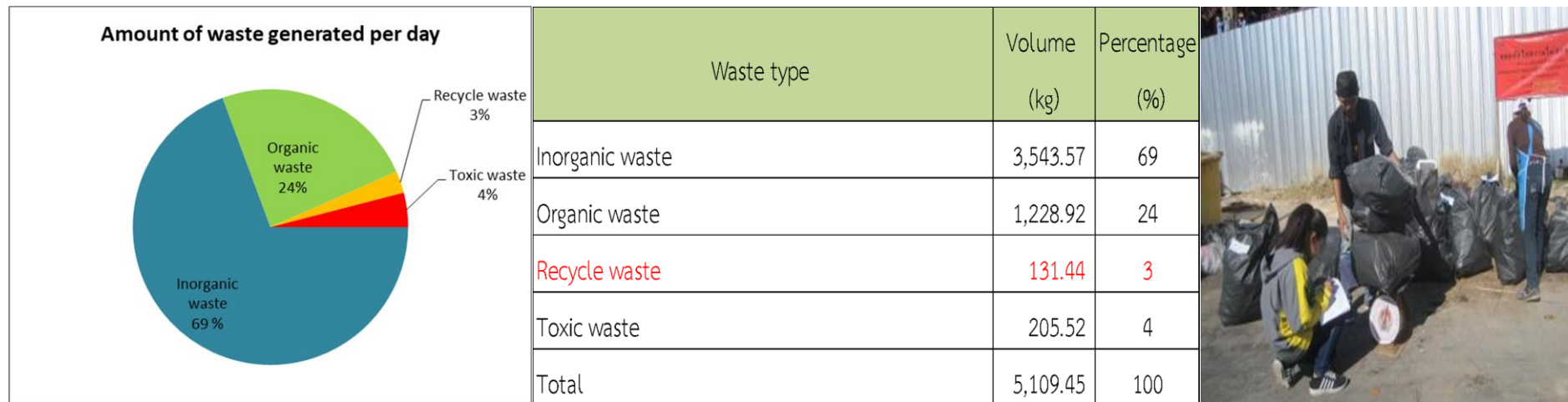


Waste (WS)

Recycling program for university waste

Study the amount of solid waste. From surveying data for each type of waste generated within Mahasarakham University for 3 days to find the average amount of waste generated per day. to be used as a representative for calculating the total amount of waste generated within Mahasarakham University.

From the survey of total waste in Mahasarakham University It was found that the total amount of waste generated per day was 5,109.45 kg, of which 131.44 kg was recycled waste, accounting for 3% of the total waste.



From the results of the survey on the amount of waste in Mahasarakham University It was found that the dormitory of MahaSarakham University was a large source of waste. The amount of waste that occurs per day is 682 kilograms. There are 2,755 residential students. “Green dormitory” by the target group in the project of 10 dormitories with the following objectives:

1. To aim to encourage students to learn the process of waste management with the 3 R principles: Reduce, Reuse, Recycle.
2. To encourage students to separate waste from the source
3. To encourage students to use waste by using it to create inventions.

Project implementation period : June – September 2022(4 months) due to the epidemic situation of COVID-19

On	Dormitories	number of guests					Total
		1st year student	2st year student	3st year student	4st year student	other	
1	Kantharawichai Dormitory	115	68	41	63	4	291
2	WapiPathum Dormitory	80	72	62	72	3	289
3	Kutrang Dormitory	3	11	3	3	0	20
4	YangSiSurat Dormitory	198	135	128	68	2	531
5	PhayakkhaphumPhisai Dormitory	198	83	81	70	4	436
6	Kosum Phisai Dormitory	183	140	144	34	2	503
7	Chiang Yuen Dormitory	123	94	87	30	3	337
8	Borabue Dormitory	35	105	105	41	2	288
9	Appreciation Dormitory	18	2	2	4	1	27
10	Na Dun Dormitory	16	6	5	6	0	33
	Total	969	716	658	391	21	2,755

Waste sorting bins to create value

Waste sorting bin project to create value To encourage students and staff to participate in waste separation using the 3 R principles: REDUCE, REUSE and RECYCLE from the source of waste. By creating garbage sorting bins according to the faculty / agency.

How to do it





From the results of the survey of the total amount of recycled waste within Maharakham University in 2022
1 day, the amount of recycled waste occurred 131.44 kg.
1 year, the amount of recycled waste occurred 47,975.60 kg.

Program to reduce the use of paper and plastic on campus

Maharakham University implemented a policy to reduce the use of plastic bags and paper. Due to large quantities of general waste, particularly plastic bags which take longer time to decompose, the university has thus issued the guidelines in order to help reduce the use of plastic bags and paper on the campus area as follows:

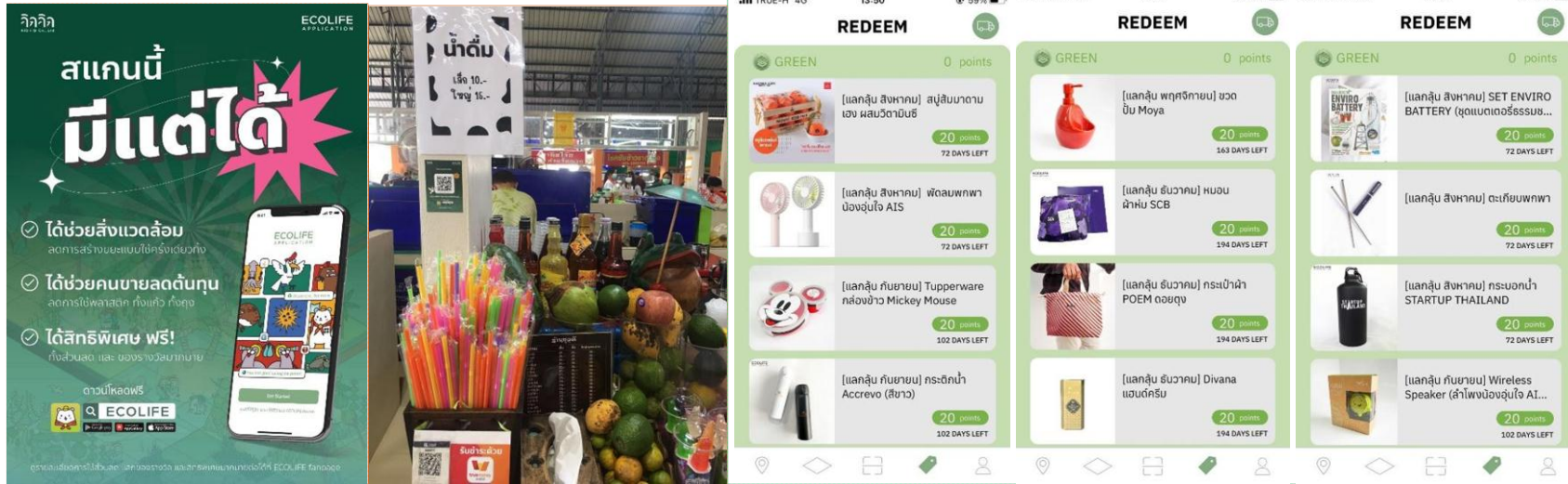
Policy to reduce the use of plastic and paper in Maharakham University

<p style="text-align: center;"> ประกาศ มหาวิทยาลัยมหาสารคาม เรื่อง มาตรการจัดการขยะภายในมหาวิทยาลัยมหาสารคาม</p> <p>ด้วย มหาวิทยาลัยมหาสารคาม ได้ตระหนักถึงปัญหาสิ่งแวดล้อมโดยเฉพาะปัญหาขยะตกค้าง หากไม่ได้รับการจัดการที่เหมาะสมอาจก่อให้เกิดผลกระทบต่อสิ่งแวดล้อมและส่งผลกระทบต่อสุขภาพอนามัยของนักเรียน นิสิต และบุคลากรภายในมหาวิทยาลัยมหาสารคามได้ ซึ่งมหาวิทยาลัยมหาสารคามตระหนักถึงปัญหาดังกล่าว เพื่อลดปริมาณขยะที่เกิดขึ้นในปัจจุบันและอนาคต จึงอาศัยอำนาจตามความในมาตรา ๑๗ และมาตรา ๒๐ (๑) แห่งพระราชบัญญัติมหาวิทยาลัยมหาสารคาม พ.ศ. ๒๕๓๗ และมติที่ประชุมคณะกรรมการบริหารจัดการขยะมูลฝอยภายในมหาวิทยาลัยมหาสารคาม ครั้งที่ ๒/๒๕๖๕ จึงได้กำหนดมาตรการเพื่อประกาศ มาตรการจัดการขยะภายในมหาวิทยาลัยมหาสารคามขึ้น ดังนี้</p> <p>๑. คำจำกัดความ ขยะอินทรีย์ หมายถึง ขยะที่สามารถย่อยสลายได้ เช่น เศษอาหาร เศษผัก เศษผลไม้ เศษใบไม้ เศษหญ้า เป็นต้น ขยะทั่วไป หมายถึง ขยะที่ไม่ต้องการนำกลับมาใช้ประโยชน์อีก เช่น ถุงพลาสติก โฟม เป็นต้น ขยะรีไซเคิล หมายถึง วัสดุและสิ่งเหลือใช้ที่สามารถนำมาใช้ประโยชน์หรือแปรรูปได้อีก เช่น กระดาษ พลาสติก กระเบื้อง ขวดแก้ว กระป๋องอะลูมิเนียม เป็นต้น ขยะอันตราย หมายถึง ขยะที่มีองค์ประกอบหรือเป็นอันตรายชนิดต่างๆ เช่น หลอดไฟ ถ่านไฟฉาย กระป๋องสเปรย์ แบตเตอรี่ เป็นต้น ขยะติดเชื้อ หมายถึง สิ่งของที่มีสัมผัสกับสารคัดหลั่งของผู้ป่วย เช่น ชุดตรวจ COVID-๑๙ หน้ากากอนามัยที่ใช้แล้ว เป็นต้น</p> <p>๒. มาตรการรณรงค์คัดแยกขยะ ๒.๑ จัดให้มีถังหรือจุดสำหรับรองรับขยะแต่ละประเภท ให้เพียงพอและวางในจุดที่เหมาะสม ได้แก่ ถังสีฟ้า ถังสีเหลือง ถังสีเขียว และถังสีแดง ๒.๒ ติดป้ายหรือสติ๊กเกอร์แสดงสัญลักษณ์ประเภทขยะที่ถังอย่างชัดเจน ๒.๓ ประชาสัมพันธ์ให้นักเรียน นิสิต และบุคลากรรับทราบและทิ้งขยะลงถังให้ถูกต้อง</p> <p>๓. มาตรการทิ้งขยะ ๓.๑ ขยะอินทรีย์ ให้ทิ้งลงถังสีเขียว ๓.๒ ขยะทั่วไป ให้ทิ้งลงถังสีฟ้า ๓.๓ ขยะรีไซเคิล ให้ทิ้งลงถังสีเหลือง</p> <p style="text-align: right;">๒/๓.๔ ขยช...</p>	<p style="text-align: center;">-๒-</p> <p>๓.๔ ขยะอันตราย ให้ทิ้งลงถังสีแดงหรือถังสำหรับรวบรวมขยะอันตรายโดยเฉพาะ ๓.๕ ขยะติดเชื้อ ให้ปิดปากถุงให้สนิทห้ามมีรอยฉีกขาดก่อนนำไปทิ้งลงถังขยะสีแดงหรือถังสำหรับรวบรวมขยะติดเชื้อโดยเฉพาะ</p> <p>๔. มาตรการรวบรวมและการจัดการขยะแต่ละประเภท ๔.๑ ขยะอินทรีย์ ให้ดำเนินการติดถังแยกและดำเนินการจัดการ ณ ต้นทาง ๔.๒ ขยะทั่วไป ให้รวบรวมใส่ถุงดำและมัดปากถุงให้เรียบร้อย นำมาไว้จุดรวบรวมตามเวลาที่กำหนดและบันทึกปริมาณขยะทั่วไป ๔.๓ ขยะรีไซเคิล ให้คณะ/หน่วยงานดำเนินการบริหารจัดการ (จำหน่ายให้ร้านรับซื้อรีไซเคิล) และบันทึกปริมาณขยะรีไซเคิล ๔.๔ ขยะอันตราย ให้หาจุดที่เหมาะสมสำหรับรวบรวมเพื่อรอการสำรวจและส่งกำจัดอย่างถูกหลักวิชาการต่อไป ๔.๕ ขยะติดเชื้อ ๔.๕.๑ จัดให้มีอุปกรณ์ป้องกันการติดเชื้อให้กับพนักงานเก็บขยะมิใส่ขยะ ปฏิบัติงานทุกครั้ง ๔.๕.๒ ไม่มีการป้องกันการติดเชื้อแก่พนักงานเก็บขยะที่ก่อน/หลัง ด้วยการตรวจวัดอุณหภูมิ ยังมีอยู่หรือเจลแอลกอฮอล์ ๔.๕.๓ การกำจัดให้เป็นไปตามกฎกระทรวงว่าด้วยการกำจัดมูลฝอยติดเชื้อ พ.ศ. ๒๕๕๕</p> <p>๕. มาตรการลดการใช้กระดาษ โฟม กระดาษ และพลาสติก ๕.๑ ห้ามใช้กระดาษโพนภายในพื้นที่มหาวิทยาลัยมหาสารคาม ให้ใช้กระดาษที่เป็นมิตรต่อสิ่งแวดล้อม เช่น ก่อกระดาษชานอ้อย ด้วยกระดาษ เป็นต้น ๕.๒ ส่งเสริมให้นักเรียน นิสิต และบุคลากรลดปริมาณการใช้ถุงพลาสติกและถ้วยน้ำพลาสติกด้วยการใช้ถุงผ้าแทนและใช้แก้วที่สามารถนำกลับมาใช้ซ้ำได้ ๕.๓ ให้นักเรียน นิสิต และบุคลากร ลดปริมาณการใช้กระดาษที่จำเป็น เพื่อเพิ่มประสิทธิภาพในการใช้ทรัพยากรอย่างคุ้มค่า ๕.๓.๑ ลดปริมาณการใช้กระดาษ (Reduce) นำเทคโนโลยีสารสนเทศมาเพิ่มประสิทธิภาพในการทำงาน ตรวจทานเอกสารก่อนพิมพ์ ส่งและจัดเก็บเอกสารในรูปแบบอิเล็กทรอนิกส์ ๕.๓.๒ นำกระดาษกลับมาใช้ซ้ำ (Reuse) โดยส่งเสริมการใช้กระดาษทั้งสองหน้า ๕.๓.๓ แปรรูปกระดาษและหมึกเวียนกระดาษกลับมาใช้ใหม่ (Recycle) โดยผ่านกระบวนการคัดแยกและจำหน่ายให้ร้านรับซื้อรีไซเคิลเพื่อนำไปแปรรูปและนำกลับมาใช้ใหม่</p> <p style="text-align: center;">จึงประกาศณาเพื่อทราบและให้ถือปฏิบัติโดยทั่วกัน</p> <p style="text-align: right;">ประกาศ ณ วันที่ ๒ มิถุนายน พ.ศ. ๒๕๖๕</p> <p style="text-align: right;"> (รองศาสตราจารย์ประยุทธ์ ศรีวิไล) อธิการบดีมหาวิทยาลัยมหาสารคาม</p>
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Program to reduce the use of paper and plastic on campus

