



โครงการสนับสนุนการประกวดแบบมหาวิทยาลัยเชียงใหม่ เพื่อจัดอันดับมหาวิทยาลัยสีเขียวโลก

Inception Report of Chiang Mai University for
the UI Green Metric Ranking

จัดทำโดย ดร. สุมาลี จินดาพล

ศูนย์นวัตกรรมเทคโนโลยีและการจัดการอาคาร

คณะสถาปัตยกรรมศาสตร์ มหาวิทยาลัยเชียงใหม่

เสนอ

สำนักยุทธศาสตร์ มหาวิทยาลัยเชียงใหม่

ภายใต้

การขับเคลื่อนยุทธศาสตร์ที่ 1 เชิงรุก : นวัตกรรมด้านสิ่งแวดล้อมและพลังงาน

กรกฎาคม 2018



Our Reference : 798 /UN2.R/OTL.00/2018

May 3 , 2018

To:

Prof. Emeritus Avudh Srisukri, M.d.

President

Chiang Mai University

239 Huay Kaew Road, Muang District, Chiang Mai, Thailand, 50200

Subject: Invitation to 2018 UI GreenMetric World University Rankings on Sustainability

Dear, President Prof. Emeritus Avudh Srisukri, M.d.,

It is my great pleasure to invite your esteemed university to participate in our 2018 UI GreenMetric World University Rankings.

Since 2010, UI GreenMetric World University Rankings has ranked universities worldwide according to six indicators: setting and infrastructure, energy and climate change, waste management, water, and transportation, and education. 619 universities from 76 countries were ranked in 2017 (<http://greenmetric.ui.ac.id/overall-ranking-2017/>). Complementing other University rankings which can be found on IREG Observatory on Academic Ranking and Excellence, UI GreenMetric is the first and only ranking that has established a Voluntary Standard for improving university infrastructure and action towards sustainable campuses worldwide.

Currently, we have 25 active national coordinators in Middle East, Asia, South America and Europe. In 2017, we have held an international and 9 national workshops. In this workshop, Universities can share their best practices and learn from each other experience and current development.

This year the main theme is "Universities, Impacts, and Sustainable Development Goals (SDGs)". Thus, our questionnaire looks in more details on efforts and programs to improve sustainability on campus.

UI GreenMetric World University Rankings is an important initiative to promote sustainability in higher education institutions globally. By participating, you will be able to measure your sustainability policy and performance and compare them with other institutions on the ranking. You can also share your experience and best practices in the issues of sustainability with other universities in our network. Most importantly, this ranking can serve as a platform for future cooperation among higher education institutions to make our world a better place.

Participating in UI GreenMetric is simple and free as the submission is done on line. There is no fee for participating. The online questionnaire can be accessed at: <http://questionnaire.greenmetric.ui.ac.id> using the following username and password:


Username: cmu.ac.th

Password: cmu123

Please email any questions you may have to Ms. Arsy Imanda at greenmetric@ui.ac.id. We do hope your esteemed institution will be able join us in the 2018 survey.

Thank you for your kind attention.

Yours sincerely,


Prof. Dr. Ir. Muhammad Anis, M. Met
Rector of Universitas Indonesia

UI GreenMetric Answer 2018

cmu.ac.th

University Profile

Username : cmu.ac.th
 University Name : Chiang Mai University
 University Leader : President : Clinical Professor Niwes Nantachit, M.D.

PIC Profile

PIC Name : Dr. Sumavalee Chindapol
 PIC Position : Coordinator of Chiang Mai University UI Green Metric Project
 Email : sumavalee.ch@cmu.ac.th

No	Question	Choice	Answer
Setting and Infrastructure			
1.1(o)	Type of higher education institution	<input type="radio"/> Comprehensive <input type="radio"/> Specialized higher education institution	<input checked="" type="radio"/> Comprehensive
1.2(o)	Climate	<input type="radio"/> Tropical Wet <input type="radio"/> Tropical Wet and Dry <input type="radio"/> Semiarid <input type="radio"/> Arid <input type="radio"/> Mediterranean <input type="radio"/> Humid Subtropical <input type="radio"/> Marine West Coast <input type="radio"/> Humid Continental <input type="radio"/> Subartic	<input checked="" type="radio"/> Tropical Wet and Dry
1.3(o)	Number of campus site		2
1.4(o)	Main campus setting	<input type="radio"/> Rural <input type="radio"/> Suburban <input type="radio"/> Urban <input type="radio"/> In city center <input type="radio"/> High rise building	<input checked="" type="radio"/> Urban
1.5(o)	Total main campus area (meter square)		2899200
1.6(o)	Total main campus ground floor area of buildings (meter square)		617220
1.7(o)	Total main campus buildings area (meter square)		825686
1.8(SI.1)	The ratio of open space towards total area	<input type="radio"/> < 1 <input type="radio"/> 1 - 70% <input type="radio"/> > 70 - 85% <input type="radio"/> > 85 - 92% <input type="radio"/> > 92%	<input checked="" type="radio"/> > 70 - 85%

No	Question	Choice	Answer
1.9(SI.2)	Total area on campus covered in forest vegetation (please provide total area in meter square)	<input type="radio"/> < 1 % <input type="radio"/> 1 - 2% <input checked="" type="radio"/> > 2 - 9% <input type="radio"/> > 9 - 22% <input type="radio"/> > 22%	<input checked="" type="radio"/> > 2 - 9% Total area : 182736
1.10(SI.3)	Total area on campus covered in planted vegetation (please provide total area in meter square)	<input type="radio"/> < 1 % <input type="radio"/> 1 - 9% <input checked="" type="radio"/> > 9 - 19% <input type="radio"/> > 19 - 34% <input type="radio"/> > 34%	<input checked="" type="radio"/> > 19 - 34% Total area : 928287
1.11(SI.4)	Total area on campus for water absorption besides forest and planted vegetation (please provide total area in meter square)	<input type="radio"/> < 1 <input type="radio"/> 1 - 2% <input checked="" type="radio"/> > 2 - 14% <input type="radio"/> > 14 - 29% <input type="radio"/> > 29%	<input checked="" type="radio"/> > 2 - 14% Total area : 211442
1.12(o)	Total number of regular students (part time and full time)		34440
1.13(o)	Total number of online students (part time and full time)		0
1.14(o)	Total number of academic and administrative staff		11687
1.15(SI.5)	The total of open space area divided campus population	<input type="radio"/> < 1 m ² <input type="radio"/> 1 - 3 m ² <input checked="" type="radio"/> > 3 - 27 m ² <input type="radio"/> > 27 - 83 m ² <input type="radio"/> > 83 m ²	<input checked="" type="radio"/> > 27 - 83 m ²
1.16(o)	Total university budget (in US Dollars)		277333333
1.17(o)	University budget for sustainability effort (in US Dollars)		21666666
1.18(SI.6)	Percentage of University budget for sustainability effort within a year	<input type="radio"/> < 1 % <input type="radio"/> 1 - 3% <input checked="" type="radio"/> > 3 - 5% <input type="radio"/> > 5 - 10% <input type="radio"/> > 10%	<input checked="" type="radio"/> > 5 - 10%
Energy and Climate Change			
2.1(EC.1)	Energy efficient appliances usage	<input type="radio"/> < 1% <input type="radio"/> 1 - 25% <input checked="" type="radio"/> > 25 - 50% <input type="radio"/> > 50 - 75% <input type="radio"/> > 75% <input type="radio"/>	<input checked="" type="radio"/> 1 - 25%
2.2(o)	Total main campus smart building area (meter square)		57055

No	Question	Choice	Answer
2.3(EC.2)	Smart Building implementation (percentage of the total floor area of smart building to the total smart building area)	<input type="radio"/> < 1% <input type="radio"/> 1% - 25% <input type="radio"/> > 25% - 50% <input type="radio"/> > 50% - 75% <input type="radio"/> > 75% <input type="radio"/>	<input checked="" type="radio"/> < 1%
2.4(EC.3)	Number of renewable energy sources in campus (solar power, bio diesel, wind power, etc)	<input type="radio"/> 0 <input type="radio"/> 1 source <input type="radio"/> 2 sources <input type="radio"/> 3 sources <input type="radio"/> > 3 sources	<input checked="" type="radio"/> 3 sources
2.5(o)	Please specify renewable energy sources in campus and provide capacity produced in kilo watt hour	<input type="checkbox"/> Not Applicable <input type="checkbox"/> Bio Diesel <input type="checkbox"/> Clean Biomass <input type="checkbox"/> Solar Power <input type="checkbox"/> Wind Power <input type="checkbox"/> Geothermal <input type="checkbox"/> Hydropower <input type="checkbox"/> Combine Heat and Power	<input checked="" type="checkbox"/> Solar Power Total kWh : Array <input checked="" type="checkbox"/> Clean Biomass Total kWh : Array <input checked="" type="checkbox"/> Bio Diesel Total kWh : Array
2.6(o)	Electricity usage per year (in kilo watt hour)		75172000
2.7(EC.4)	The total electricity usage divided by campus population (kWh per person)	<input type="radio"/> > 2424 kWh <input type="radio"/> > 1535 - 2423 kWh <input type="radio"/> > 633 - 1535 kWh <input type="radio"/> 279 - 633 kWh <input type="radio"/> < 279 kWh	<input checked="" type="radio"/> > 1535 - 2423 kWh
2.8(EC.5)	Ratio of renewable energy production towards total energy usage per year	<input type="radio"/> < 1% <input type="radio"/> 1%-25% <input type="radio"/> > 25%-50% <input type="radio"/> > 50% - 75% <input type="radio"/> > 75% <input type="radio"/>	<input checked="" type="radio"/> 1%-25%
2.9(EC.6)	Elements of green building implementation as reflected in all construction and renovation policies (e.g. natural ventilation, full natural day-lighting, existence of building energy manager, and existence of Green Building)	<input type="radio"/> None <input type="radio"/> 1 element <input type="radio"/> 2 elements <input type="radio"/> 3 elements <input type="radio"/> > 3 elements	<input checked="" type="radio"/> > 3 elements

No	Question	Choice	Answer
2.10(EC.7)	Greenhouse gas emission reduction program	<input type="radio"/> None (reduction program is needed, but nothing has been done) <input type="radio"/> Program in preparation (e.g. feasibility study and promotion) <input type="radio"/> Program(s) aims to reduce one out of three sources emissions (Scope 1 or 2 or 3) <input type="radio"/> Program(s) aims to reduce two out of three sources emissions (Scope 1 and 2 or Scope 1 and 3 or Scope 2 and 3) <input type="radio"/> Program(s) aims to reduce all three sources emissions (Scope 1, 2 and 3)	<input checked="" type="radio"/> Program(s) aims to reduce two out of three sources emissions (Scope 1 and 2 or Scope 1 and 3 or Scope 2 and 3)
2.11(o)	Please provide total carbon footprint (CO2 emission in the last 12 months, in metric tons)		75730
2.12(EC.8)	The total carbon footprint divided by campus population (metric ton per person)	<input type="radio"/> > 2.05 metric ton <input type="radio"/> > 1.11 - 2.05 metric ton <input checked="" type="radio"/> > 0.42 - 1.11 metric ton <input type="radio"/> 0.10 - 0.42 metric ton <input type="radio"/> < 0.10 metric ton	<input checked="" type="radio"/> > 1.11 - 2.05 metric ton
Waste			
3.1(W.S.1)	Recycling program for university waste	<input type="radio"/> Not Applicable <input type="radio"/> Partial (1% - 25% of waste) <input checked="" type="radio"/> Partial (> 25% - 50% of waste) <input type="radio"/> Partial (> 50% - 75% of waste) <input type="radio"/> Extensive (> 75% waste free)	<input checked="" type="radio"/> Partial (> 25% - 50% of waste)
3.2(W.S.2)	Program to reduce the use of paper and plastic in campus	<input type="radio"/> Not applicable. If there is no program in your university. <input type="radio"/> 1 program <input type="radio"/> 2 programs. <input type="radio"/> 3 programs. <input checked="" type="radio"/> more than 3 programs.	<input checked="" type="radio"/> more than 3 programs.