1. Ecolife program

Stores participating in the project will receive a QR code. In which students and staff can scan QR codes to refuse to accept plastics and earn points to redeem for various rewards. You can view details and rewards in the Ecolife application.



2. Say no plastic program

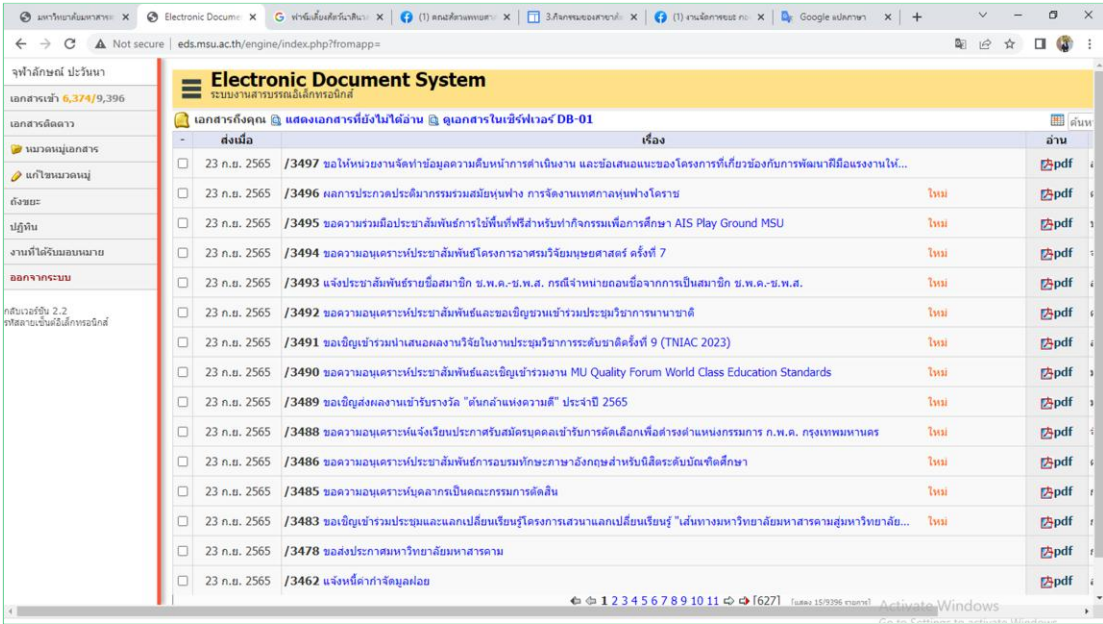
Refrain from accepting plastic bags from participating stores. will receive stamps to redeem rewards and campaign to use cloth bags instead.



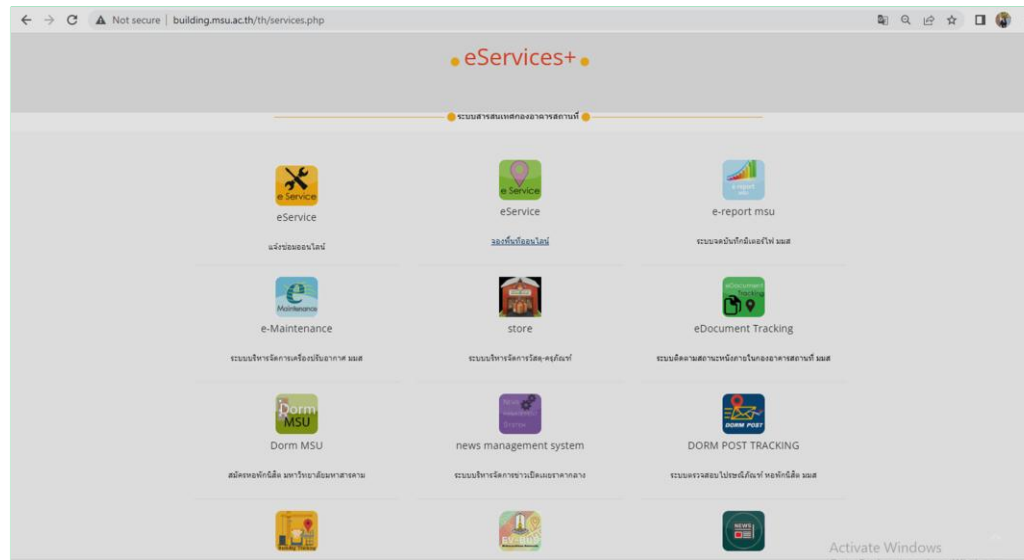
3. Order refills for food and beverages



4. Electronic Document System



5. E-services system

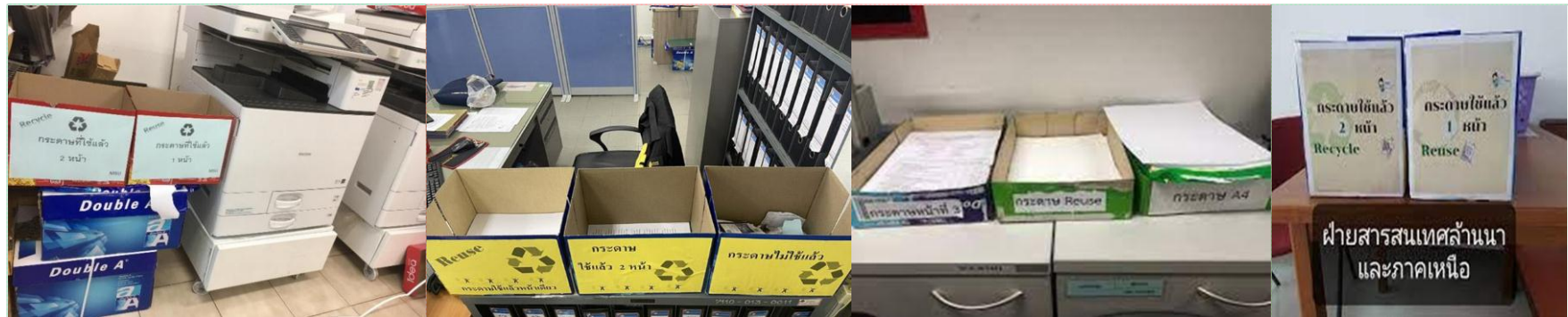


6. Online document submission system



7. Two-sided paper policy.

Policy to encourage all faculties/organizations to use 2-sided paper.



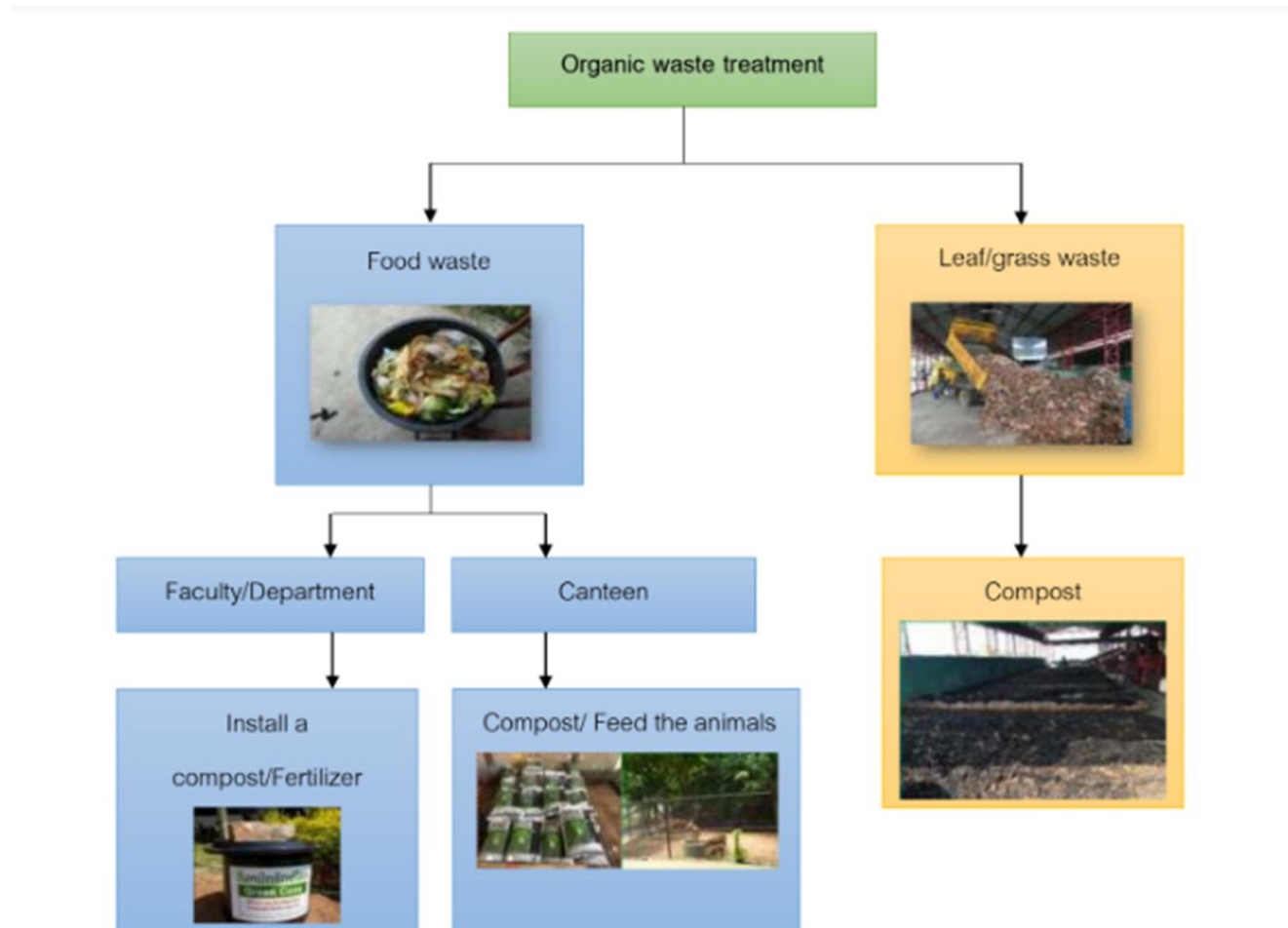
8. Use environmentally friendly products.

Maharakham University Contract with restaurant operators to use eco-friendly containers instead of single-use plastics, such as paper boxes or bagasse, for food that is biodegradable and environmentally friendly.



Organic waste treatment

From surveying data for each type of waste generated within Maharakham University for 3 days to find the average amount of waste generated per day. to be used as a representative for calculating the total amount of waste generated within Maharakham University



1. Food waste treatment

Faculty/Department

To appoint a waste management committee, one representative per unit, 38 units, and assign the agency to manage waste within the agency itself, which is one of the waste management activities. "Installation of compost bins" to treat organic waste generated within the agency From the aforementioned activities, a total of 28 units installed fermentation tanks, representing 74%, and the remaining 10 units were unable to install them. Due to the low amount of organic waste and limited space shared with neighboring agencies. which can treat almost all of the organic waste generated by the agency which follow up on the performance by meeting the waste management committee once a month.



Organic waste (food waste) generated by faculty/organization, an average of 118.92 kg per day, is handled at the source in excess of 70% due to the installation of composting bins for disposal at the source. From the joint committee of 38 departments, 28 fermentation tanks were installed or 74%.



Project to produce vermicompost from organic waste

By providing bins to support organic waste and use it to make vermicompost. by the process of decomposition by earthworms The average amount of organic waste treated is 400-600 kg per day, while the produce is used to nourish trees and sell to generate income for Maharakham University. Sold at a price of 50 baht per bag, 5 kg per bag.



Feeding animals

Provide bins for organic waste. especially food waste to be used as animal feed Because Maharakham University has a farm for raising chickens. in order to reduce the amount of feed purchase and to utilize organic waste. Another part is sent to the farming group that raises animals. which receives every day



2. Leaf/grass waste treatment: Project to produce compost from organic waste

By collecting 100-200 kilograms of leaf litter, grass clippings, and grass clippings from the landscape work, on average, to make compost. The produce that has been used to nourish trees and sell to generate income for Maha Sarakham University. Sold at a price of 20 baht per bag, 3 kg per bag.

Shredded leaves, grass leaves to be small, mixed with manure, black husks, mixed to put in a pile, arranged in rows to have a thickness of not 15 cm.



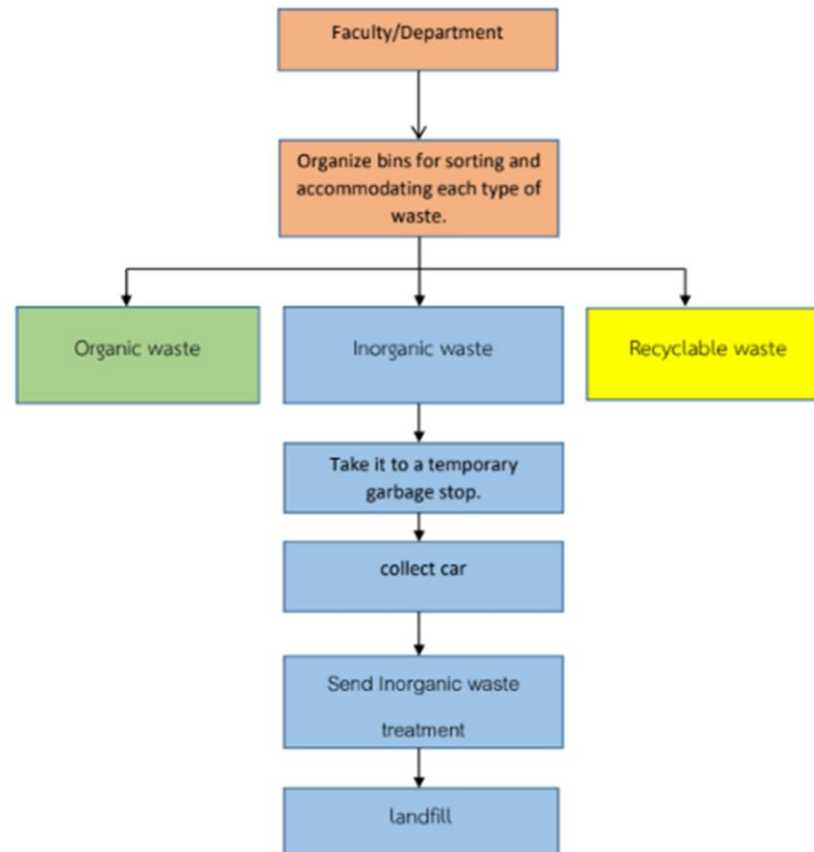
Water to a humidity of about 60-70% and return the fertilizer pile once a week to allow the lower part to come into contact with the air. It takes about 45-60 days to decompose, or you can easily notice that the compost begins to look dark and can be utilized.



Inorganic waste treatment

Study the amount of solid waste From surveying data for each type of waste generated within Mahasarakham University for 3 days to find the average amount of waste generated per day. to be used as a representative for calculating the total amount of waste generated within Mahasarakham University

From the survey of total waste in Mahasarakham University It was found that the total amount of waste occurred per day was 5,109.45 kg, of which 3,543.57 kg was inorganic, accounting for 69% of the total waste.



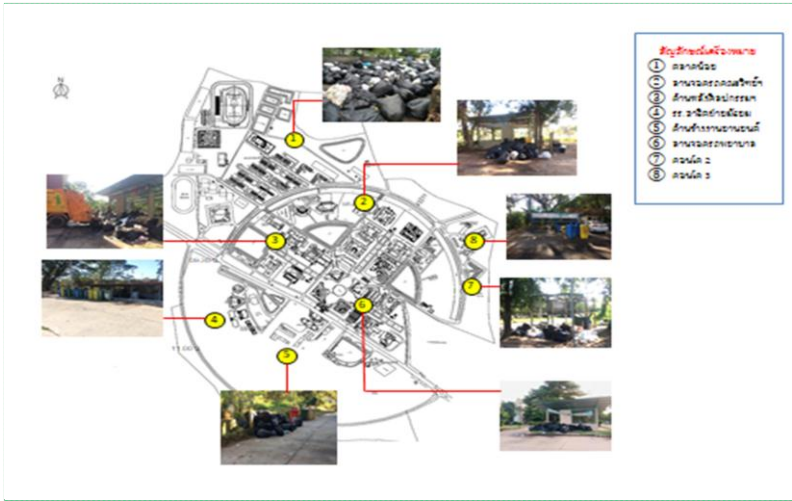
Faculty/organizations provide bins for separating and disposing of inorganic waste.



Collected in a black bag and tied the mouth of the bag to bring it to a gathering point or a temporary garbage stop.



Inorganic collection point (Kham Rieng Campus, 8 points)



Toxic waste treatment

Hazardous waste or toxic waste refers to materials that are no longer used, deteriorated product or various containers that contain or are contaminated with hazardous materials/substances that are toxic, flammable, corrosive radioactive substance and pathogenic substances, etc. that cause harm to persons, animals, plants, property or the environment.

Maharakham University divides toxic waste into 3 types according to its origin:

1. Toxic waste from the laboratory is various types of dangerous chemicals, and containers, etc.
2. Toxic waste from faculties/organizations is waste that is toxic, flammable, and radioactive such as batteries, fluorescent lamps, batteries, mobile phones. Spray cans containing paint, etc.
3. Toxic waste from hospitals (Sutthavet Hospital Faculty of Medicine Maharakham University) is Solid waste containing pathogens in quantity or concentration, which, if exposed to or close to the waste, can cause disease



The amount of toxic waste that Maharakham University sends for treatment is as follows :

The amount of toxic waste from the lab	= 12,269.00 kg
The amount of toxic waste from faculties/organizations	= 140.00 kg
The amount of toxic waste from hospitals	= 59,843.00 kg
Total amount of toxic waste treatment	= 72,252.00 kg

From the survey results of the total amount of toxic waste within Maharakham University

- 1 day, 205.52 kg of toxic waste occurred.
- 1 year, 75,014.80 kg of toxic waste occurred.

Sewage disposal

Sewage is divided into 3 parts :



Greywater :
wastewater from
building



Greywater :
wastewater from
kitchen



Faecal sludge :
solids and liquids
accumulating in
sanitation systems

1. Greywater disposal : wastewater from building
Building wastewater collection system



Waste water treatment process : Aerated Lagoon (AL) wastewater treatment system



Recycle water

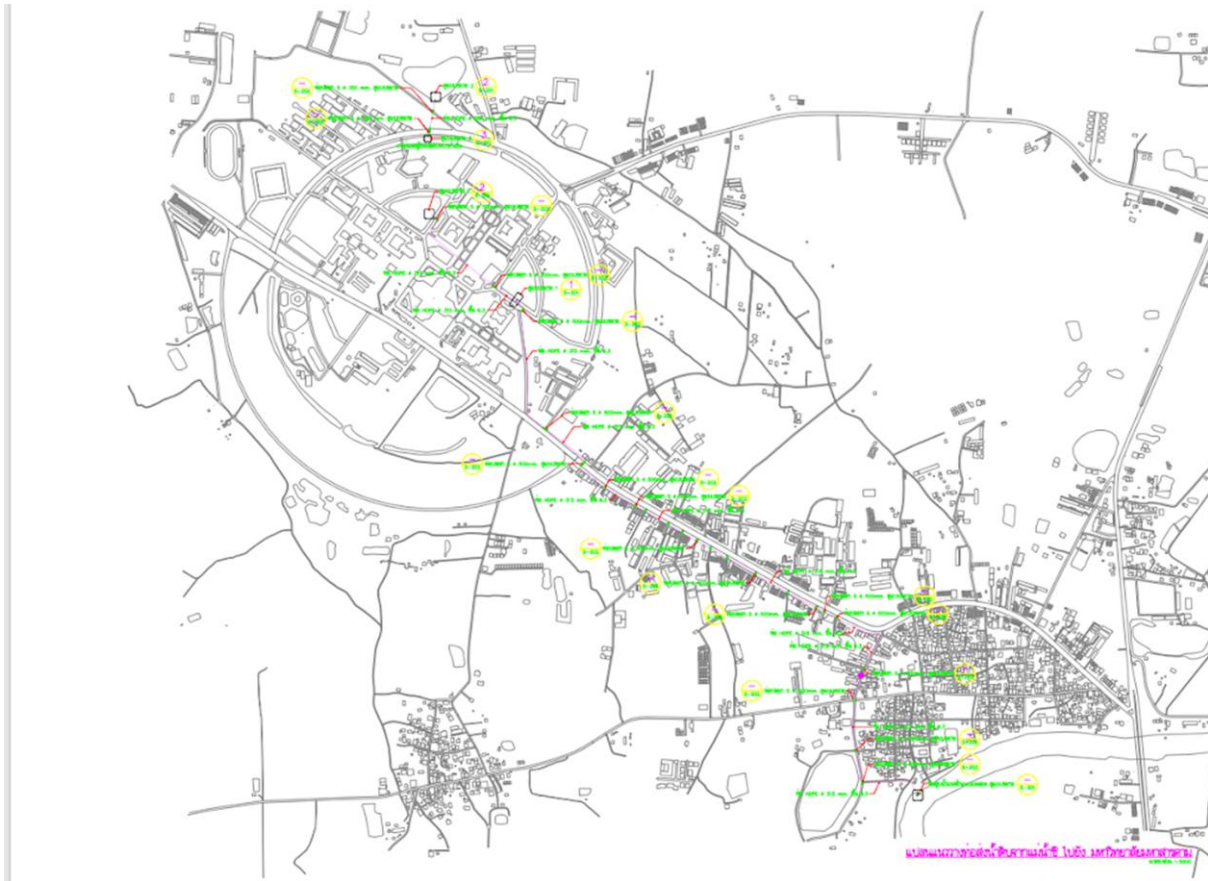
before reusing the treated wastewater The wastewater quality was measured before and after treatment, including PH, Do, BOD, SS and compared to the standard. which collects all 6 samples as follows:

Sampling point	parameter (mg/l)			
	pH	Do	BOD	SS
sewage collection pond	6.86	0.25	81.17	91.00
1st aeration pond	7.22	2.10	64.50	68.33
2nd aeration pond	7.42	6.07	31.50	35.00
sedimentation pond	7.92	7.19	29.25	30.33
Pond 1	8.50	9.46	28.65	27.00
Pond 2	9.79	19.40	17.85	22.50

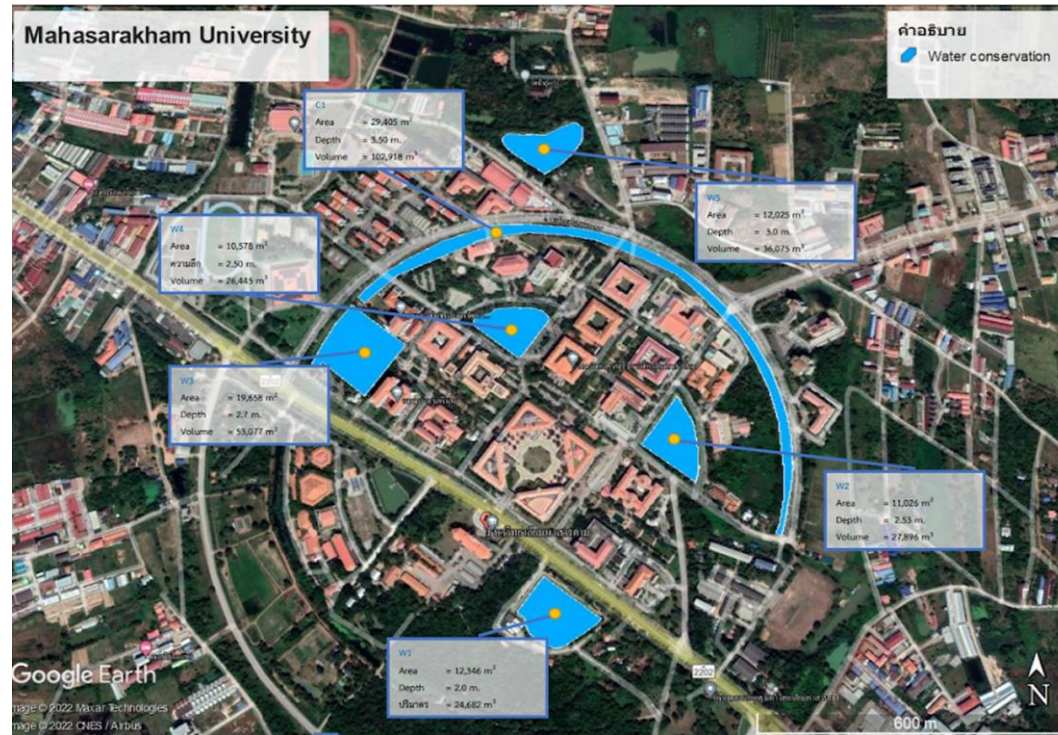
Water (WR)

Water Conservation Program Implementation

Maharakham University receives raw water from surface water directly from the Chi River without using groundwater. By pumping and storing it at the raw water storage ponds inside the university when the raw water storage ponds collecting rainwater decreases without contamination during water delivery.