No	Question	Choice	Answer
3.3(W.S.3)	Organic waste treatment	<input type="radio"/> Open dumping <input type="radio"/> Partial (1% - 25% of treated) <input type="radio"/> Partial (> 25% - 50% of treated) <input type="radio"/> Partial (> 50% - 75% of treated) <input type="radio"/> Extensive (> 75% treated and recycled)	<input checked="" type="radio"/> Extensive (> 75% treated and recycled)
3.4(W.S.4)	Inorganic waste treatment	<input type="radio"/> Burned in open <input type="radio"/> Partial (1% - 25% of treated) <input type="radio"/> Partial (> 25% - 50% of treated) <input type="radio"/> Partial (> 50% - 75% of treated) <input type="radio"/> Extensive (> 75% treated and recycled)	<input checked="" type="radio"/> Extensive (> 75% treated and recycled)
3.5(W.S.5)	Toxic waste treatment	<input type="radio"/> Not Managed <input type="radio"/> Partial (1% - 25% of treated) <input type="radio"/> Partial (> 25% - 50% of treated) <input type="radio"/> Partial (> 50% - 75% of treated) <input type="radio"/> Extensive (> 75% treated and recycled)	<input checked="" type="radio"/> Extensive (> 75% treated and recycled)
3.6(W.S.6)	Sewerage disposal	<input type="radio"/> Untreated to waterways <input type="radio"/> Treated conventionally <input type="radio"/> Treated technically <input type="radio"/> Treatment for down cycling <input type="radio"/> Treatment for up cycling	<input checked="" type="radio"/> Treatment for down cycling
Water			
4.1(WR.1)	Water conservation program implementation	<input type="radio"/> None (Conservation program is needed, but nothing has been done) <input type="radio"/> 1%-25 % : Program in preparation (e.g. feasibility study and promotion) <input type="radio"/> > 25%- 50%: Implemented at early stage (e.g. measurement of potential surface runoff volume) <input type="radio"/> > 50% - 75% water conserved <input type="radio"/> > 75% water conserved <input type="radio"/>	<input checked="" type="radio"/> > 75% water conserved

No	Question	Choice	Answer
4.2(WR.2)	Water recycling program implementation	<input type="radio"/> None (Water recycling program is needed, but nothing has been done) <input type="radio"/> 1%-25 % : Program in preparation (e.g. feasibility study and promotion) <input checked="" type="radio"/> > 25%- 50%: Implemented at early stage (e.g. measurement of waste water) <input type="radio"/> > 50% - 75% water recycled <input type="radio"/> > 75% water recycled <input type="radio"/>	<input checked="" type="radio"/> > 25%- 50%: Implemented at early stage (e.g. measurement of waste water)
4.3(WR.3)	Water efficient appliance usage (water tap, toilet flush, etc)	<input type="radio"/> None (Water efficient appliances is needed, but nothing has been done) <input type="radio"/> 1%-25 % : Program in preparation (e.g. feasibility study and promotion) <input type="radio"/> > 25%- 50% of water efficient appliances installed <input type="radio"/> > 50% - 75% of water efficient appliances installed <input type="radio"/> > 75% of water efficient appliances installed <input type="radio"/>	<input checked="" type="radio"/> None (Water efficient appliances is needed, but nothing has been done)
4.4(WR.4)	Treated water consumed (percentage)	<input type="radio"/> None <input type="radio"/> 1% - 25% treated water consumed <input type="radio"/> > 25% - 50% treated water consumed <input type="radio"/> > 50% - 75% treated water consumed <input type="radio"/> > 75% treated water consumed	<input checked="" type="radio"/> > 25% - 50% treated water consumed

Transportation

5.1(o)	Number of cars actively used and managed by University		474
5.2(o)	Number of cars entering the university daily		19462
5.3(o)	Number of motorcycles entering the university daily		37970

No	Question	Choice	Answer
5.4(TR.1)	The Ratio of Vehicles (cars and motorcycles) divided campus population	<input type="radio"/> ≥ 1 <input type="radio"/> ≥ 0.5 to < 1 <input type="radio"/> ≥ 0.125 to < 0.5 <input type="radio"/> ≥ 0.045 to < 0.125 <input type="radio"/> < 0.045	<input checked="" type="radio"/> < 0.045
5.5(TR.2)	Shuttle service	<input type="radio"/> Shuttle service is possible but not provided by university <input type="radio"/> Shuttle service is available and the University contributes some parts of its costs <input type="radio"/> Shuttle service is provided by University and regular but not free <input type="radio"/> Shuttle service is provided by University, regular, and free <input type="radio"/> Shuttle service is provided by university, regular, free, and zero emission. Or shuttle use is not possible	<input checked="" type="radio"/> Shuttle service is provided by university, regular, free, and zero emission. Or shuttle use is not possible
5.6(o)	Number of shuttles operated in your university		55
5.7(o)	Average number of passengers of each shuttle		151
5.8(o)	Total trips of shuttle services each day		17
5.9(TR.3)	Zero Emission Vehicles (ZEV) policy on campus	<input type="radio"/> Zero Emission Vehicles are not available <input type="radio"/> Zero Emission Vehicles use is not possible or practical <input type="radio"/> Zero Emission Vehicles are available, but not provided by university <input type="radio"/> Zero Emission Vehicles are available, and provided by university and charged <input type="radio"/> Zero Emission Vehicles are available, and provided by university for free	<input checked="" type="radio"/> Zero Emission Vehicles are available, and provided by university for free
5.10(o)	Average number of Zero Emission Vehicles (e.g. bicycles, cano, snowboard, electric car, etc.) on campus per day		101

No	Question	Choice	Answer
5.11(TR.4)	The Ratio of Zero Emission vehicle divided campus population	<input type="radio"/> ≤ 0.002 <input type="radio"/> > 0.002 to ≤ 0.004 <input checked="" type="radio"/> > 0.004 to ≤ 0.008 <input type="radio"/> > 0.008 to ≤ 0.02 <input type="radio"/> > 0.02	<input checked="" type="radio"/> > 0.002 to ≤ 0.004
5.12(o)	Total parking area (meter square)		391274
5.13(TR.5)	Ratio of parking area to total campus area	<input type="radio"/> $> 8\%$ <input type="radio"/> $> 6 - 8\%$ <input checked="" type="radio"/> $> 4 - 6\%$ <input type="radio"/> $1\% - 4\%$ <input type="radio"/> $< 1\%$	<input checked="" type="radio"/> $> 8\%$
5.14(TR.6)	Transportation program designed to limit or decrease the parking area on campus over the last 3 years (from 2015 to 2017)	<input type="radio"/> Not Applicable <input type="radio"/> Program in preparation (e.g. feasibility study and promotion) <input type="radio"/> Less than 10% decrease <input type="radio"/> Between 10% - 30% decrease <input type="radio"/> Program resulting in more than 30% decrease in parking or parking is restricted	<input checked="" type="radio"/> Not Applicable
5.15(TR.7)	Number of transportation initiatives to decrease private vehicles on campus (e.g. car sharing, charging high parking fees, metro / tram / bus services and etc)	<input type="radio"/> Not Applicable <input type="radio"/> 1 initiative <input type="radio"/> 2 initiatives <input type="radio"/> 3 initiatives <input checked="" type="radio"/> > 3 initiatives	<input checked="" type="radio"/> > 3 initiatives
5.16(TR.8)	Pedestrian path policy on campus	<input type="radio"/> Pedestrian paths are not applicable <input type="radio"/> Pedestrian paths are available <input type="radio"/> Pedestrian paths are available, and design for safety <input type="radio"/> Pedestrian paths are available, design for safety and convenient <input checked="" type="radio"/> Pedestrian paths are available, design for safety, convenient, and in some part disabled-friendly features.	<input checked="" type="radio"/> Pedestrian paths are available, design for safety, convenient, and in some part disabled-friendly features.
5.17(o)	Approximate daily travel distance of a vehicle inside campus only (in Kilometers)		6608

Education and Research

No	Question	Choice	Answer
6.1(o)	Number of courses/subjects related to sustainability offered		18
6.2(o)	Total number of courses/subjects offered		303
6.3(ED.1)	The ratio of sustainability courses divided by total courses / subjects	<input type="radio"/> < 1% <input type="radio"/> 1% - 3% <input type="radio"/> > 3% - 8% <input type="radio"/> > 8% - 17% <input type="radio"/> > 17%	<input checked="" type="radio"/> > 3% - 8%
6.4(o)	Total research funds dedicated to sustainability research (in US Dollars) (average per annum over the last 3 years).		5936237
6.5(o)	Total research funds (in US Dollars) (average per annum over the last 3 years).		38651046
6.6(ED.2)	The ratio of sustainability research funding divided by total research funding	<input type="radio"/> < 1% <input type="radio"/> 1% - 7% <input type="radio"/> > 7% - 14% <input type="radio"/> > 14% - 30% <input type="radio"/> > 30%	<input checked="" type="radio"/> > 14% - 30%
6.7(ED.3)	Number of scholarly publications on sustainability published. (average annually for the past 3 years)	<input type="radio"/> 0 <input type="radio"/> 1 - 20 <input type="radio"/> 21 - 83 <input type="radio"/> 83 - 300 <input type="radio"/> > 300	<input checked="" type="radio"/> 21 - 83
6.8(ED.4)	Number of events related to sustainability. (average annually for the past 3 years)	<input type="radio"/> 0 <input type="radio"/> 1 - 4 <input type="radio"/> 5 - 17 <input type="radio"/> 18 - 47 <input type="radio"/> > 47	<input checked="" type="radio"/> > 47
6.9(ED.5)	Number of student organizations related to sustainability	<input type="radio"/> 0 <input type="radio"/> 1 - 2 <input type="radio"/> 3 - 4 <input type="radio"/> 5 - 10 <input type="radio"/> > 10	<input checked="" type="radio"/> 3 - 4
6.10(ED.6)	Existence of a university-run sustainability website	<input type="radio"/> Not available <input type="radio"/> Website in progress or under construction <input type="radio"/> Website is available and accessible <input type="radio"/> Website is available, accessible, and updated occasionally <input type="radio"/> Website is available, accessible, and updated regularly	<input checked="" type="radio"/> Not available