Possessing five sizable storage ponds and canals all surrounding the institution, Maharakham University provides water storage for usage on campus. This can support the remaining runoff from seepage and evaporation that falls in the university area.

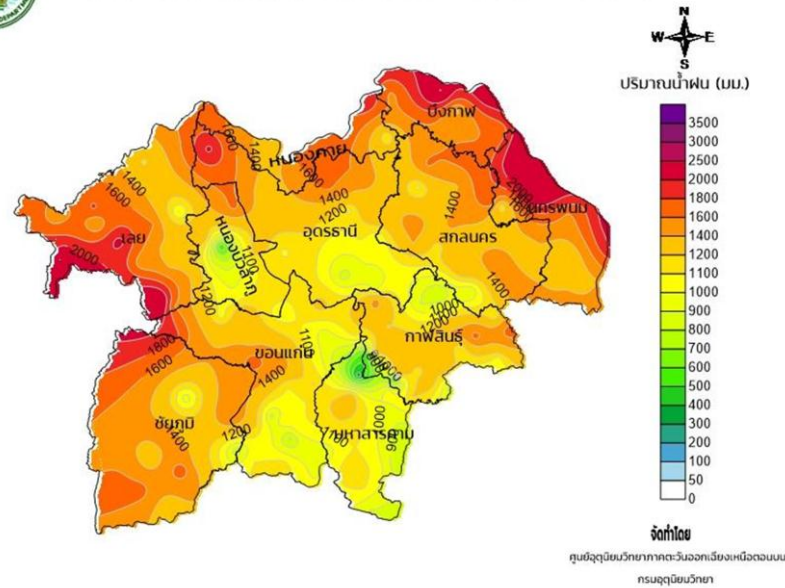


Water Conservation	volume
W1	24682
W2	27896
W3	53077
W4	26445
W5	36075
C1	102918
Total	271093

Maharakham University have overall storage of about 271093 cubic meters respectively. Overall water storage is enough to storage surface runoff in Maharakham University up to 54%. The percent can be calculated as follows:



ปริมาณน้ำฝนสะสมภาคตะวันออกเฉียงเหนือตอนบน ประจำปี พ.ศ. 2564

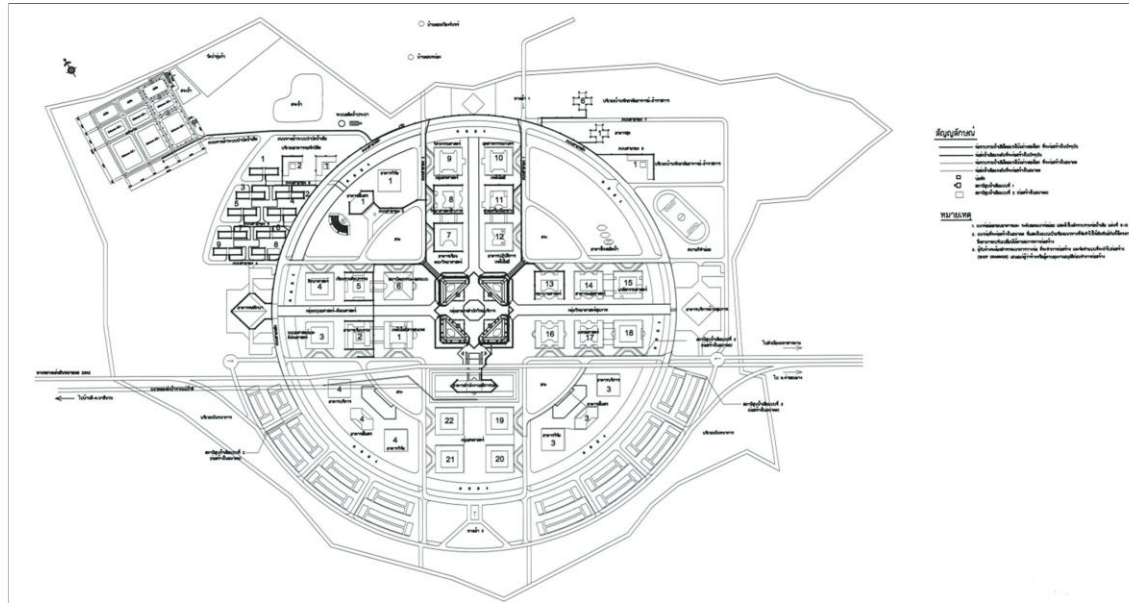


* In 2022, the total amount of water that fell in the area from the amount of average precipitation of 1100 millimeters per year.

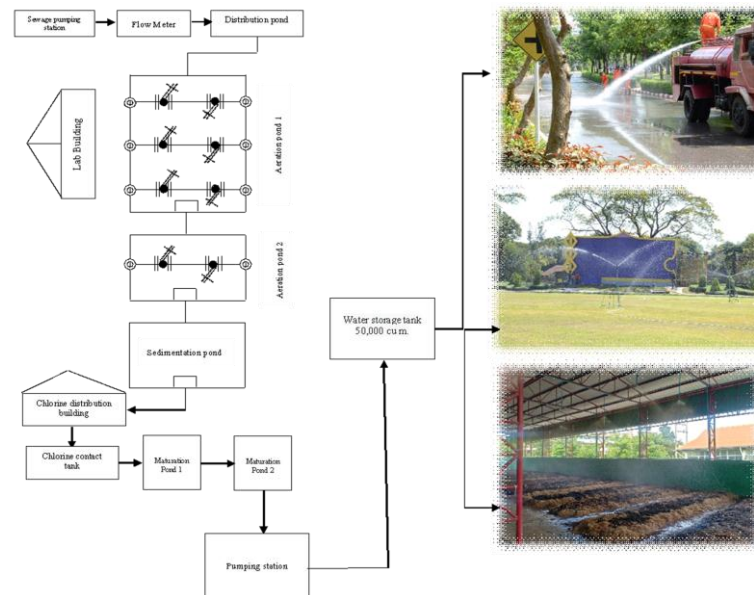
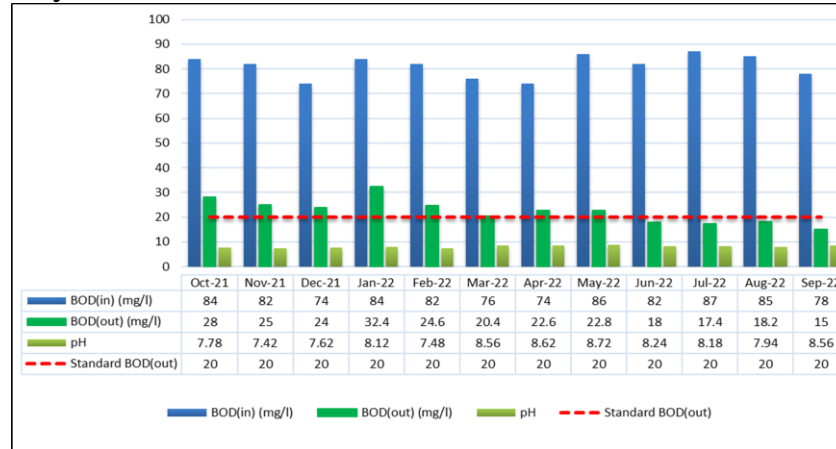


Water recycling program implementation

Maharakham University uses an aerated lagoon treatment system for wastewater treatment that can remove pollutants. Then, treated wastewater will be pumped to a storage pond with a capacity of up to 50000 cubic meters. The water treatment plant of Maharakham University uses treated water for all university activities such as toilets, plants, organic fertilizer production, firewater, and cleaning for the purposes.



The amount of wastewater is small compared to the total water supply because the wastewater treatment system will receive water only for the dormitory. In which the building has a wastewater treatment system installed inside the building. The stored wastewater is reused for all university activities without being released to the public and the dirtiness of the wastewater is regularly measured every month.



Water-using appliance

Classification of water-saving sanitary ware of MahaSarakham University

1. Urinals should be classified as follows:

1.1 Not saving water

- A faucet urinal that the user must close - open by themselves (ball cock / faucet)

1.2 A urinal is a sanitary ware that uses water effectively

- Urinal flush valve (automatically shuts off)
- Sensor urinal (automatic on-off water)



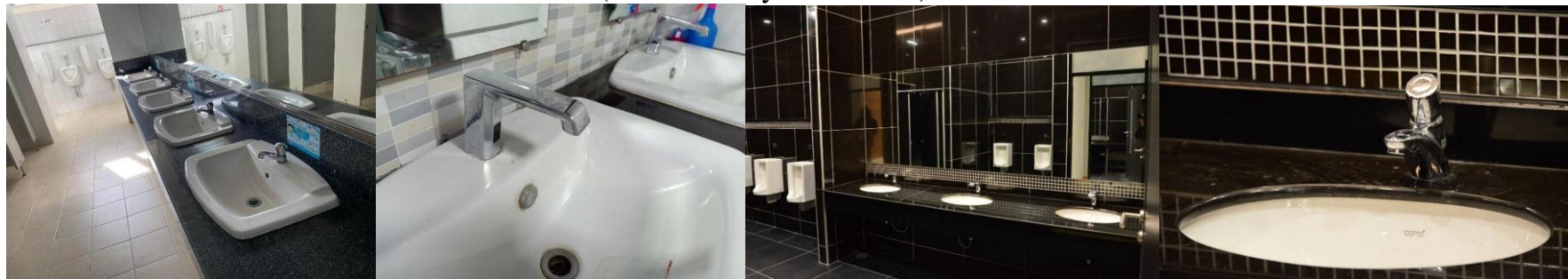
2. Hand washes basins/wash basins (Lavatory) are classified as follows:

2.1 Bathroom sinks that do not save water

- Hand wash/wash basin A faucet that the user must close-open by themselves (ball cock/ faucet)

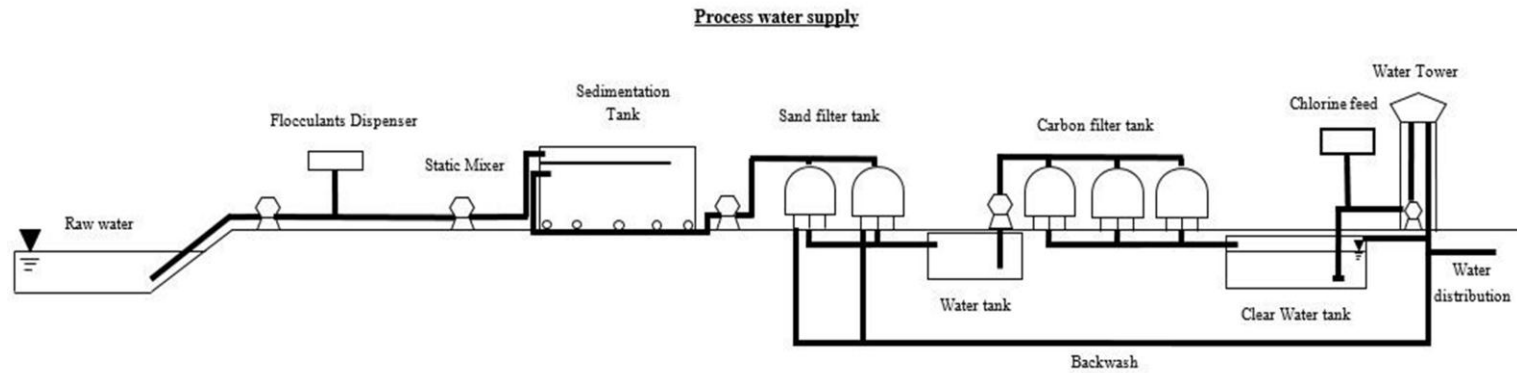
2.2 Sinks are sanitary wares that use water efficiently

- Hand wash basin/face wash with flush valve (automatically shut off the water)
- Sensor wash basin/wash basin (automatically turn on-off)



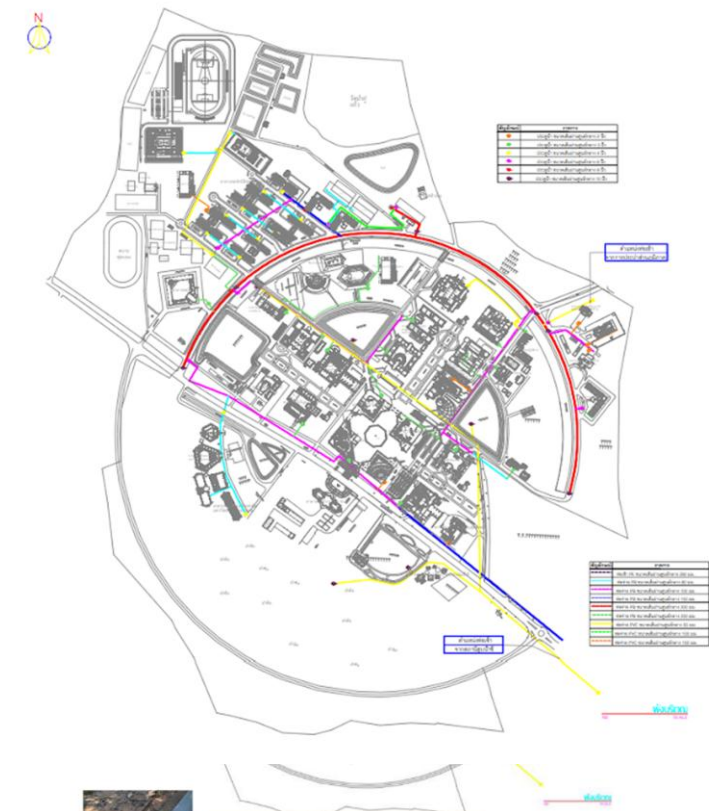
Treated water consumed

Maharakham University has a treated water plant to produce tap water for its use within the University by using raw water on the campus.