No	Question	Choice	Answer
6.11(o)	Sustainability website address if available		
6.12(ED.7)	Existence of published sustainability report	<input type="radio"/> Not available <input type="radio"/> Sustainability report is in preparation <input type="radio"/> Sustainability report is available <input type="radio"/> Sustainability report is available and updated annually <input type="radio"/> Sustainability report is available, accessible, and updated annually	<input checked="" type="radio"/> Not available



Online Submission Attachment Pages

University Name Chiang Mai University
Date of Establishment 14th August 2018
Address 239 HuayKew Road, Suthep, Muang, Chiang Mai, 50200 THAILAND
Longitude 98° 57'28.2"E Latitude 18° 47'46.5" N
Web Address www.cmu.ac.th

Region (Based on region classification) Tropical wet and dry [Aw : rainy wet season but dry in winter]
Rector / President / Vice Chancellor of University Clinical Professor Niwes Nantachit, M.D.
Sustainability Director Associate Prof. Prasert Rerkkriangkrai, [Vice President for Physical Facilities and Environment]
Person in Charge Dr. Sumavalee Chindapol [Coordinator of Chiang Mai University UI Green Metric Project]
PIC/Sustainability Director e-mail address sumavalee.ch@cmu.ac.th

Partnership on Sustainability

a. Network:

1. Local (please specify) Sustainable University Network of Thailand
2. Regional (please specify) Asia Sustainable Campus Network
3. International (please specify) International Sustainable Campus Network

b. Partner :

1. Government
2. Community
3. Educational Institution



Rev. 16

No	Points	CRITERIA	INDICATIVE PERFORMANCE MEASURE					Evidence
1		1500	Setting and Infrastructure (SI)					
1.1.			[1] Comprehensive [2] Specialized higher education institution					
1.2.			[1] Tropical wet [2] Tropical wet and dry [3] Semiarid [4] Arid [5] Mediterranean [6] Humid subtropical [7] Marine west coast [8] Humid continental [9] Subarctic					
1.3.			Number of campus sites Provide number 2 Campuses					Yes
1.4.			Main Campus Setting [1] Rural [2] Suburban [3] Urban [4] In city center [5] High rise building					Yes
1.5.			Total main campus area (m²) Provide number 2,899,200 sq.m					Yes
1.6.			Total main campus ground floor area of buildings (m²) Provide number 617,220 sq.m					
1.7.			Total main campus buildings area (m²) Provide number 825,686 sq.m					
1.8.	SI1	300	The ratio of open space area towards total area [1] < 1% [2] 1% - 70% [3] > 70% - 85% [4] > 85% - 92% [5] > 92%					
1.9.	SI2	200	Total area on campus covered in forest (%) [1] < 1% (provide total area in meter square) [2] 1 - 2% (provide total area in meter square) [3] > 2 - 9% (provide total area in meter square) 182,736 sq.m [4] > 9 - 22% (provide total area in meter square) [5] > 22% (provide total area in meter square)					Yes
1.10.	SI3	300	Total area on campus covered in planted vegetation (%) [1] < 1% (provide total area in meter square) [2] 1 - 9% (provide total area in meter square) [4] > 19 - 34% (provide total area in meter square) 928,287 sq.m [5] > 34% (provide total area in meter square)					

No	Points		CRITERIA	INDICATIVE PERFORMANCE MEASURE				Evidence
				[3] > 9 - 19%	(provide total area in meter square)			
1.11.	SI4	200	Total area on campus for water absorption besides forest and planted vegetation (%)	[1] < 1%	(provide total area in meter square)	[4] > 14 - 29%	(provide total area in meter square)	
				[2] 1 - 2%	(provide total area in meter square)	[5] > 29%	(provide total area in meter square)	
				[3] > 2 - 14%	(provide total area in meter square) 211,442 sq.m			
1.12.			Total Number of Regular Students (part time and full time)	Provide number	34,440 people			
1.13.			Total Number of Online Students (part time and full time)	Provide number	None			
1.14.			Total number of academic and administrative staff	Provide number	11,687 people			
1.15.	SI5	300	The total open space area divided by total campus population	[1] < 1 m2	[2] 1 – 3 m2	[3] > 3 - 27 m2	[4] > 27 – 83 m2	[5] > 83 m2
1.16.			Total University budget (in US Dollars)	Provide number	246 million \$US (2015) , 301 million \$US (2016) , 285 million \$US (2017)			
1.17.			University budget for sustainability effort	Provide number	14 million \$US (2015) , 42 million \$US (2016) , 9 million \$US (2017)			
1.18.	SI6	200	Percentage of University budget for sustainability effort within a year	[1] < 1%	[2] 1% - 3%	[3] > 3% - 5%	[4] > 5% - 10%	[5] > 10%

No	Points		CRITERIA	INDICATIVE PERFORMANCE MEASURE					Evidence
2		1800	Energy and Climate Change (EC)						
2.1.	EC1	200	Energy efficient appliances usage	[1] < 1%	[2] 1% - 25%	[3] > 25% - 50%	[4] > 50% - 75%	[5] > 75%	Yes
2.2.			Total main campus smart building area (m²)	Provide number 57,055 sq.m					
2.3.	EC2	300	Smart Building implementation	[1] < 1%	[2] 1% - 25%	[3] > 25% - 50%	[4] > 50% - 75%	[5] > 75%	Yes
2.4.	EC3	300	Number of renewable energy sources in campus	[1] 0	[2] 1 source	[3] 2 sources	[4] 3 sources	[5] > 3 sources	
2.5.			Renewable energy produced on campus per year	[1] None	[2] Bio diesel Provide capacity in Kilo Watt 1,989,000 kWh	[5] Geothermal Provide capacity in Kilo Watt	[6] Wind power Provide capacity in Kilo Watt	[7] Hydropower Provide capacity in Kilo Watt	Yes
				[3] Clean biomass Provide capacity in Kilo Watt 1,080,000 kWh	[4] Solar power Provide capacity in Kilo Watt 31,160,000 kWh	[8] Combine Heat and Power Provide capacity in Kilo Watt			
2.6.			Electricity usage per year (in kilo watt hour)	Provide number 75,172,000 kWh					Yes
2.7.	EC4	300	The total electricity usage divided by total campus population (kWh per person)	[1] > 2424 kWh	[2] > 1535 - 2424 kWh	[3] > 633 - 1535 kWh	[4] 279 - 633 kWh	[5] < 279 kWh	
2.8.	EC5	200	Ratio of renewable energy produce/production towards total energy usage per year	[1] < 1%	[2] 1% - 25%	[3] > 25% - 50%	[4] > 50% - 75%	[5] > 75%	
2.9.	EC6	300	Elements of green building implementation as reflected in all construction and renovation policy	[1] None	[2] 1 element.	[3] 2 elements.	[4] 3 elements.	[5] > 3 elements	Yes
2.10.	EC7	200	Greenhouse gas emission reduction program	[1] None. Please select this option if reduction program is needed, but nothing has been done	[2] Program in preparation (e.g. feasibility study and promotion)	[3] Program(s) aims to reduce direct emissions from sources owned or controlled by university, and including emissions from university fleets and vehicles (Scope 1 source)	[4] Program(s) aims to reduce indirect emissions from purchased electricity (Scope 2 source)	[5] Program(s) aims to reduce Indirect emissions from all other sources that occur as a result of University operations but occur from sources not owned or controlled by the University, such as employee commuting, air travel, and paper consumption (Scope 3 source)	

No	Points		CRITERIA	INDICATIVE PERFORMANCE MEASURE					Evidence
2.11.			The total carbon footprint divided by total campus population (metric ton per person)	Provide number 75,730 metric ton, 1.64 metric ton/person					Yes
2.12.	EC8	300	Please provide total carbon footprint (CO ₂ emission in the last 12 months, in metric tons)	[1] > 2.05 metric ton	[2] > 1.11 – 2.05 metric ton	[3] > 0.42 – 1.11 metric ton	[4] 0.10 – 0.42 metric ton	[5] < 0.10 metric ton	
3		1800	Waste (WS)						
3.1.	WS1	300	Recycling program for University waste	[1] Not applicable	[2] Partial (1% - 25% of waste)	[3] Partial (>25% - 50% of waste)	[4] Partial (>50% - 75% of waste)	[5] Extensive (> 75% of waste)	Yes
3.2.	WS2	300	Program to reduce the use of paper and plastic in campus	[1] Not applicable.	[2] 1 program	[3] 2 programs	[4] 3 programs	[5] More than 3 programs	Yes
3.3.	WS3	300	Organic waste treatment	[1] Open dumping	[2] Partial (1% - 25% treated)	[3] Partial (> 25% - 50% treated)	[4] Partial (> 50% - 75% treated)	[5] Extensive (> 75% treated and recycled)	Yes
3.4.	WS4	300	Inorganic waste treatment	[1] Burned in open	[2] Partial (1% - 25% treated)	[3] Partial (> 25% - 50% treated)	[4] Partial (> 50% - 75% treated)	[5] Extensive (> 75% treated and recycled)	Yes
3.5.	WS5	300	Toxic waste treatment	[1] Not managed	[2] Partial (1% - 25% treated)	[3] Partial (> 25% - 50% treated)	[4] Partial (> 50% - 75% treated)	[5] Extensive (> 75% treated and recycled)	Yes
3.6.	WS6	300	Sewerage disposal	[1] Untreated into waterways	[2] Treated conventionally	[3] Treated technically	[4] Treatment for down cycling	[5] Treatment for up cycling	Yes
4		1000	Water (WR)						
4.1.	WR1	300	Water conservation program implementation	[1] None (Conservation program is needed, but nothing has been done)	[2] 1%-25 % : Program in preparation (e.g. feasibility study and promotion)	[3] > 25% - 50%. Implemented at early stage (e.g. measurement of potential surface runoff volume)	[4] > 50% - 75% water conserved	[5] > 75% water conserved	Yes
4.2.	WR2	300	Water recycling program implementation	[1] None (Water recycling program is needed, but nothing has been done)	[2] 1%-25 % : Program in preparation (e.g. feasibility study and promotion)	[3] > 25% - 50%. Implemented at early stage (e.g. measurement of waste water)	[4] > 50% - 75% water recycled	[5] > 75% water recycled	Yes
4.3.	WR3	200	The use of water efficient appliances (water tap, toilet flush, etc)	[1] None (Water efficient appliances is needed, but nothing has been done)	[2] 1%-25 % : Program in preparation (e.g. feasibility study and promotion)	[3] > 25% - 50% of water efficient appliance installed	[4] > 50% - 75% of water efficient appliance installed	[5] > 75% of water efficient appliance installed	Yes
4.4.	WR4	200	Treated water consumed	[1] None	[2] 1% - 25% treated water consumed	[3] > 25% - 50% treated water consumed	[4] > 50% - 75% treated water consumed	[5] > 75% treated water consumed	

No	Points		CRITERIA	INDICATIVE PERFORMANCE MEASURE					Evidence
5		1800	Transportation (TR)						
5.1.			Number of cars actively used and managed by University	Provide number 474 vehicles					
5.2.			Number of cars entering the university daily	Provide number 19,462 vehicles					
5.3.			Number of motorcycles entering the university daily	Provide number 37,970 vehicles					
5.4.	TR1	200	The ratio of total vehicles (cars and motorcycles) divided by total campus population	[1] 1/1 (one vehicle serves for one person)	[2] 1/2 (one vehicle serves for two people)	[3] 1/3 to 8 (one vehicle serves for three to eight people)	[4] 1/9 to 22 (one vehicle serves for nine to twenty-two people)	[5] 1/ more than 22 (one vehicle serves for more than twenty-two people)	
5.5.	TR2	300	Shuttle services	[1] Shuttle service is possible but not provided	[2] Shuttle service is available	[3] Shuttle service is available and regular	[4] Shuttle service is available, regular, and free	[5] Shuttle service is available, regular, free, and zero emission. Or shuttle use is not possible	Yes
5.6.			Number of shuttles operated in your university	Provide number 55 vehicles					
5.7.			Average number of passengers of each shuttle	Provide number 151 vehicles					
5.8.			Total trips of each shuttle service per day	Provide number 17.3 trips/day					
5.9.	TR3	200	Zero Emission Vehicles (ZEV) policy on campus	[1] Zero Emission Vehicles are not available	[2] Zero Emission Vehicles use is not possible or practical	[3] Zero Emission Vehicles are available, but not provided by university	[4] Zero Emission Vehicles are available, and provided by university and charged	[5] Zero Emission Vehicles are available, and provided by university for free	Yes
5.10.			Average number of Zero Emission Vehicles (e.g. bicycles, cano, snowboard, electric car, etc.) on campus per day	Provide number 101.6 vehicles/day					
5.11.			The ratio of Zero Emission Vehicles (ZEV) divided by total campus population	[1] 1/ more than 500 (one ZEV for more than 500 people)	[2] 1/500 to 251 (one ZEV for 500 to 251 people)	[3] 1/250 to 126 (one ZEV for 250 to 126 people)	[4] 1/125 to 51 (one ZEV for 125 to 51 people)	[5] 1/ less than 51	
5.12.	TR4	200	Total parking area (m ²)	Provide number 391,274 sq.m					
5.13.	TR5	200	Ratio of parking area to total campus area	[1] > 8%	[2] > 6% - 8%	[3] > 4% - 6%	[4] 1% - 4%	[5] < 1%	Yes
5.14.	TR6	200	Transportation program designed to limit or decrease the parking area on campus over the last 3 years (from 2015 to 2017)	[1] None	[2] Program in preparation (e.g. feasibility study and promotion)	[3] Program resulting in less than 10% decrease in parking	[4] Program resulting in between 10% - 30% decrease in parking	[5] Program resulting in more than 30% decrease in parking or parking is restricted	
5.15.	TR7	200	Transportation initiatives to decrease private vehicles on campus	[1] Not applicable	[2] 1 initiative	[3] 2 initiatives	[4] 3 initiatives	[5] > 3 initiatives	

No	Points		CRITERIA	INDICATIVE PERFORMANCE MEASURE					Evidence
5.16.	TR8	300	Pedestrian path policy on campus	[1] Pedestrian path are not applicable	[2] Pedestrian paths are available	[3] Pedestrian paths are available, and design for safety	[4] Pedestrian paths are available, design for safety and convenient	[5] Pedestrian paths are available, design for safety, convenient, and in some part disabled-friendly features.	Yes
5.17.			A approximate daily travel distance of a vehicle inside campus only (in Kilometers)	Provide number 6,608 km (weekday) , 3,402 km (weekend)					
6		1800	Education and Research (ED)						
6.1.			Number of courses/modules related to sustainability offered	Provide number 18 courses, 203 subjects					Yes
6.2.			Total number of courses/modules offered	Provide number 303 courses , 12,362 subjects					Yes
6.3.	ED1	300	The ratio of sustainability courses divided bt total courses/subjects	[1] < 1%	[2] 1% - 3%	[3] > 3% - 8%	[4] > 8% - 17%	[5] > 17%	
6.4.			Total research funds dedicated to sustainability research (in US Dollars)	Provide number 5.4 million \$US (2015) , 5.2 million \$US (2016) , 7.2 million \$US (2017). Average 3 years = 5,936,237 \$US (15.4%)					Yes
6.5.			Total research funds (in US Dollars)	Provide number 36 million \$US (2015) , 38 million \$US (2016) , 41 million \$US (2017). Average 3 years = 38,651,046 \$US					Yes
6.6.	ED2	300	The ratio of sustainability research funding divided by total research funding	[1] < 1%	[2] 1% - 7%	[3] > 7% - 14%	[4] > 14% - 30%	[5] > 30%	
6.7.	ED3	300	Number of scholarly publications on sustainability published	[1] 0	[2] 1 - 20	[3] 21 - 83	[4] 83 - 300	[5] > 300	
6.8.	ED4	300	Number of events related to sustainability	[1] 0	[2] 1 - 4	[3] 5 - 17	[4] 18 - 47	[5] > 47	Yes
6.9.	ED5	300	Number of student organizations related to sustainability	[1] 0	[2] 1 - 2	[3] 3 - 4	[4] 5 - 10	[5] > 10	
6.10.	ED6	200	Existence of a university-run sustainability website	[1] Not available	[2] Website in progress or under construction	[3] Website is available and accessible	[4] Website is available, accessible, and updated occasionally	[5] Website is available, accessible, and updated regularly	
6.11.			Sustainability website address if available	Provide website address					
6.12.	ED7	100	Existence of published sustainability report	[1] Not available	[2] Sustainability report is in preparation	[3] Sustainability report is available	[4] Sustainability report is available and updated annually	[5] Sustainability report is available, accessible, and updated annually	Yes

Note: Please refer to the 2018 Guideline for further information



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[1] Setting and Infrastructure (SI)

[1.3] Number of Campus sites

			
			<p>Muang Chaing Mai, Suan Sak – Suan Dok Campus (Chiang Mai University, Thailand)</p>
			<p>Lamphun, Hariphunchai Campus (Chiang Mai University, Thailand)</p>



Description:

Chiang Mai University is an educational institution with two campuses. The main campus locates in Muang District, Chiangmai Province and the second campus is in Lamphun Province (Please note that other research facilities without educational activity are not counted towards criteria).



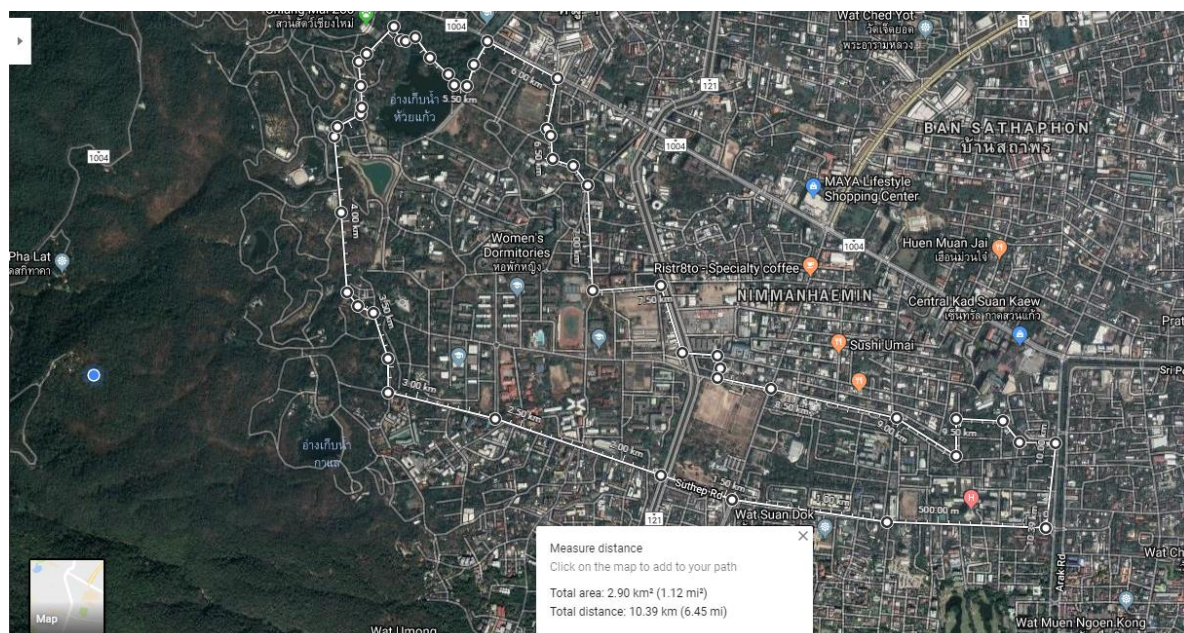
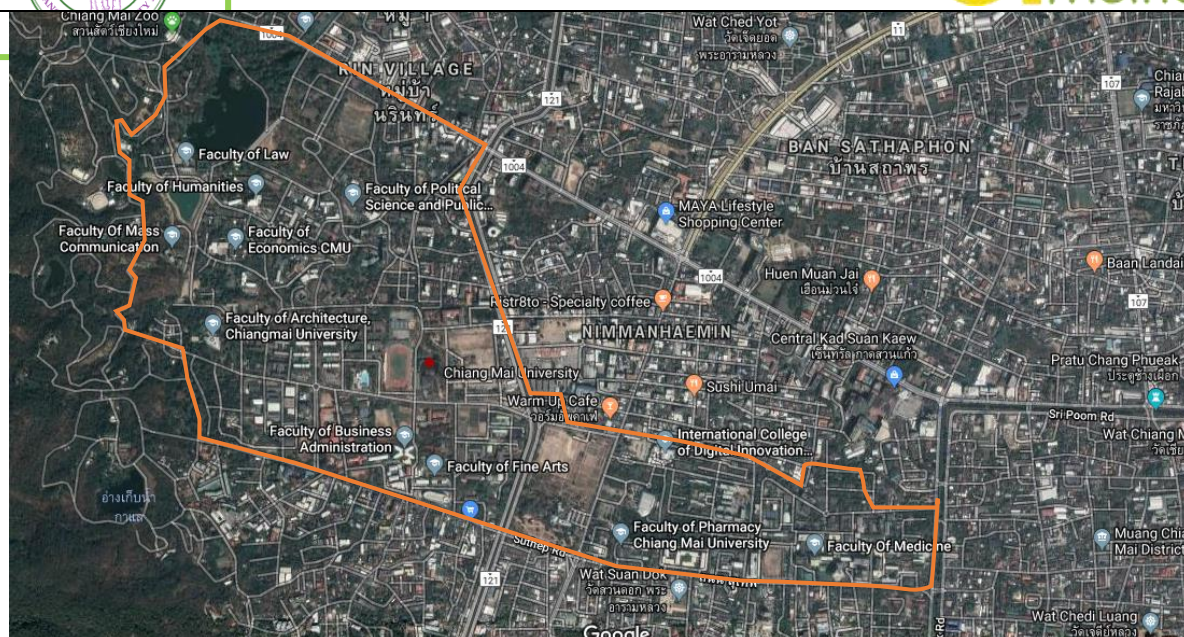
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[1] Setting and Infrastructure (SI)