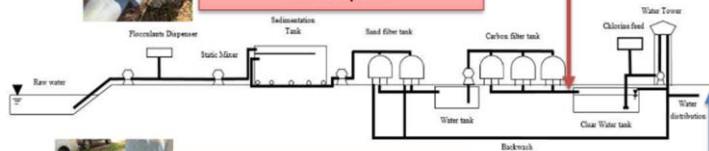


The use this water will be water that comes into direct contact with humans for both consumer and consumer use, therefore it is 100% clean and tap water without the use of water from other sources such as groundwater that is not treated.

The water supply flow from the tower to the building in Maharakham University.



The point of measuring the production rate of tap water before it is stored in the clear water storage cement pond.



The point of measuring the rate of water consumption by releasing it directly from the tower to the building according to the demand for water.

The new larger expansive water supply system will be ready by 2023 to handle increased water consumption.



Transportation (TR)

The total number of vehicles (cars and motorcycles) divided by the total campus' population

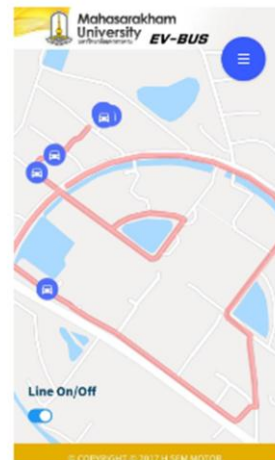
- Number of cars actively used and managed by University. : 18
- Number of cars entering the university daily. : 2,605
- Number of motorcycles entering the university daily. : 11,051

No.	Vehicle types	Total Number
1	The car is managed by the university	189
	BUS	= 16
	SEDAN	= 13
	VAN	= 64
	PICKUP	= 33
	TRUCK	= 27
	MOTORCYCLE	= 34
	OTHER	= 2
2	Cars entered the university	2,605
3	Motorcycles entered the university	11,051
	Total (Vehicles)	13,845



Shuttle Services

MSU have public transportation (EV trams) for everyone on campus. There are six EV trams that operate around the University. EV trams have an origin point at student dormitories to all faculties and important buildings/places within the University. On official days, the service is available from 07.00 a.m. – 08.00 p.m. Weekends and public holidays are available from 08.00 a.m. – 04.00 p.m. MSU students can check the schedule of EV trams by EV-BUS application.



Monthly summary of electric trams around the university and summarize the total number of passengers who use the service

Model of an electric bus that will be used within Mahasarakham University.

Zero Emission Vehicles (ZEV) Policy on Campus

Maharakham university offers free electric trams for students and staff, free bicycle lending, and bicycle lanes to use safely. There are also trams for sightseeing around the university, electric bikes, and electric motorcycles.



แนวปฏิบัติการใช้บริการจักรยาน เพื่อส่งเสริมสุขภาพ

ข้อปฏิบัติในการยืม-คืน จักรยาน

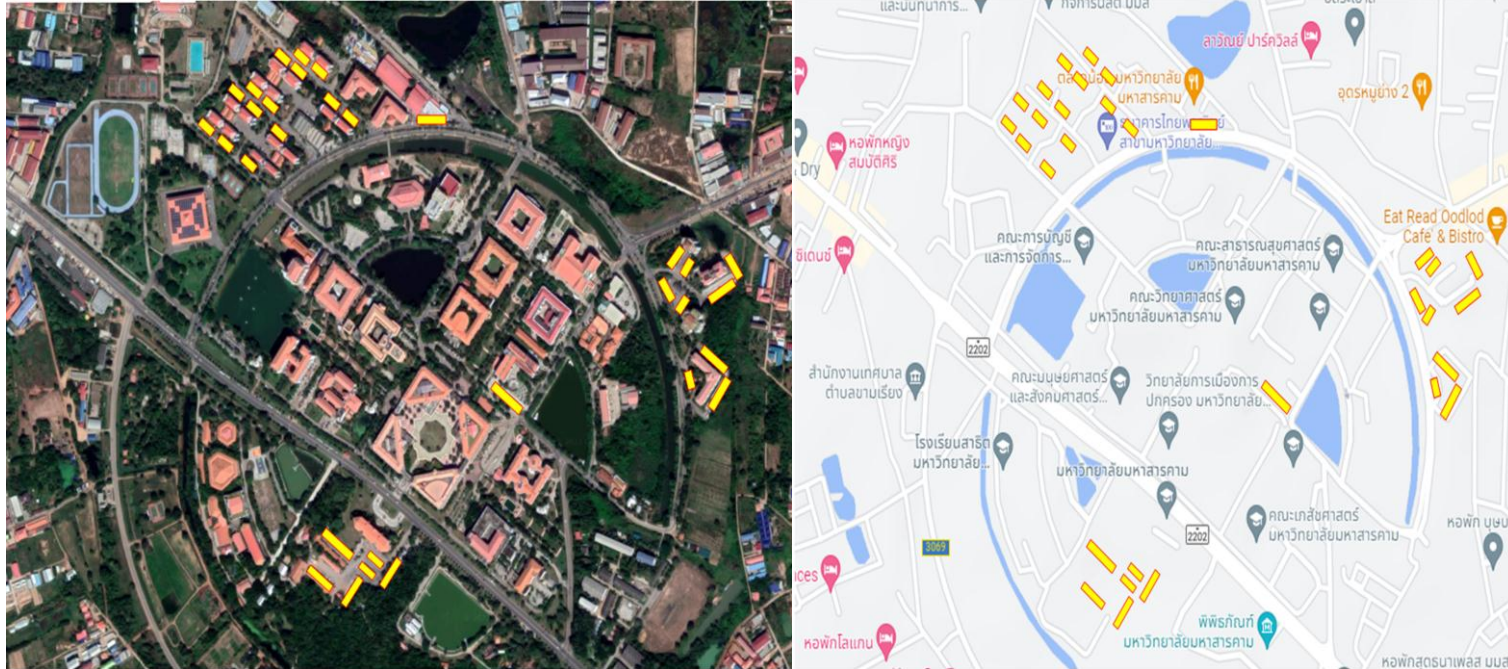
1. ใช้บริการยืม-คืน จักรยาน เวลา 16.30-20.00 น. เท่านั้น
2. ใช้บริการสำหรับนักเรียน นิสิตและบุคลากร มหาวิทยาลัยมหาสารคาม
3. การยืม-คืน จักรยานให้ยื่นบัตรประจำตัวนักเรียน นิสิต บุคลากรหรือบัตรทางการออกให้ ณ จุดให้บริการอาคารศึกษาและกองกิจการนิสิต มหาวิทยาลัยมหาสารคาม
4. ลงทะเบียนการยืม-คืน ณ จุดให้บริการ
5. การบริการ ใช้บริการเป็นจุดเฉพาะในเขตศูนย์มหาวิทยาลัยมหาสารคามเท่านั้น
6. ผู้ขอใช้บริการสามารถ ยืม-คืน จักรยานได้นอกค่ามัดจำ! คนพิมพ์เท่านั้น
7. ผู้ขอใช้บริการจักรยานต้องนำจักรยานส่งคืนไม่เกินเวลา 19.45 น. ในวันนั้นๆ
8. ผู้ใช้บริการต้องตรวจสอบสภาพของจักรยานก่อนใช้บริการทุกครั้ง
9. หากเกิดการสูญหายหรือใช้บริการโดยไม่ปฏิบัติตามรายการที่มีให้บริการ
10. รายการให้บริการจักรยานต้องคืน ประกอบด้วย จักรยาน 1 คัน
11. กรณียืมไปใช้ประโยชน์ในภาคอื่น ให้มีอำนาจของกองกิจการนิสิต

ศูนย์ส่งเสริมสุขภาพ ๑๑๖ อาคารนิสิต



Ratio of Parking Area to Total Campus Area

- Total main campus area: 1697600 m²
- Total parking area = 15322 m²
- Ratio = 0.009%



Transportation program designed to limit or decrease the parking area on campus

Reduction of university parking space:

1. Reducing parking spaces by prohibiting parking in areas that obstruct traffic and risk accidents.
2. Reducing parking space usage, parking space can be used only for authorized persons.
3. Paint the traffic line at the no-parking area to reduce the parking area.
4. Free electric trams.
5. Free for bicycles.



Reducing parking spaces by prohibiting parking in areas that obstruct traffic and risk accidents.

Reducing parking space usage, parking space can be used only for authorized persons.



Paint the traffic line at the no-parking area to reduce the parking area.



Free electric trams.



Free electric trams.



Free for bicycles.



Free for bicycles.

Number of Transportation Initiatives to Decrease Private Vehicles on Campus

Maharakham university promotes free public transportation for everyone. As following

1. Free electric tram service for students and staff in the university.
2. Free bicycle lending.
3. Electric motorbikes for students and staff to test drive in collaboration with the electric motorcycle company.



Free electric trams service for students and staff in the university

Free electric trams service for students and staff in the university



Free bicycle lending.



Free bicycle lending.



Maharakham University has entered into a contract with an electric motorcycle distribution company to build an electric motorcycle service station and a charging station to serve students and staff within the university.

Pedestrian Path Policy on Campus

Campus sidewalks emphasize the shadiness of nature and the safety of users.

1. Sidewalks have railings between roads for safety.
2. Shady and spacious sidewalks for users.
3. Well-lit sidewalks for users.
4. A walkway between buildings for pedestrian safety.
5. Crosswalks for pedestrian safety.
6. Ramp for disabled people using wheelchairs.



Sidewalks have railings between roads for safety.



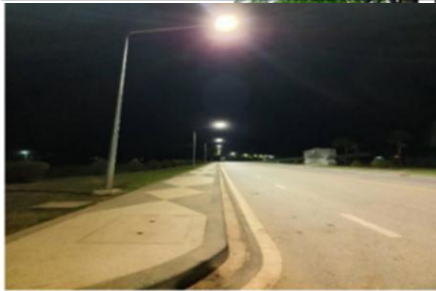
Sidewalks have railings between roads for safety.



Shady and spacious sidewalks for users.



Shady and spacious sidewalks for users.



Well-lit sidewalks for users.



Well-lit sidewalks for users.



A walkway between buildings for pedestrian safety.



A walkway between buildings for pedestrian safety.



Crosswalks for pedestrian safety.



Crosswalks for pedestrian safety.