[1.4] Main campus setting





Aerial photography showing the campus and the connected urban area

Description:

Chiang Mai University's main campus situates on 239 Huay Kaew Road, Suthep Sub-district, Muang District, Chiang Mai Province, Thailand, Postal code 50200 THAILAND

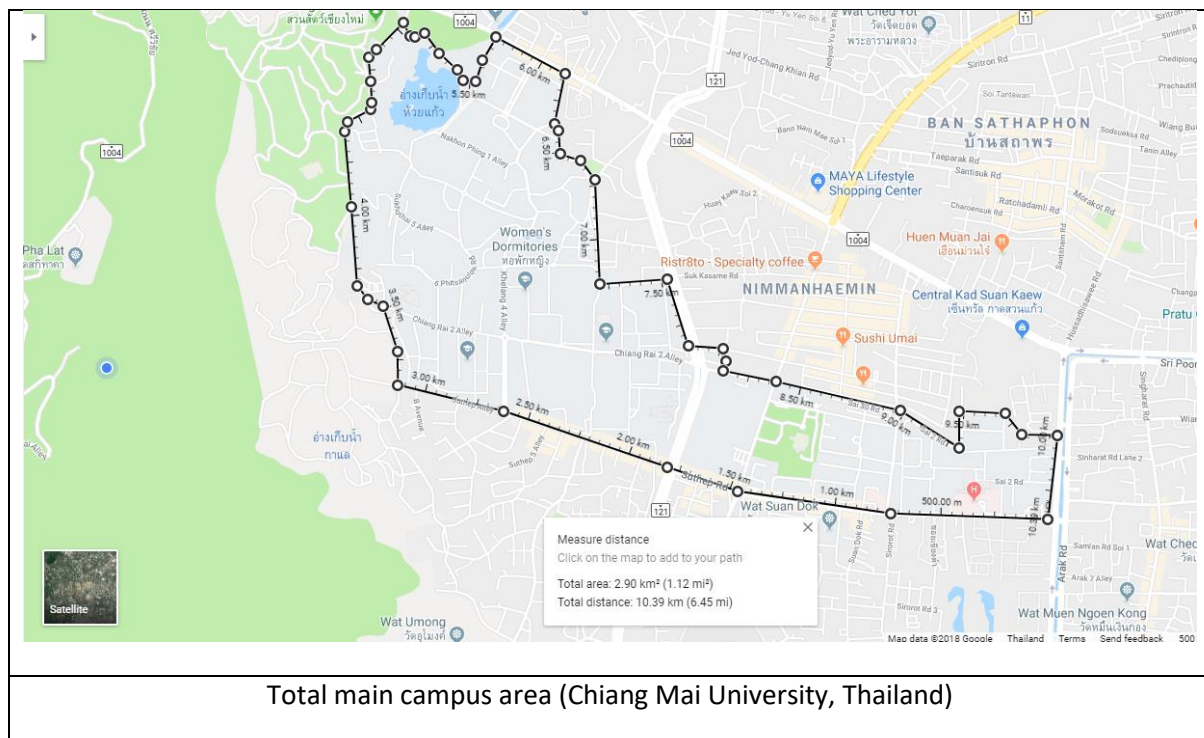


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[1] Setting and Infrastructure (SI)

[1.5] Total main campus area (meter²)



Description:

Total area of Chiang Mai University's main campus by Suthep foothill, including Suan Dok and Suan Sak areas is 1,812 Rais or 2,899,200 square meters

Total area: 2.90 km² (1.12 mi²) = 2,899,200 m²

Total distance: 10.39 km (6.45 mi) = 10,390 m



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[1] Setting and Infrastructure (SI)

[1.9] Total area on campus covered in forest vegetation (meter²)





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[2] Energy and Climate Change (EC)

[2.1] Energy efficient appliances usage are replacing conventional appliances



Conventional appliances are replaced by LED lighting fixtures (individual adjustment in all fixtures)
Photo: Faculty of Architecture, CMU, shot by Sumavalee Chindapol, 20Dec2017

Description:

Chiang Mai University has implemented the plan to reduce energy consumption by replacing old electrical appliances by energy efficient appliances. The aim is to reduce energy consumption by 32% in 2020, compared with 2016. Details are follows.

- 1) Changing conventional lighting system to LED lighting system throughout Chiang Mai University Project: The university has replaced 71,670 conventional light bulbs and, as a result, it saves up to 5,195,308 kWh on energy consumption and 18,703,107 Baht annually. By changing to LED lighting



system, the plan has reduced the university's energy consumption by 6.9% when compared to the total amount of 72,172,000 kWh of energy consumed in 2016.



Table 2.4 Changing conventional lighting system to LED lighting system throughout Chiangmai University Project

Number	Types of conventional lighting system	Types of replacing LED light bulbs	Amount (bulbs)
1	Fluorescent tube 36 W	18 W	62,110
2	Fluorescent tube 18 W	9 W	8,809
3	Mercury-vapor lamp 160 W	75 W	266
4	Mercury-vapor lamp 250 W	120 W	6
5	High Pressure Sodium Lamp (HPML) 250 W	120 W	229
6	High Pressure Sodium Lamp (HPML) 250 W	30 W	250
Total			71,670

- 2) EASY Smart Meter Installation Project: an on-going project during year 2017-2018 involving the installation of meters that examine, monitor, and analyze real-time energy consumption in order to help develop usage plans for each building in the university. The project is aimed to reduce 25% of energy consumption of the university by 2020.



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[2] Energy and Climate Change (EC)

[2.3] Smart Building implementation



Easy smart meter, smart energy management device and solar rooftop on S1



S1 Parking Building, an example of Smart Building implementation



Description:

By the time the four smart building renovation projects are completed in 2021, the anticipated Smart Building area percentage will be 6.9% of the total area of the university's main campus which occupies 825,686 square meters. Up until 2017, 'S1 Parking Building' was the only smart building in the university having smart device for energy management and rooftop solar cell. Its area occupies only 1% of the university building area. With an attempt to implement a smart building plan, Chiang Mai University has recently installed smart energy management devices on every building on campus. The plan is expected to complete by the end of 2018.



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[2] Energy and Climate Change (EC)

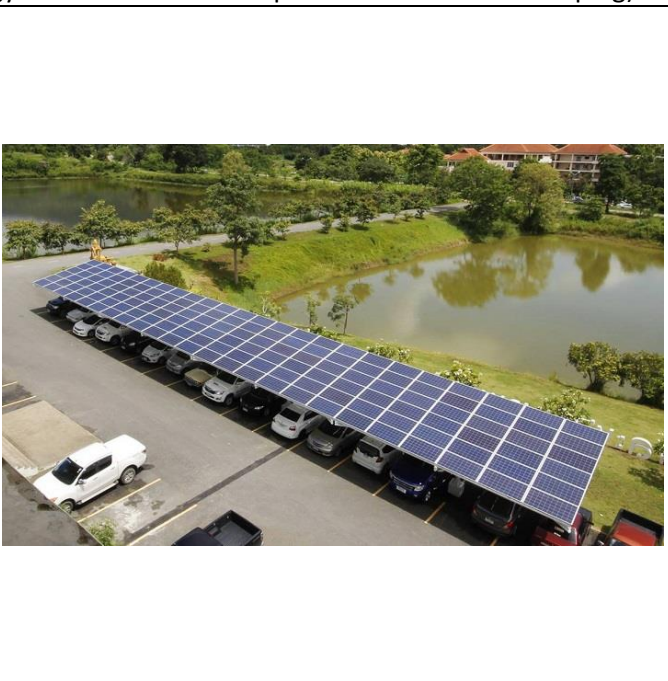
[2.5] Renewable energy produce inside campus



Biogas – Compressed Biomethane Gas (CBG) (Energy Research and Development Institute – Nakornping)



Clean Biomass from garbage and waste (Energy Research and Development Institute – Nakornping)



Example of Solar Roof (Energy Research and Development Institute – Nakornping)



Description:

Table 2.5 Renewable Energy Production within Chiang Mai University's Main Campus

Renewable Energy	Production Capacity (kw)	Production per year (kWh)
Bio Diesel	500	1,989,000
Clean Biomass from garbage, waste	300	1,080,000
Solar Power	19,000	31,160,000



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[2] Energy and Climate Change (EC)

[2.6] Electricity usage per year (in kilo watt hour)

Detail		Unit	In 2016	2017
Electricity usage		kWh/yr	75,597,600	74,367,200
Electricity production				
-	Solar Power form ERDI (36 kWp)	kWh/yr	52,560.00	52,560.00
-	Solar Power from Faculty of Agro-Industry (29 kWp)	kWh/yr	42,340.00	42,340.00
-	Solar Power from Faculty of Pharmacy (62 kWp)	kWh/yr	90,520.00	90,520.00

Description:

In 2016 and 2017 Chiang Mai University consumed 75,172,000 kWh and 74,367,200 kWh of electricity, respectively. In 2016, 66,908,330 kWh of electricity was generated on-site while 75,172,000 kWh was consumed. Calculated on a yearly basis based on a total number of population of 46,127, an energy consumption rates are 1,630 kWh/person in 2016 and 1,616 kWh/person in 2017.

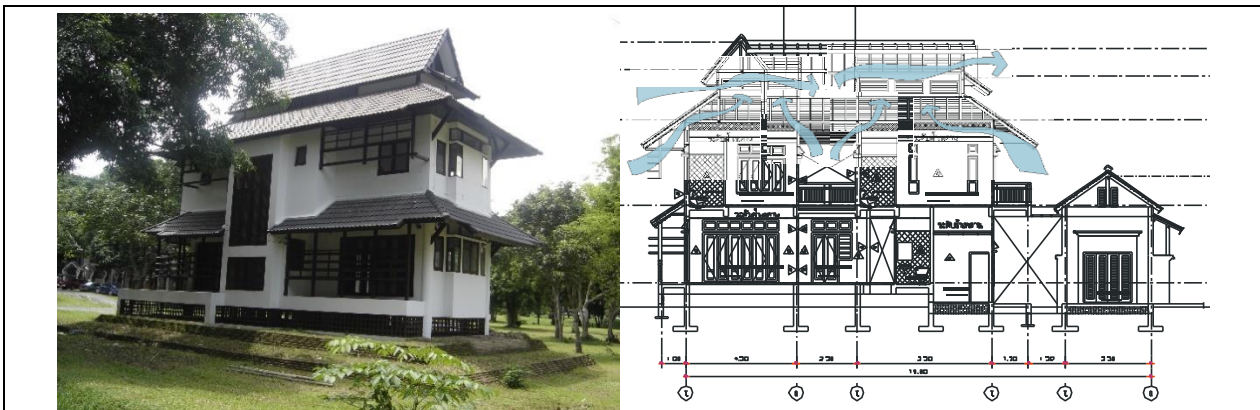


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[2] Energy and Climate Change (EC)

[2.9] Elements of green building implementation as reflected in all construction and renovation policy



Passive energy-saving house at the Faculty of Architecture



Car park building's vertical green wall design



Green wall design plan for parking buildings



Energy-saving building of Northern Science Park Project

Description:

In 2017, the Faculty of Architecture, Chiang Mai University has constructed a passive energy-saving and environmental-friendly house as a prototype of a building that encourages the use of natural ventilating system. Later, in 2015, Green Building Concept was applied to many other building. For instance, at the S1 Car Park Building which was completed in 2016, a vertical green wall and a natural cross-ventilation system were designed. A solar rooftop system and EASY Smart Meter were also installed. With its design and system, the building has nearly reached zero energy consumption rate and, thus, it has become a typical model for another 3 upcoming building projects which are North Science Park Project, Small Animal Laboratory Centre and Smart Carpark buildings.