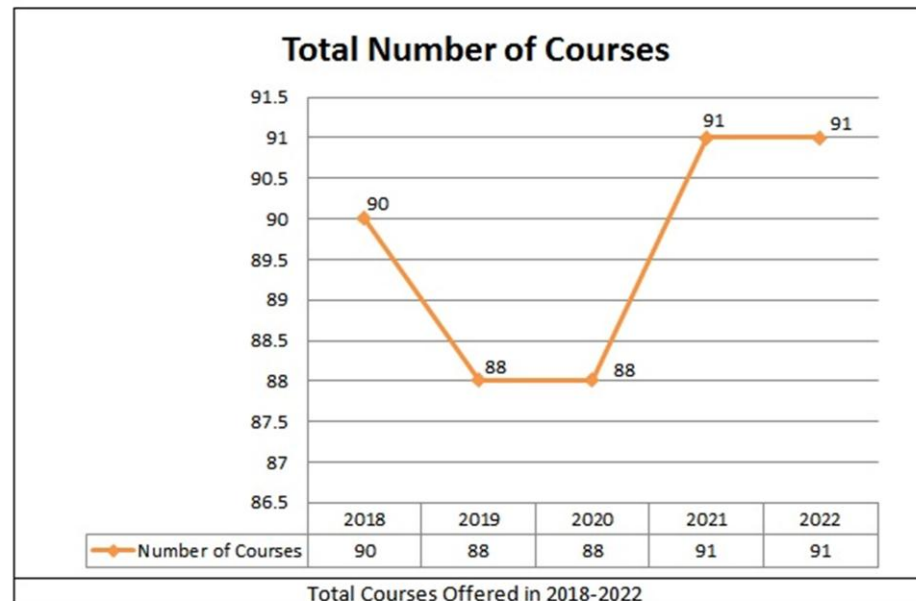
Education and Research (ED)

Maharakham University is 1 of 216 universities in Thailand. The University is location in Northeast part of Thailand Maharakham university offer under-graduate and post-graduate degree programs in three academic clusters

- Social Sciences
- Pure and Applied
- Science and Health ScienceIn

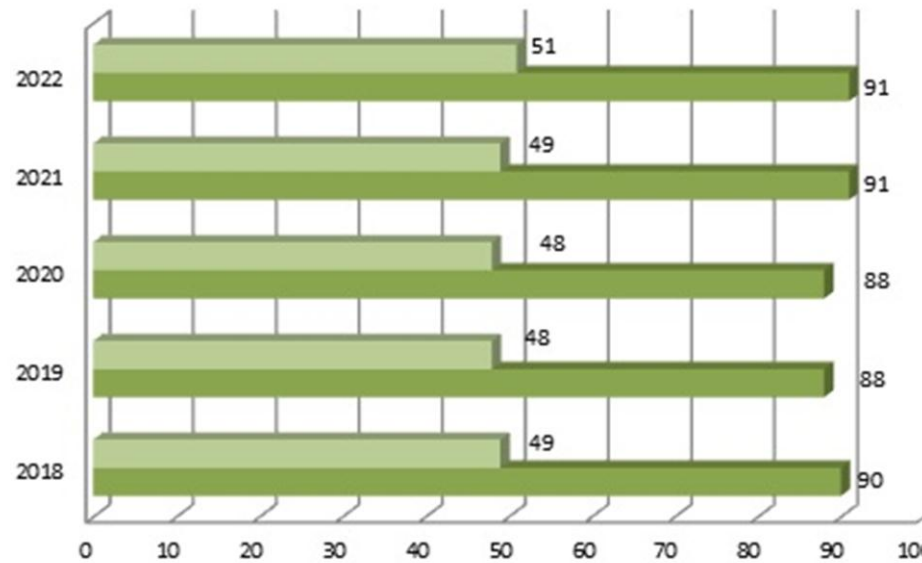
Response to this growth covers the area of Khamriang campus. There are about 3,562 Staffs and 41,903 students enrolling in this main campus. Maharakham University has a total of 17 faculties and 2 colleges. In 2022, there will be a total of 91 courses.

Number of Courses	
2018	90
2019	88
2020	88
2021	91
2022	91



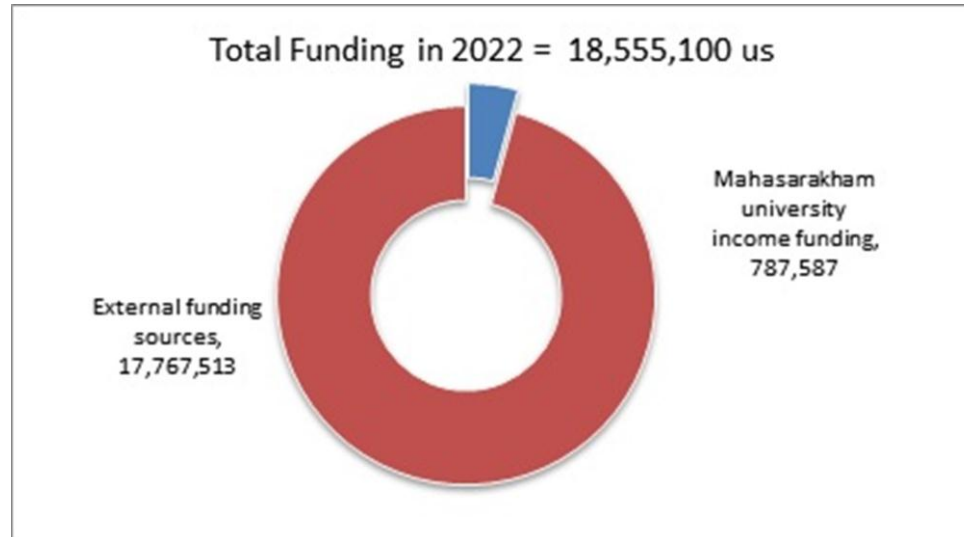
This is the number of taught courses approved through Maharashtra University's Curriculum Renewal Program which aims to embed sustainability into all course content and modules offered by the University. Including courses that are already embedded in sustainability and courses with operational sustainability certificates are part of the core curriculum.

Total number of courses with sustainability embedded for courses running in 2018 - 2022

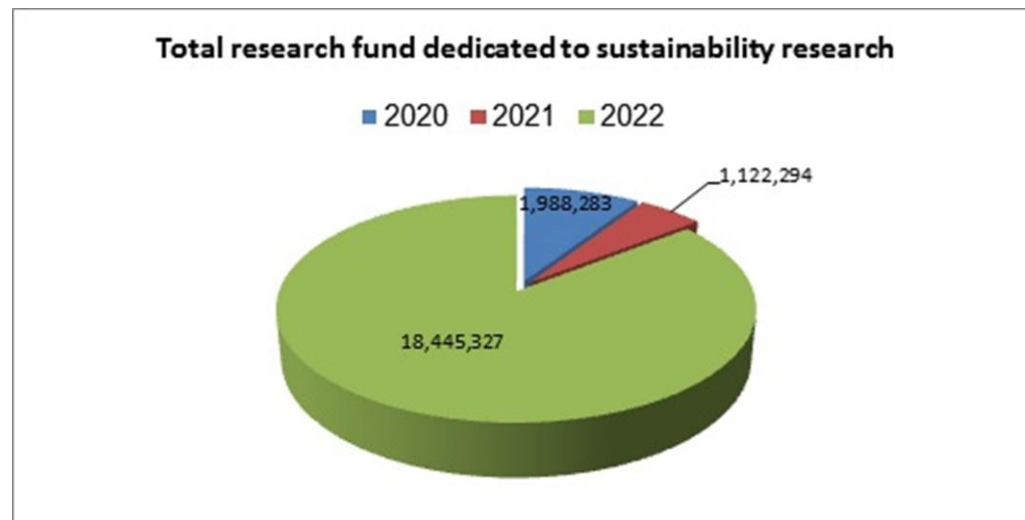


	2018	2019	2020	2021	2022
■ Number of Courses Related to Sustainability Offered	49	48	48	49	51
■ Total Number of Courses	90	88	88	91	91

Maharakham University has been allocated Research fund for university development 18,555,100 US Dollars. It is income funding 787,587 US Dollars and external funding sources 17,767,513 US Dollars



In 2022, Maharakham University Grants 18,445,327 US Dollars for Sustainable Research.



Events related to environment and sustainability hosted or organized by the University in the academic



อธิการบดี มสธ ลงพื้นที่ติดตามการปรับปรุงอาคารและภูมิทัศน์มหาวิทยาลัย



บุษย์สิริภ.ศ. (ศุภมาส ๑๖๓๖๒๖) วัตถุประสงค์ในการศึกษาชีวิต และ วัตถุประสงค์ของชีวิต



มสธ จัดโครงการขับเคลื่อนมหาวิทยาลัยสีเขียวตามเป้าหมายการพัฒนาที่ยั่งยืน (SDGs)



มสธ ร่วมโครงการ "park 1% go campus"



มสธ สักกัก...ศุภ บูชิตชัยทวีสิน ร่วมกิจกรรมสืบเสาะวิทยาศาสตร์แห่งชาติ ครั้งที่ ๑๑



มสธ จัดบรรยายพิเศษ "โอกาสจากเส้นทางดิจิทัล ไทย-ลาว-จีน" ผู้ทรงคุณวุฒิจากด้านนโยบายด้าน 5G, 6G และ AI ของจีน



นักวิจัยคณะวิทยาศาสตร์ มสธ ร่วมงาน "เครือข่ายนักวิจัยไทย-ลาว-จีน" ในงาน Thailand Research Expo 2022



นิสิต มสธ เข้าร่วมโครงการค่ายเรียนรู้และเผยแพร่โครงการพระราชดำริ (หอทัย รักษ์ สุจริตใจอาสา)



มสธ จัดเสวนา Thailand Digital 2022 ในหัวข้อ "ปัจจัยความสำเร็จการขับเคลื่อน Smart City ในระบบประเทศไทย"



นิสิต มสธ ร่วมกิจกรรมจากโครงการความหลากหลายทางชีวภาพในมหาวิทยาลัย มสธ ครั้งที่ 2565



มสธ จัดกิจกรรมเส้นทางท่องเที่ยว "สุขภาพดี เกษตรอินทรีย์ สดชื่นดีมีงาน"



อธิการบดี มสธ ลงพื้นที่ติดตามการก่อสร้างและปรับปรุงภูมิทัศน์มหาวิทยาลัย



รถรางฟรี...ที่ มสธ เริ่มแล้ววันนี้ เชิญชวนนิสิต บุคลากรใช้บริการ



น้องใหม่ มสธ ร่วมกิจกรรมเข้าฐานเรียนรู้ สร้างเสริมคุณธรรมจริยธรรม มีจิตสำนึกสาธารณะ



จัดงาน 904 มสธ ร่วมกิจกรรมจิตอาสาพัฒนา เนื่องในวันเฉลิมพระชนมพรรษา พระบาทสมเด็จพระวชิรเกล้าเจ้าอยู่หัว 28 กรกฎาคม 2565



คณาจารย์และบุคลากร มสธ ร่วมสนับสนุนโครงการประกวดนักวิจัยหน้าใหม่ ประจำปี ๒๕๖๕



คณะวิทยาศาสตร์ มสส จัดสัมมนา "การพัฒนาวิศวกรรมดิจิทัลเพื่อเพิ่มขีดความสามารถในการแข่งขันภาคตะวันออก เพื่อสร้างโอกาสและยกระดับขีดความสามารถ"



คณะวิทยาศาสตร์ มสส ลงนาม MOU กับวิทยาลัยการแพทย์นานาชาติของยูนิเวอร์ซิตีแห่งชิคาโกในการจัดทำหลักสูตรแพทย์แผนไทยประยุกต์ฉบับแรก



มสส รับรางวัล QS Recognition of Engagement ในงาน the 7th Edition of EduData Summit



อธิการบดี มสส ลงพื้นที่ติดตามการปรับปรุงอาคารและภูมิทัศน์มหาวิทยาลัย



มสส จัดโครงการบริการวิชาการ ทำน้ำประปาดื่มปลอดภัยชุมชน เขมรแห่งการแสดงผลและแสดงผลที่นั่น



คณบดีคณะวิทยาศาสตร์ มสส จัดงานเทศกาลผักอินทรีย์ดี ๆ สำหรับเด็ก และเยาวชน



มสส จัดงาน "นวัตกรรมสร้างสรรค์ มนาสา ตราฟัก"



มสส จัดงาน "วัฒนธรรมอีสาน : หนึ่ง ศิลปะ และการแสดงภายใต้การเปลี่ยนแปลงของสภาพอากาศโลก"



ณีสถิต คณะการคอมพิวเตอร์ มสส ลงนามความร่วมมือกับ "ชุมชนยั่งยืนแคว้นต้นวัฒนธรรม"



มสส จัดโครงการ การใช้เศรษฐกิจโมเดลใหม่ (BCG Economy Model)



กลุ่มศิลปะและเครือข่ายมูลนิธิจิตอาสา มสส จัดโครงการ "บ้านหลังเรียน"



มสส จัดโครงการฟอสซิลสำหรับเด็ก (Fossil for kids) ตอน ไดโนเสาร์ครองโลก (Planet of Dinosaur)



มสส ร่วมกับ depa ยกระดับทักษะชีวิตผู้ทรงรับสรรทุกโครงการนวัตกรรม (CODE-KA-THON)



อธิการบดี มสส ลงพื้นที่ทำนุบำรุงมหาวิทยาลัย (เขตพื้นที่ภาคอีสาน)



อธิการบดี มสส มอบนโยบายการดำเนินงานปรับปรุงพื้นที่สวนเกษตรชุมชนที่ระยอง - ถนนทางหลวงหมายเลข 208



มสส ทำบุญตักบาตรสืบสานวัฒนธรรมไทยสงกรานต์วิถีใหม่ ปี 2565



อธิการบดี มมส ลงพื้นที่บริเวณแยกอาคารชุดหอพักอาคาร 10 กำแพงแก้วในการปลูกฝังงาน



อธิการบดี มมส ลงพื้นที่ทำรมกรีนชามชัย (เขตพื้นที่บึงฉลวย)



อธิการบดี มมส ลงพื้นที่ติดตามบริษัทผู้สนับสนุนมหาวิทยาลัยเตรียมรับเสด็จฯ



สภาคณาจารย์ มมส จัดโครงการประชารัฐร่วมใจ ปลูกต้นไม้เพื่อคนไทย (ชปท) ปลูกต้นไม้เพื่อคนไทยในมหาวิทยาลัย