Moreover, Chiang Mai University is planning for its masterplan development into a smart city around 2018 – 2021 including various projects which are;

- City planning utilizing smart city management and smart energy project (40% in progress)
- Free clean-energy public transport project (100% completion)
- Clean energy city and transportation connection towards nearby cities and towns project
- Additional functions within green spaces and green spaces conservation project
- Entire environment and waste cycle management project



Template for Evidence(s) UI GreenMetric Questionnaire

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[2] Energy and Climate Change (EC)

[2.12] Please provide total carbon footprint (CO₂ emission in the last 12 months, in metric tons)

The table below summarizes Chiang Mai University's measurement on direct and indirect greenhouse gas reduction from 2016 - 2017

Table 2.7 Summarization of Chiangmai University's measurement on greenhouse gas reduction in 2017

Activities	2017		
	Amount	Co-efficient	MetricTonCO ₂ -eq
Stationary Combustion (TonCO ₂ – eq)*	3,354.83	-	3.35
Mobile Combustion (TonCO ₂ – eq)*	161.96	-	0.16
Solid Waste (Incineration) (TonCO ₂ – eq)*	799.05	-	0.80
Solid Waste (landfill) (TonCO ₂ – eq)*	4,283.54	-	4.28
Wastewater (TonCO ₂ – eq)*	2,233.07	-	2.23
Livestock (TonCO ₂ – eq)*	89.53	-	0.09
Electricity (kWh)	74,367,200	0.84	62,468
Transportation – Private cars (cars)	18,680	0.02	6,886
Transportation – Private motorcycles (cars)	34,530	0.01	6,365
Total			75,730

* Data was derived from Chiang Mai University energy and CO₂ consumption record.

CO₂ (electricity) = $(74,367,200 \text{ kWh} / 1000) \times 0.84 = 62,468$ metric ton
 CO₂ (cars) = $(18,680 \times 2 \times 1.92 \times 240 / 100) \times 0.02 = 6,886$ metric ton
 CO₂ (motorcycle) = $(34,530 \times 2 \times 1.92 \times 240 / 100) \times 0.01 = 6,365$ metric ton
 CO₂ (total) = 75,730 metric ton

* CMU shuttle bus is a Zero emission vehicle using electricity. Its CO₂ footprint has already been counted in electricity.



Description

Total Carbon Footprint in 2017 was 75,730 metric ton which is equal to 1.64 tons per person base on the total number of the population of 46,127 people.

References

	Name	Unit s	EMISSION FACTORS				References
			CO ₂	CH ₄	N ₂ O	Total	
			[kg CO ₂ /unit]	[kg CH ₄ /unit]	[kg N ₂ O/unit]	[kg CO ₂ eq/unit]	
Stationary Combustion							
	Natural gas	scf	0.05722	0.00000	0.00000	0.05728	IPCC Vol.2 table 2.2, DEDE
	Lignite	kg	1.05747	0.00001	0.00002	1.06241	IPCC Vol.2 table 2.2, DEDE
	Residual fuel oil	litre	3.07820	0.00012	0.00002	3.08829	IPCC Vol.2 table 2.2, DEDE
	Gas/Diesel oil	litre	2.69872	0.00011	0.00002	2.70797	IPCC Vol.2 table 2.2, DEDE
	Anthracite	kg	3.08662	0.00003	0.00005	3.10144	IPCC Vol.2 table 2.2, DEDE
	Sub-bituminous coal	kg	2.53416	0.00003	0.00004	2.54660	IPCC Vol.2 table 2.2, DEDE
	Jet Kerosene	litre	2.46890	0.00010	0.00002	2.47766	IPCC Vol.2 table 2.2, DEDE
	LPG	litre	1.67972	0.00003	0.00000	1.68118	IPCC Vol.2 table 2.2, DEDE
	LPG	kg	3.11060	0.00005	0.00000	3.11330	LPG 1 litre = 0.54 kg (DEDE)
Mobile Combustion (On road)							
	Motor Gasoline - uncontrolled	litre	2.18156	0.00104	0.00010	2.23755	IPCC Vol.2 table 3.2.1, 3.2.2, DEDE
	Motor Gasoline -oxydation catalyst	litre	2.18156	0.00079	0.00025	2.27629	IPCC Vol.2 table 3.2.1, 3.2.2, DEDE
	Motor Gasoline - low mileage light duty vehicle vintage 1995 or later	litre	2.18156	0.00012	0.00018	2.23803	IPCC Vol.2 table 3.2.1, 3.2.2, DEDE
	Gas/ Diesel Oil	litre	2.69872	0.00014	0.00014	2.74460	IPCC Vol.2 table 3.2.1, 3.2.2, DEDE
	Compressed Natural Gas	kg	2.12619	0.00349	0.00011	2.24724	IPCC Vol.2 table 3.2.1, 3.2.2, PTT
	Liquified Petroleum Gas	litre	1.49338	0.00165	0.00001	1.53623	IPCC Vol.2 table 3.2.1, 3.2.2, DEDE
	Liquified Petroleum Gas	kg	2.76552	0.00306	0.00001	2.84487	LPG 1 litre = 0.54 kg (DEDE)
Mobile Combustion (Off road)							
	Diesel						
	- Agriculture	litre	2.69872	0.00015	0.00104	3.01290	IPCC Vol.2 table 3.3.1, DEDE
	- Forestry	litre	2.69872	0.00015	0.00104	3.01290	IPCC Vol.2 table 3.3.1, DEDE
	- Industry	litre	2.69872	0.00015	0.00104	3.01290	IPCC Vol.2 table 3.3.1, DEDE

- Household	litre	2.69872	0.00015	0.00104	3.01290	IPCC Vol.2 table 3.3.1, DEDE
Motor Gasoline - 4 stroke						
- Agriculture	litre	2.18156	0.00252	0.00006	2.26329	IPCC Vol.2 table 3.3.1, DEDE
- Forestry	litre	2.18156	0.00000	0.00000	2.18156	IPCC Vol.2 table 3.3.1, DEDE
- Industry	litre	2.18156	0.00157	0.00006	2.23968	IPCC Vol.2 table 3.3.1, DEDE
- Household	litre	2.18156	0.00378	0.00006	2.29477	IPCC Vol.2 table 3.3.1, DEDE
Motor Gasoline - 2 stroke						
- Agriculture	litre	2.18156	0.00441	0.00001	2.29550	IPCC Vol.2 table 3.3.1, DEDE
- Forestry	litre	2.18156	0.00535	0.00001	2.31911	IPCC Vol.2 table 3.3.1, DEDE
- Industry	litre	2.18156	0.00409	0.00001	2.28763	IPCC Vol.2 table 3.3.1, DEDE
- Household	litre	2.18156	0.00567	0.00001	2.32698	IPCC Vol.2 table 3.3.1, DEDE
Mobile Combustion (Railway)						
Diesel	litre	2.69872	0.00015	0.00104	3.01290	IPCC Vol.2 table 3.4.1, DEDE

Stationary Combustion

		IPCC [kg/TJ]			DEDE [MJ/unit]	
		CO2	CH4	N2O	NCV	
Natural gas	scf	56100	1	0.1	1.02	dry basis
Lignite	kg	101000	1	1.5	10.47	
Residual fuel oil	litre	77400	3	0.6	39.77	
Gas/Diesel oil	litre	74100	3	0.6	36.42	
Anthracite	kg	98300	1	1.5	31.4	
Sub-bituminous coal	kg	96100	1	1.5	26.37	
Jet Kerosene	litre	71500	3	0.6	34.53	
LPG	litre	63100	1	0.1	26.62	

Mobile Combustion (On road)

		IPCC [kg/TJ]			DEDE [MJ/unit]	
		CO2	CH4	N2O	NCV	
Motor Gasoline - uncontrolled	litre	69300	33	3.2	31.48	gasoline
Motor Gasoline -oxydation catalyst	litre	69300	25	8	31.48	
Motor Gasoline - low mileage light duty vehicle vintage 1995 or later	litre	69300	3.8	5.7	31.48	
Gas/ Diesel Oil	litre	74100	3.9	3.9	36.42	
Compressed Natural Gas	kg	56100	92	3	37.9	*ref. from Petroleum Authority of Thailand



Liquefied Petroleum Gas	litre	56100	62	0.2	26.62
-------------------------	-------	-------	----	-----	-------

Mobile Combustion (Off road)

		IPCC [kg/TJ]			DEDE [MJ/unit]
		CO2	CH4	N2O	NCV
Diesel					
- Agriculture	litre	74100	4.15	28.6	36.42
- Forestry	litre	74100	4.15	28.6	36.42
- Industry	litre	74100	4.15	28.6	36.42
- Household	litre	74100	4.15	28.6	36.42
Motor Gasoline - 4 stroke					
- Agriculture	litre	69300	80	2	31.48
- Forestry	litre	69300			31.48
- Industry	litre	69300	50	2	31.48
- Household	litre	69300	120	2	31.48
Motor Gasoline - 2 stroke					
- Agriculture	litre	69300	140	0.4	31.48
- Forestry	litre	69300	170	0.4	31.48
- Industry	litre	69300	130	0.4	31.48
- Household	litre	69300	180	0.4	31.48

Mobile Combustion (On road)

		IPCC [kg/TJ]			DEDE [MJ/unit]
		CO2	CH4	N2O	NCV
Gas/ Diesel Oil	litre	74100	4.15	28.6	36.42

Waste Incineration

		IPCC kg/tonWaste			DEDE	
		CO2	CH4	N2O	GHG	References
Clinical Waste	ton	792	0.06	0.056	810.19	IPCC Vol.5 table 5.2, 5.3, 5.4

Waste Disposal

		IPCC kg/tonWaste			DEDE	
		CO2	CH4	N2O	GHG	References
Municipal Waste	ton	-	-	-	2.49	Thailand Greenhouse Gas Management Organization

	Per 1 kg of waste					References
	Food waste	Plastic	Paper	PET Bottles	Glass	
Municipal Waste	0.41 13	0.17	0.1327	0.11	0.05	ERDI – Waste management solution, CMU, Project "Comprehensive waste