มมส ส่งมอบผลงานวิจัยและนวัตกรรมเพื่อการพัฒนาด้านการเกษตรในพื้นที่ จ.กำแพงเพชร



คณาจารย์ มมส ลงนามความร่วมมือทางวิชาการกับกระทรวงพลังงาน พัฒนาการเกษตรและใช้พลังงานอย่างมีประสิทธิภาพ



อธิการบดี มมส ลงพื้นที่ทำรมกรีนชามชัย วางแผนบริหารจัดการเลือกสถานที่ก่อสร้างโรงเรือนเลี้ยงไก่



อธิการบดี มมส ลงพื้นที่ติดตามและให้กำลังใจเจ้าหน้าที่ เสร็จงานทำพิธีพระราชทานปริญญาบัตร ประจำปีการศึกษา 2563-2564



คณะเทคโนโลยี มมส จัดบรรยายพิเศษจากมหาวิทยาลัยและเพื่อน (R&D) บริษัท BCF life sciences



คณาจารย์ มมส จัดประชุมเสวนาออนไลน์วิทยาศาสตร์และเทคโนโลยี 1/2565



มมส จัดกิจกรรม HELLO นานู เป็นเส้นทางส่งเสริมการเกษตรและสุขภาพ "ปรีชาชาญ เสริมใจ ชีวีสุขสมผล"



อธิการบดี มมส ร่วมพิธีเปิดนิทรรศการ "วิถีชีวิตวิถีสุข : มรดกวัฒนธรรมจากอดีตสู่ปัจจุบัน"



มมส นางจิวร่วมกับผู้มาเยือน พัฒนาศูนย์ปฏิบัติการบ้านกึ่ง (กุดหลวง)



มมส 4n OIA Road Show สืบสานความเข้าใจกับบุคลากรพร้อมส่งกำลังใจสู่บุคลากร



มมส ส่งมอบผลงานวิจัย พัฒนา "น้ำดื่มสุขภาพ Low Sugar" ทางเลือกสุขภาพผู้ดูแลน้ำตาล



อธิการบดี มมส ลงพื้นที่ติดตามปรับภูมิทัศน์มหาวิทยาลัยเตรียมรับเสด็จฯ



ผู้บริหาร มมส ลงพื้นที่ฟาร์มมหาวิทยาลัย



อธิการบดี มมส ลงพื้นที่ติดตามปรับภูมิทัศน์มหาวิทยาลัย



นิสิตสาขาเกษตรศาสตร์ มมส ปลูกพื้ปลูกดอกสารพุน จำนวนยี่รายคาถากุ จากแปลงทดลองและวิจัยทางการเกษตร



จิตอาสา มมส ดำเนินการช่วยเหลือฟื้นฟูและปรับปรุงภูมิทัศน์ภายในคณาจารย์ประสมอุทกภัย ไร่ศรีสุวรรณวาร (บ้านห้วยชัน)



There are 40 student organizations in Mahasarakham University and 13 organizations related to sustainability.

Student organizations related to sustainability

- Group of students under the Student Organization
 - Kiang Mo student group
 - Chao Din student group
 - Palang Sangkom Student Group
 - Chor Ratchaphruek student Group
- Club for service
 - Rak Pattana Club
 - Arsa Pattana Club
- Club for student relations
 - Tourism Club
 - Run Sampan Club
 - Nok Natang Club
 - Local history Club
 - Environmental relations Club
- Club for culture and tradition
 - Rak TangThai Club
 - Rak E-San Club



Maharakham University It has a mission to conserve, restore, protect, propagate and develop arts, culture and traditions of Isan.

Faculty of Architecture, Urban Planning and Creative Arts Maharakham University organizes the Kaedam Festival project, listen to Lam Pleun, walk the Isan Dance by Kaedum Bridge at the Kaedum Wooden Bridge.



Maharakham University Organize a project to preserve Buddhism and carry on the merit-making tradition in the 8th month, “Offering candles to His Majesty the King



Isan Arts and Culture Research Institute Maharakham University organizes the event "Creative Innovation Mahasan Craft"



Maharakham University Organize a project to preserve art and culture to the community and disseminate music performances and folk performances of the year 2022.



Maharakham University There is a policy to promote and support the international arts and culture preservation project for the year 2022




Faculty of Arts and Cultural Sciences Maharakham University Organized a ceremony to award plaques to the art institute network and Artist Awarded The 5th CLMTV&CN Contemporary Art Awards 2022.




Maharakham University There is a hybrid learning system. both online and in the classroom. Computer center of the university of Sousse worked very hard to identify the needs very quickly and to organize distance lectures to professors for e-learning discovering (Helpdesk for E-Learning) to ensure un quick interaction with professors. Also, software was imposed to professors (Moodle, google classroom, social media, etc.) to reduce technological constraints or teachers/ students apprehension. (e.g. Virtual Private Network, Communication Tools, Collaboration Tools)



Using MSU VPN (Unofficial)


for general users


for advanced users

Ask for information & Report usage problems

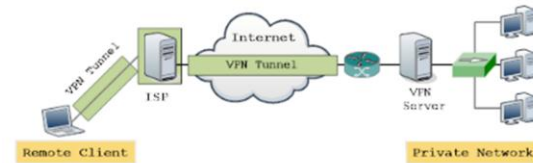
[Networking and Communications computer bureau Maharakham University](#)
 Telephone number : 043-754400
 Internal telephone number : 2499
 * Business hours Monday - Friday 8.30 a.m. - 4.30 p.m.

Email : network@msu.ac.th

**** For reporting problems via email, please describe the problem details. found by which may attach a picture so that the staff can analyze and solve problems faster**

Using MSU VPN for general users (Unofficial)

Virtual Private Network (VPN) is communication over the Internet. used as a channel for private communication with the network or used to communicate between corporate networks via public networks or the Internet. By creating a private channel or tunnel, known as a tunnel, the data transmitted through the tunnel is encrypted. and packet traffic at the network layer is encapsulated. (Encapsulated) It can also be used to prove the rights of users of the corporate networks as well.
Data communication and computer networks in business work : Assistant Professor Dr. Jaruy Sawithi



VPN User Guide for Web Browsers

 **chrome**

 **Safari**

Digital innovation services are available. For students and teachers.

- Web Portal
- Internet authentication
- electronic mail system
- Microsoft 365
- license program for students

บริการนวัตกรรมดิจิทัล สำหรับนิสิต ปีการศึกษา 2565
สำนักคอมพิวเตอร์ มหาวิทยาลัยมหาสารคาม

MSU Web Portal

- มีสำหรับส่งข้อมูลงาน MSU @msu.ac.th, @o365.msu.ac.th
- Username : ssa365
- Password : เลขบัตรประชาชน 13 หลัก
- ส่งงานเสร็จแล้ว http://portal.msu.ac.th

ระบบพิสูจน์ตัวตน (Internet Authentication)

- มีสำหรับเชื่อมต่อระบบอินเทอร์เน็ต มหาวิทยาลัยมหาสารคาม
- Username : ssa365
- Password : เลขบัตรประชาชน 13 หลัก
- ส่งงานเสร็จแล้ว http://login.msu.ac.th
- ** Reset สถานะผู้ใช้ระบบ http://portal.msu.ac.th/reset-password

ระบบจดหมายอิเล็กทรอนิกส์ @msu.ac.th

- มีสำหรับใช้งานระบบงาน เช่น Classroom , Docs , Sheet
- Username : ssa365@msu.ac.th
- Password : Pw@เลขบัตรประชาชน 13 หลัก
- ส่งงานเสร็จแล้ว http://gmail.com
- ** Reset สถานะผู้ใช้ระบบ (Resetสถานะผู้ใช้ระบบ) http://myaccount.google.com

Microsoft 365 @o365.msu.ac.th

- มีสำหรับใช้งานระบบงานในระบบงาน เช่น OneDrive, Skype
- Username : ssa365@o365.msu.ac.th
- Password : Pw@เลขบัตรประชาชน 13 หลัก
- ส่งงานเสร็จแล้ว http://office.com
- ** Reset สถานะผู้ใช้ระบบ (Resetสถานะผู้ใช้ระบบ) http://myaccount.microsoft.com

โปรแกรมลิขสิทธิ์สำหรับนิสิต

- มีสำหรับดาวน์โหลดโปรแกรมลิขสิทธิ์ Microsoft MSN ใช้งานฟรี
- Username : ssa365@o365.msu.ac.th
- Password : หมายเลขบัตรประชาชน Microsoft 365
- ส่งงานเสร็จแล้ว http://azureforeducation.microsoft.com/devtools

หมายเหตุ:
 ๑) กรณีแจ้งใช้สิทธิ์ ใช้งานระบบต้องกรอกเลขบัตรประชาชน
 ๒) กรณีแจ้งใช้สิทธิ์กรอกเลขบัตรประชาชน

บริการของเรา (สำนักคอมพิวเตอร์ มหาวิทยาลัยมหาสารคาม)

MSU Authentication

บัญชีผู้ใช้งาน
woralak

รหัสผ่าน
รหัสบัตรประชาชน

เปลี่ยนรหัสผ่าน

คลิกที่นี่
เพื่อไปยัง Authen Login

Google Suite

บัญชีผู้ใช้งาน
woralak.s@msu.ac.th

รหัสผ่าน
Pw@รหัสบัตรประชาชน

ลืมรหัสผ่าน

คลิกที่นี่
เพื่อไปยัง Google Mail

Office o365

บัญชีผู้ใช้งาน
woralak.s@o365.msu.ac.th

รหัสผ่าน
Pw@รหัสบัตรประชาชน

ลืมรหัสผ่าน

คลิกที่นี่
เพื่อไปยัง Office o365

ลงทะเบียน
แจ้งซ่อมคอมพิวเตอร์

แจ้งซ่อมคอมพิวเตอร์

Number of sustainability community services project

1. Students of Environmental Technology Program Develop an environmental management system To upgrade the business organization towards sustainability (Energy and Climate Change)

Environmental Technology Program students visit the site to study the production process of natural-dyed hand-woven fabrics of Kham Riang hand-woven fabric community enterprises. or the Kham Riang Silk House

It is part of the development of knowledge and skills in creating a work instruction that integrates holistic quality, environment, occupational health and safety. Identifying environmental issues (Environmental Aspect) environmental impact (Environmental Impact)

Assessing the significance of the problem as well as the preparation of environmental development plans (Environmental Management Plan) to be used as a guideline to drive sustainable management of community business organizations.

นิสิตหลักสูตรสาขาวิชาเทคโนโลยีสิ่งแวดล้อม พัฒนาระบบการจัดการสิ่งแวดล้อม เพื่อยกระดับองค์กรธุรกิจสู่ความยั่งยืน

env@msu.ac.th 3 weeks ago Uncategorized, กิจกรรม : นิสิต, กิจกรรม-วิจัย, ข่าว, ข่าวประชาสัมพันธ์
Leave a comment 126 Views



2. Environmental Technology Program Participate in academic services with interdisciplinary cooperation “Project to raise farmers in salty and brackish soil at Ban Pla Bu, Nong Saeng Sub-district, Wapi Pathum District Maha Sarakham Province” (Energy and Climate Change), (Waste), (Water)

Environmental Technology Program Join to drive the academic service project on the topic of upgrading farmers in saline and brackish land at Ban Pla Bu, Nong Saeng sub-district, Wapi Pathum district. Maha Sarakham Province

Faculty of Science as project leader It is responsible for the development of learning and skills of youth. To provide basic knowledge and understanding of local natural resources such as soil, water and air in relation to environmental technology, covering body of knowledge, skills in using basic scientific measurement tools, interpreting results, and suggesting solutions to community problems.

There is integration of cooperation with the education sector at the local level. for the development of holistic areas and mutual benefits including giving opportunities to community committees and faculty members visited the area to study tap water production at Nong Tum Subdistrict Municipality

To raise the potential of the water supply system of Ban Pla Bu community that still has problems with color and turbidity. Ensure water quality meets the drinking water quality criteria of the Department of Health B.E. 2563 and bring the identity of the “goby” community as a mechanism and develop it into a large woven bin in the shape of a goby. integration into art by relying on the local wisdom and professional skills of the community To create awareness on waste management especially waste sorting Available type.



3. Environmental Technology Course Go to the area to check water quality To support the implementation of the U2T project in Talad Subdistrict

Environmental Technology Program along with the Faculty of Public Sector Operations and newly graduated graduates Implemented under the U2T project Talat Subdistrict, Mueang District, Maha Sarakham Province has surveyed the area, collected data, and measured basic water quality, consisting of temperature, pH, electrical conductivity and dissolved oxygen (DO). There are a total of 4 measurement points, namely Nong Krathum (Pho Si Community), Huai Kha Kang, Kut Nang Yai and Somthawin canal.

While considering the quality of water Compared with the second type of water source, because of the fish-fishing lifestyle that uses such water source, it was found that Huai Kha Kang, Kud Nang Yai and Somthawin Canal. Has a dissolved oxygen (DO) value that is lower than the standard Therefore, measures for water resource management are urgently needed. This must arise from the participation process of all sectors. In this regard, Kut Nang Yai and Somthawin Canal. For everyone to be aware of the value, use, maintain and maintain good water quality sustainably.