	Leaves	Metal	Fabric	Ceramic	Etc	management for Chiang Mai University"
	0.0448	0.02	0.0144	0.01	0.04	
	EF: GHG per ton of waste					References
Municipal Waste	Food waste	Plastic	Paper	PET Bottles	Glass	Thailand Greenhouse Gas Management Organizaon
	2.53	2.32	2.93	2.32	2.32	
	Leaves	Metal	Fabric	Ceramic	Etc	
	3.27	-	2	2.32	2.32	

Electricity (PEA)

		IPCC kg/tonWaste			GHG	DEDE References
	unit	CO2	CH4	N2O		
Electricity	ton	-	-	-	0.58	Thailand Greenhouse Gas Management Organizaon

Livestock: ENTERIC FERMENTATION

		IPCC kg/head-yr			GHG	DEDE References
	unit	CO2	CH4	N2O		
Cows	head	-	55.00	-	1,375.00	
Water Buffalos	head	-	55.00	-	1,375.00	IPCC Vol.4 table 10.10
Pigs	head	-	1.50	-	37.50	
Ducks	head	-	-	-	-	
Chicken	head	-	-	-	-	
Sheeps	head	-	8.00	-	200.00	
Goats	head	-	5.00	-	125.00	
Rabbits	head	-	-	-	-	

Livestock: ENTERIC FERMENTATION

	Default items			Value	Reference
1	Maximum CH4 producing capacity: B ₀ (kgCH ₄ /kgBOD)			0.60	IPCC , volume 5, chapter 6, p.6.12
2	Maximum CH4 producing capacity: B ₀ (kgCH ₄ /kgCOD)			0.25	IPCC , volume 5, chapter 6, p.6.12

3	Methane correction factor : MCF (Septic system)			0.50	IPCC , volume 5, chapter 6, p.6.13 (Septic system)	
4	Methane correction factor : MCF (Anaerobic system)			0.80	IPCC , volume 5, chapter 6, p.6.13 (Anaerobi c system)	
5	Methane correction factor : MCF (Aerobic system)			-	IPCC , volume 5, chapter 6, p.6.21	
6	BOD per L: BOD (mg/L)			181.00	Pollution Control Department, Thailand	
7	BOD per L: BOD (kg/m3)			0.18	Pollution Control Department, Thailand	
8	BOD per capita: BOD (g/person/day)			40.00	Pollution Control Department, Thailand	
9	BOD per capita: BOD (g/person/hour)			1.67	Pollution Control Department, Thailand	



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)

[3.1] Recycling Program For University Waste

Chiang Mai University (CMU) has recycling program for waste including waste separation to waste transformation. Waste separation in CMU is managed under the program entitled 'Chang-Chang-Yak' which mean 'Elephants carefully separate waste'; the elephant is the mascot of CMU. With this program, waste is separated into five different categories: general waste, recycle waste, organic waste, toxic waste and toilet waste.

The waste separation program is promoted through the 'Sustainable knowledge to readers: Waste categories in CMU' campaign using QR code and poster.



Waste separation campaign in CMU

CMU also has "Recycle Bank". Every department, staffs and students can collect their recyclable waste and deposit to the recycle bank. The bank's duty is to receive the recyclable waste, sell it to the recycling dealers and return the benefit to the departments, staffs and students. The benefit will be returned in the form of money deposited into each individual's account. The below photos are examples of bankbook of Planning Division and waste deposit criteria. Recyclable waste that can be deposited includes paper, glass, metal, pasteurized box (i.e. UHT milk or juice) and plastic. The dealer will recycle the waste into another product, such as plastic waste into a low grade plastic bag.

The waste deposit criteria are

- 1) please bring your ID card and recycle bankbook with you when you come to deposit;
- 2) 1 kg minimum weight for each deposit;
- 3) the balance in the bankbook must be equal to the bank record;



- 4) please inform recycle bank staff immediately if the bankbook is lost;
- 5) the minimum balance must not fall below 20 Baht;
- 6) the account will be closed automatically if the account has been inactive for one year or if the balance falls below 20 Baht.

สมุดคู่มือ ธนาคารวัสดุรีไซเคิล



ชื่อบัญชี กองแผนงาน

เลขที่บัญชี 0008

ข้อกำหนดและเงื่อนไข



1. โปรดนำบัตรประจำตัวนักศึกษา บัตรประชาชน และสมุดคู่มือมาด้วยทุกครั้ง
2. การฝากทุกครั้งวัสดุรีไซเคิลที่นำมาฝาก ต้องไม่น้อยกว่า 1 กิโลกรัม
3. ยอดคงเหลือในสมุดคู่มือ ต้องตรงกับยอดบัญชีธนาคาร
4. โปรดแจ้งเจ้าหน้าที่ เมื่อสมุดคู่มือสูญหาย
5. ยอดคงเหลือในสมุดคู่มือต้องไม่ต่ำกว่า 20 บาท
6. ธนาคารขอสงวนสิทธิ์ในการปิดบัญชีภายใน 1 ปี หากบัญชีไม่มีการเคลื่อนไหวและยอดคงเหลือต่ำกว่า 20 บาท

หากมีข้อสงสัยประการใดโปรดติดต่อ : ทีมงานธนาคารวัสดุรีไซเคิล โทร. 053-943192



ธนาคารวัสดุรีไซเคิล (Recycle Bank)

ชื่อบัญชี (Account Name) กอจแผนงาน

เลขที่บัญชี (Account No.) 0008

ลายมือชื่อ (Signature)

ว.ศ.ป. (Date)	รายการ (Transaction)	จำนวน (กก.) (Amount)	ฝาก (บาท) (Deposit)	ถอน (บาท) (Withdrawal)	คงเหลือ (บาท) (Balance)	ลงชื่อ จนท. (Sign Teller)
2/5/61	1	12	72	-	72	มีชัย
30/5/61	1	18.3	109.8	-	181.8	...

ตัวอย่างประเภทวัสดุรีไซเคิลที่รับฝาก

กระดาษ

- กระดาษขาว-ดำ
- กระดาษทั่วไป
- หนังสือพิมพ์
- นิตยสาร-วารสาร
- กล่องขนม

แก้ว

- ขวดสีชา
- ขวดสีเขียว
- ขวดใส

พลาสติก

- ขวดยาคูลท์
- ขวดนมพาสเจอร์ไรส์
- ขวดน้ำดื่มใส
- ขวดน้ำดื่มขุ่น

โลหะ/อลูมิเนียม

- กระป๋อง
- ฝาฉีก

กล่องเครื่องดื่ม

- กล่องนม ยู เอช ที
- กล่องน้ำผลไม้

Recycle Bank of Chiang Mai University



Waste station for recycle bank

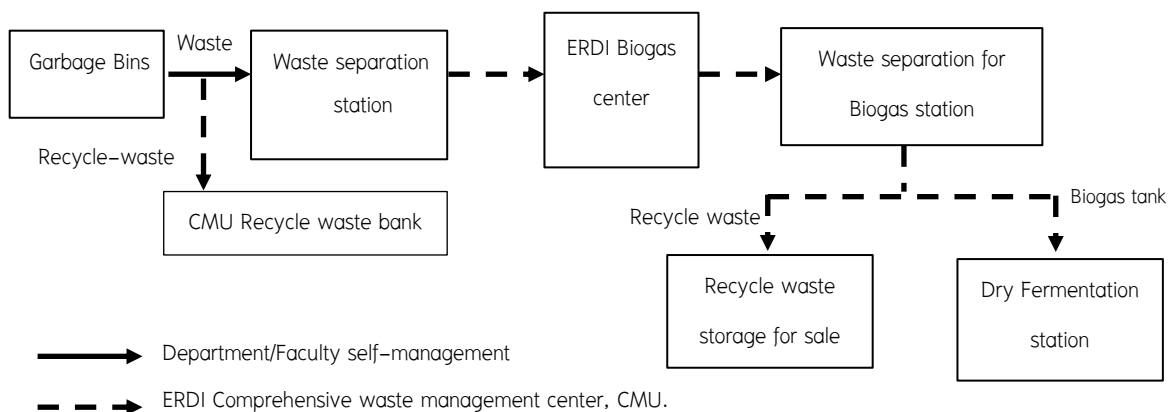


Waste separation station

Description:

In 2017, 41.04% or 7.39 tons of reusable waste such as plastic products, paper, plastic bottles were collected daily by faculties and institutes across the university and then, managed by the Buildings, Grounds and Facilities Division, all the waste will be sent to the university recyclable waste bank on a weekly basis. Then, it will be processed under recycling program by the recycle material dealer and company. The CMU-comprehensive recycling waste program aims to run a full-service of 100% waste recycling system by 2018.

With this full-service, the waste will be recycled into solid fuels and CBG fuel under the Waste Bank Project.





Template for Evidence(s) UI GreenMetric Questionnaire

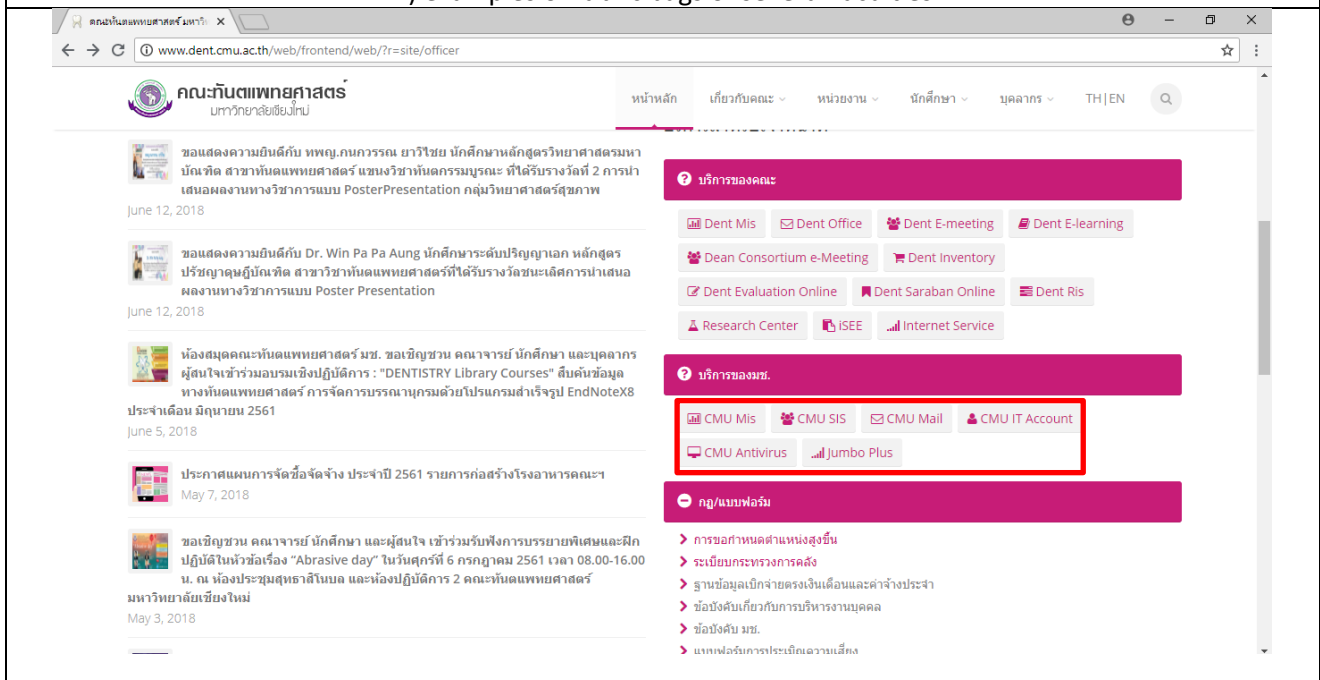
University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)


[3.2] Program to Reduce The Use of Paper and Plastic in Campus




1) examples of fabric bags of several faculties



2) the example of e-document system of the Faculty of Dentistry





กองคลัง | Finance Division
สำนักงานมหาวิทยาลัย มหาวิทยาลัยเชียงใหม่

หน้าหลัก ข้อมูลกองคลัง ประกาศ-ข้อบังคับ

Home Division Info Rule/Announcement

แบบฟอร์มการเงินการคลังและพัสดุ จัดซื้อจัดจ้าง คู่มือกองคลัง

Procurement Procurement

องค์ความรู้กองคลัง ข้อมูลด้านพัสดุ ระบบอื่นๆ

Knowledge Link

ประกาศจัดซื้อจัดจ้าง

หน้าแรก / จัดซื้อจัดจ้าง > ประกาศจัดจ้าง ...