4. School Academic Services Project Sahatsakhan Suksa School, Kalasin Province

Faculty of Science Mahasarakham University under the operation of the Academic Service Center Faculty of Science (Science Training Center : STC) Has organized an academic service project for schools (Gifted project) for students in special classrooms. Project for the promotion and development of students with special abilities in science and mathematics (Gifted Program) at the lower and upper secondary level. Sahatsakhan Suksa School, Kalasin Province, totaling 180 people.



5. Academic Service Project for Kamalasai School, Kalasin Province

Faculty of Science Mahasarakham University under the operation of the Academic Service Center Faculty of Science (Science Training Center: STC) has organized an academic service project to schools (Gifted Project) for students in special classrooms. Project to promote and develop students with special abilities in science and mathematics (Gifted Program), grade 5, Kamalasai School, Kalasin Province, totaling 70 people.



6. Faculty of Veterinary Maharakham University Organize academic meetings “Management of basic health and reproductive system in cattle”

Faculty of Veterinary Medicine Maharakham University Organized a veterinary academic conference project for the year 2022 on the topic of basic health management and reproductive system in cattle.

The project was organized to help and educate farmers on the topic.

Management of basic health and reproductive system in cattle. In order to spread the knowledge that is correct according to the principles for farmers and trainees to be adapted to management Problem solving and primary health care Assessment of the reproductive system in cattle and the basic principles of ultrasound Using ultrasound to assess the reproductive system and pregnancy



Number of sustainability-related startups

Maharakham University has initiated management and operation. Sustainability-related startups by students and staff

1. “solar powered glass”

National Award Winner Innovation of solar power generation glass In the 9th Road to Nawatvanich project competition. Innovative solar power generation glass It is produced by taking a type of glass through certain techniques or processes. to have the ability to change the energy from Ultraviolet (UV) and infrared rays are electrical energy. Team Daisy Glazz will focus on generating electricity by utilizing photon from ultraviolet (UV) and infrared rays as the design does not include busbar electrodes.) and the grid (Grid) to cover the area of the glass thus making the glass translucent In other words, Daisy Glazz is a translucent solar panel.



2. “Scallion Machine EV”

Students of the Faculty of Accounting and Management who received the first runner-up award. Presenting the work of an electric train to grow green onions, Scallion Machine EV from the competition in the Chicken Run Enterprise of the Future innovative Entrepreneurship Student Project by Thailand Management Association, Thailand Management Association (TMA)



3. “Finger Training Assessment Device for Thai Massage”

Mechatronics Engineering student Faculty of Engineering and students of applied Thai traditional medicine Faculty of Medicine Maharakham University earn silver From the competition for innovations in higher education at the National Research Expo 2022 (Thailand Research Expo 2022). from innovation “A device to help evaluate finger strength training for Thai massage”.



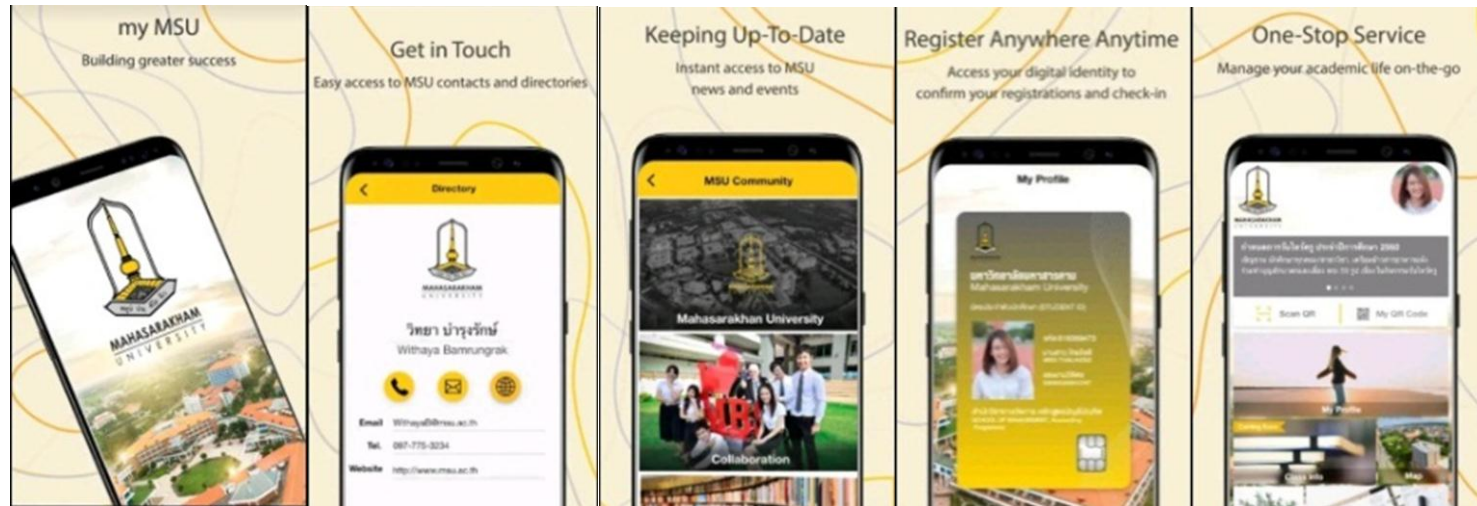
4. “Infrared ray rotary cylindrical drum dryer together with hot air discharged, movable”

Delivering research results and innovation transfer for the development of agricultural potential in Kalasin province to deliver research results Rotary cylindrical drum dryer with infrared radiation combined with hot air, movable discharge.



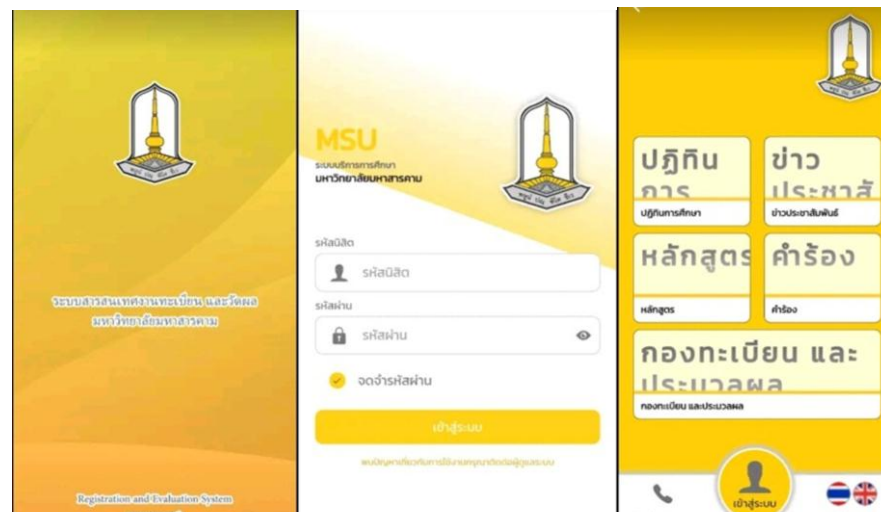
5 “Application MSU App : Maharakham University”

The application provides basic information about the university. and facilitate various services of Maharakham University



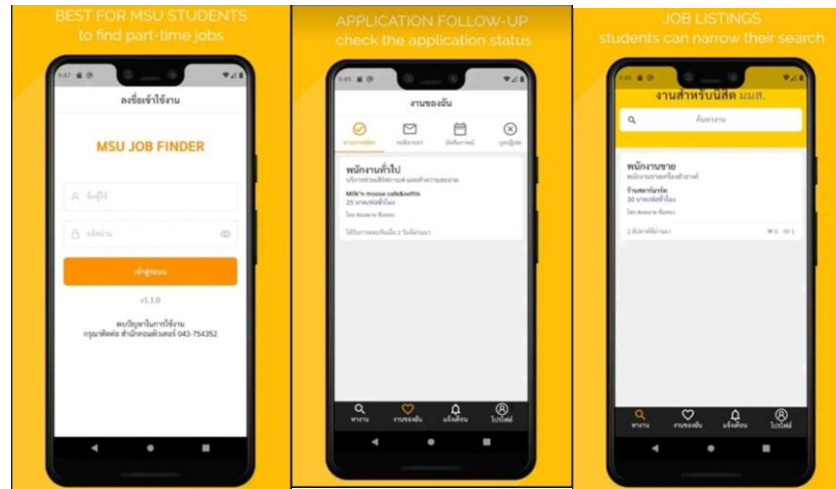
6 “Registration and Evaluation System” (reg.msu.ac.th)

Registration System Maharakham University For educational information services to students of the university.



7. “MSU JOB FINDER”

MSU Jobs, a part-time job search application for KU students and teachers/staff. Announcement to recruit students to help work.



8. “MSU Health Care”

Maharakham University Design of MSU Health Care mobile application to track those at risk of contracting COVID-19 For groups returning from high-risk countries Groups close to travelers returning from high-risk countries and those who have common flu symptoms that must be monitored If the symptoms fall within the risk group criteria Immediately send treatment



9. "Fragrance planting system, planting cart"

Students of the Faculty of Engineering, the owner of "Innovative Fragrant Planting System, Planting Cart System" It is an innovation that has been supported by the MMSC Cooperation Center to develop prototypes to be more efficient. and to extend it to be able to be used for commercial purposes.



10 "Mushroom incubator with synthetic rubber wall"

Faculty of Engineering Mahasarakham University develop innovation Mushroom incubator with synthetic rubber wall.



11. “Microwave Sensors for Agricultural and Medical Applications”

Maharakham University create new innovations microwave sensor For agricultural and medical applications Microwave Sensors for Agricultural and Medical Applications are used to measure material properties. or matter in the non-contact state of solids, liquids and gases and does not cause damage to the material.



12. “TOPSHARE” for OTOP” (Application)

“Top share” focuses on increasing sales channels of OTOP products online through a marketing process model that combines the marketing concept of Rrferral Marketing and the marketing concept of “Affiliate Marketing” that focuses on building confidence for consumers in purchase participation through the application (Application) “Top share” by recommending the word between consumers together. Referral consumers are paid referrals in the form of commissions. To create motivation to spread the word and stimulate the rapidly increasing trading of OTOP products.



13. “Thermoelectric heat detector, wireless, energy-free”

Thermoelectric energy harvesting technique for Non-powered heat detection Using natural rubber as a cooling material coated on the fins.of the heatsink from the experiment showed that it can increase the efficiency of the thermoelectric device in the difference in temperature on the hot and cold side and voltage.



ภาพประกอบ 31 อุปกรณ์เทอร์โมอิเล็กทริกที่ทำการทดลอง



(ข)

อุปกรณ์ภายในเซนเซอร์เทอร์โมอิเล็กทริก (ข) อุปกรณ์ภายนอกเซนเซอร์เทอร์โมอิเล็กทริก

14. “Medical examination cabinet” (positive pressure cabinet)

Medical personnel sit inside the cabinet. and the patient is outside Suitable for general patient examination. It is a closed cabinet made of acrylic and polycarbonate sheet. Make the cabinet lightweight but still strong. Inside there is a suction and distribution system for clean air through a filter and Hepa filter. There is a small air vent for ventilation. mounted on top It has a short circuit protection system and shows the cabinet usage situation. with fluorescent lamps which illuminates the work for doctors There are pockets for removing and wearing disposable gloves that are easy to use and easy to replace. There is a system to directly feed the UVC sterilizer to disinfect after use.



15. “Negative pressure cabinet collects specimens”

Negative pressure cabinet holds specimens. Usage The patient will sit inside the cabinet. The doctor will sit outside for an examination. Suitable for patients who are at risk groups. or have an infection This cabinet will increase the confidence of medical personnel. in the collection of various secretions Prevent the spread of nebulizers from speaking, coughing, sneezing. It is a closed cabinet made of acrylic and polycarbonate sheet. Make the cabinet lightweight but still strong. Inside there is a suction and distribution system for clean air through a filter and Hepa filter. There is a small air vent for ventilation. front mounted Let the air curve upward to blow the air out the back. UVC 80W sterilized and then passed through a filter and a Hepa filter respectively before venting clean air to the outside. There is a short circuit protection system and shows the status of the cabinet with fluorescent lamps. which illuminates the work for doctors There are pockets for removing and wearing disposable gloves that are easy to use and easy to replace. There is a system to directly feed the UVC sterilizer to disinfect after use.



16. “UVC sterilizer”

UVC sterilizers are divided into mobile and cabinet type. Features and uses are similar. Easy to use, just plug it in It is an innovation to supply electricity to inventions for special types of UVC lamps for specific medical applications. The radiation from the lamp produces waves that can damage the DNA of viruses and bacteria. Highlights of the invention is easy to use, uses materials that can be purchased locally. Makes it cheap, lightweight, easy to move to the area that needs disinfection. Disinfection cabinet The heat from the reflector is also included, which shortens the sterilization time. Makes sterilization faster It takes about 10 minutes.



Maharakham University Annual Sustainability Report 2021-2022

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Layout and Design : Miss Woraluck Sribanasarn



The image features a vibrant, natural background. In the foreground, there are lush green plants with a prominent pink flower. The middle ground shows a well-maintained green lawn. In the background, a dense line of various trees, including palm trees, stretches across the horizon under a clear blue sky. The text 'MAHASARAKHAM UNIVERSITY' is superimposed in the center of the image.

MAHASARAKHAM UNIVERSITY