ระบบจัดซื้อจัดจ้างเป็นระบบที่รองรับการดำเนินงานด้านพัสดุ หรือเลือกฟังก์ชันการดำเนินงาน แล้วคลิก Apply

[เพิ่มประกาศใหม่](#)

หน้า 17 ลำดับที่ 321 - 340 จากทั้งหมด 3891 รายการ

ชื่อ

ชื่อหัวข้อที่ต้องการ

หัวข้อ	ประเภทประกาศ	หน่วยงาน	วันที่ประกาศ	สถานะ	ไฟล์ข่าวประกาศจัดซื้อจัดจ้าง
ประกาศศูนย์ความเป็นเลิศทางการแพทย์ คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ เรื่อง ประกวดราคาซื้อเครื่องตรวจวิเคราะห์ภาพจอประสาทตาและจอตา (CorneaAnterior Segment OCT) ด้วยวิธีประกวดราคาอิเล็กทรอนิกส์ (e-bidding)	การประกวดราคาด้วยวิธีทางอิเล็กทรอนิกส์	ศูนย์ความเป็นเลิศ คณะแพทยศาสตร์	20 พ.ย. 2560	ประกาศ	cmupurchase-2017-1989312567.PDF
ประกาศศูนย์ความเป็นเลิศทางการแพทย์ คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ เรื่อง ประกวดราคาซื้อเครื่องตรวจวิเคราะห์ภาพจอประสาทตาและจอตา (Contrast Sensitivity and Glare Testing) ด้วยวิธีประกวดราคาอิเล็กทรอนิกส์ (e-bidding)	การประกวดราคาด้วยวิธีทางอิเล็กทรอนิกส์	ศูนย์ความเป็นเลิศ คณะแพทยศาสตร์	20 พ.ย. 2560	ประกาศ	cmupurchase-2017-1989312567.PDF

3) The example of e-bidding system in the Finance Division, CMU

sumavalee.ch@cmu.ac.th : Logout

+ ตัวอย่างข้อสอบประมวลผลความรู้ด้านศึกษาศาสตร์ ปีที่ 5

Course Material

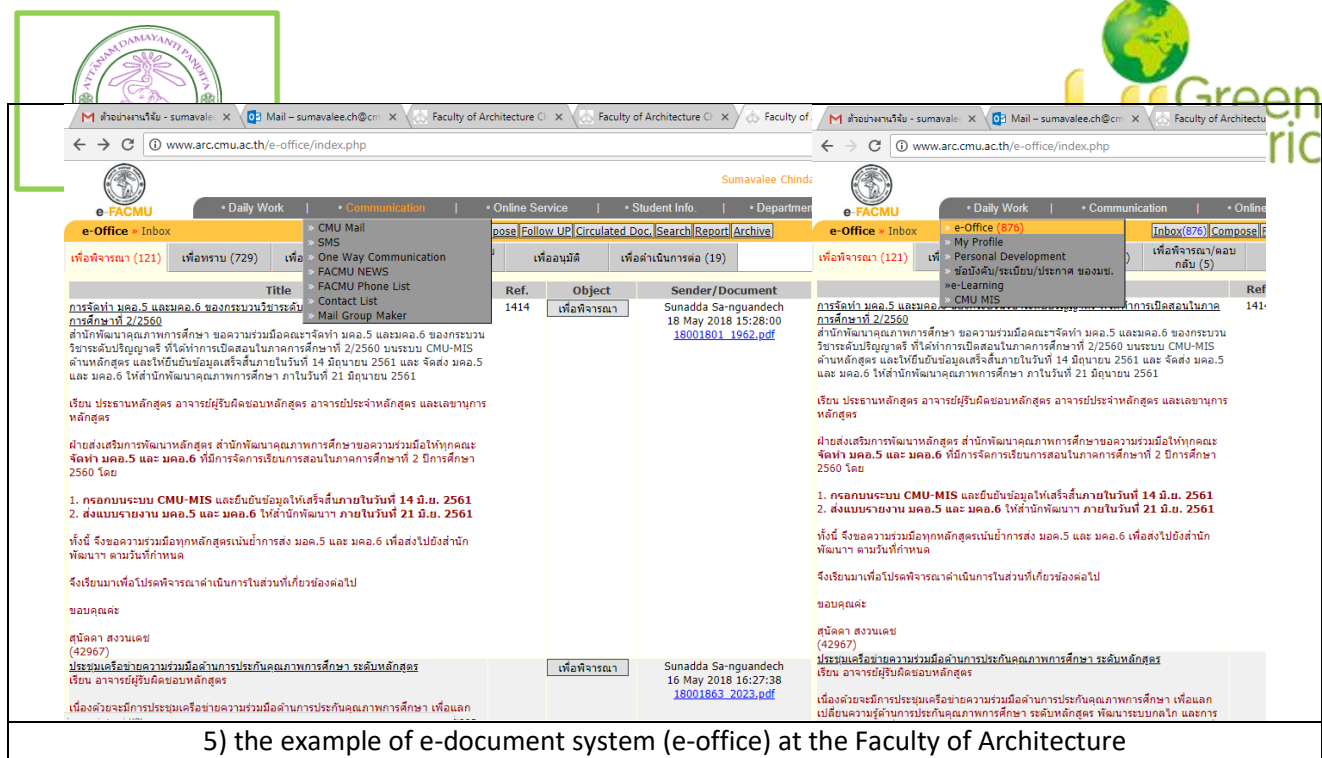
Semester : 02/2560 801371 : ARCT 371 : HOUSING Search

801371 : HOUSING

Lecture 1	Assoc.Prof.Dr. Raviwan Oranratmanee
Lecture 2	Assoc.Prof.Dr. Raviwan Oranratmanee
Lecture 3	Assoc.Prof.Dr. Raviwan Oranratmanee
Lecture 4	Assoc.Prof.Dr. Raviwan Oranratmanee
ความหมายของบ้าน	Assoc.Prof.Dr. Angunthip Srisuwan
การตั้งถิ่นฐานของมนุษย์	Assoc.Prof.Dr. Angunthip Srisuwan
พัฒนาการที่อยู่อาศัย 1	Assoc.Prof.Dr. Angunthip Srisuwan
พัฒนาการที่อยู่อาศัย 2	Assoc.Prof.Dr. Angunthip Srisuwan
พัฒนาการที่อยู่อาศัย 3	Assoc.Prof.Dr. Angunthip Srisuwan
หลักการพัฒนาระบบ	Assoc.Prof.Dr. Angunthip Srisuwan
กฎหมายที่เกี่ยวข้องกับการพัฒนาที่อยู่อาศัย	Assoc.Prof.Dr. Angunthip Srisuwan
กฎหมายโครงการที่อยู่อาศัย	Assoc.Prof.Dr. Angunthip Srisuwan
week01:Introduction	Dr. Umpiga Shummadtayar
week04:principle and process of housing development	Dr. Umpiga Shummadtayar
week04:Assignment2	Dr. Umpiga Shummadtayar
week06:Presentation (Q&A system Assignment2)	Dr. Umpiga Shummadtayar
week11:Site Selection&Analysis	Dr. Umpiga Shummadtayar
week12:Consumer&innovative	Dr. Umpiga Shummadtayar
week13:Flip Classroom&Housing Project	Dr. Umpiga Shummadtayar
week15:Low-income housing: principle&theory	Dr. Umpiga Shummadtayar
week15:Low-income housing: development&design	Dr. Umpiga Shummadtayar

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4) the example of e-Learning system at Faculty of Architecture



5) the example of e-document system (e-office) at the Faculty of Architecture

Description:

Chiang Mai University has implemented policies and methods on paper and plastic usage reduction such as two-sided paper printing, using reusable cups instead of plastic cups, using fabric tote bags and printing when necessary.

Also, CMU has promoted many paper-reduction projects such as;

- 1) Chiang Mai University has encouraged the use of fabric bags since 2014. Cloth bags have been handed out to faculties and institutes to replace plastic bags.
- 2) e-Document project. Reducing the use of physical paper across every university platform including paperless e-Meeting, e-evaluation and e-Booking.
- 3) e-Bidding for paperless government online purchasing processes.
- 4) e-Learning as an educational method of communication.
- 5) e-Office for faculties advertorial products instead of using paper advertisement

The Faculty of Architecture, Chiang Mai University has applied the paperless concept and has been implemented many related paperless projects.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)

[3.3] Organic Waste Treatment

รื่องน่ารู้สู่ผู้อ่าน ประเภทขยะในรั้ว มช.

สำนักงานมหาวิทยาลัย มช. มีเป้าหมายในการเป็นต้นแบบสำนักงานที่มีการคัดแยกขยะเพื่อเข้าสู่การเป็นมหาวิทยาลัยแห่งความยั่งยืน (Sustainability University) โดยจะมีการรณรงค์คัดแยกขยะเป็น 5 ประเภท ดังนี้

ขยะทั่วไป ขยะรีไซเคิล ขยะอินทรีย์ ขยะอันตราย ขยะอิเล็กทรอนิกส์

ถุงพลาสติก พลาสติกเปื้อนอาหาร ขยะพลาสติก เศษอาหาร เศษผลไม้ เศษกระดาษ เศษโลหะ เศษพลาสติก เศษเครื่องใช้ไฟฟ้า เศษอิเล็กทรอนิกส์ เศษพลาสติก เศษกระดาษ เศษโลหะ เศษพลาสติก เศษเครื่องใช้ไฟฟ้า เศษอิเล็กทรอนิกส์

รวมด้วยช่วยกันชาว มช. ทั้งขยะลงถังให้ถูกสีกับโครงการ ช้าง..ช้าง..แยก

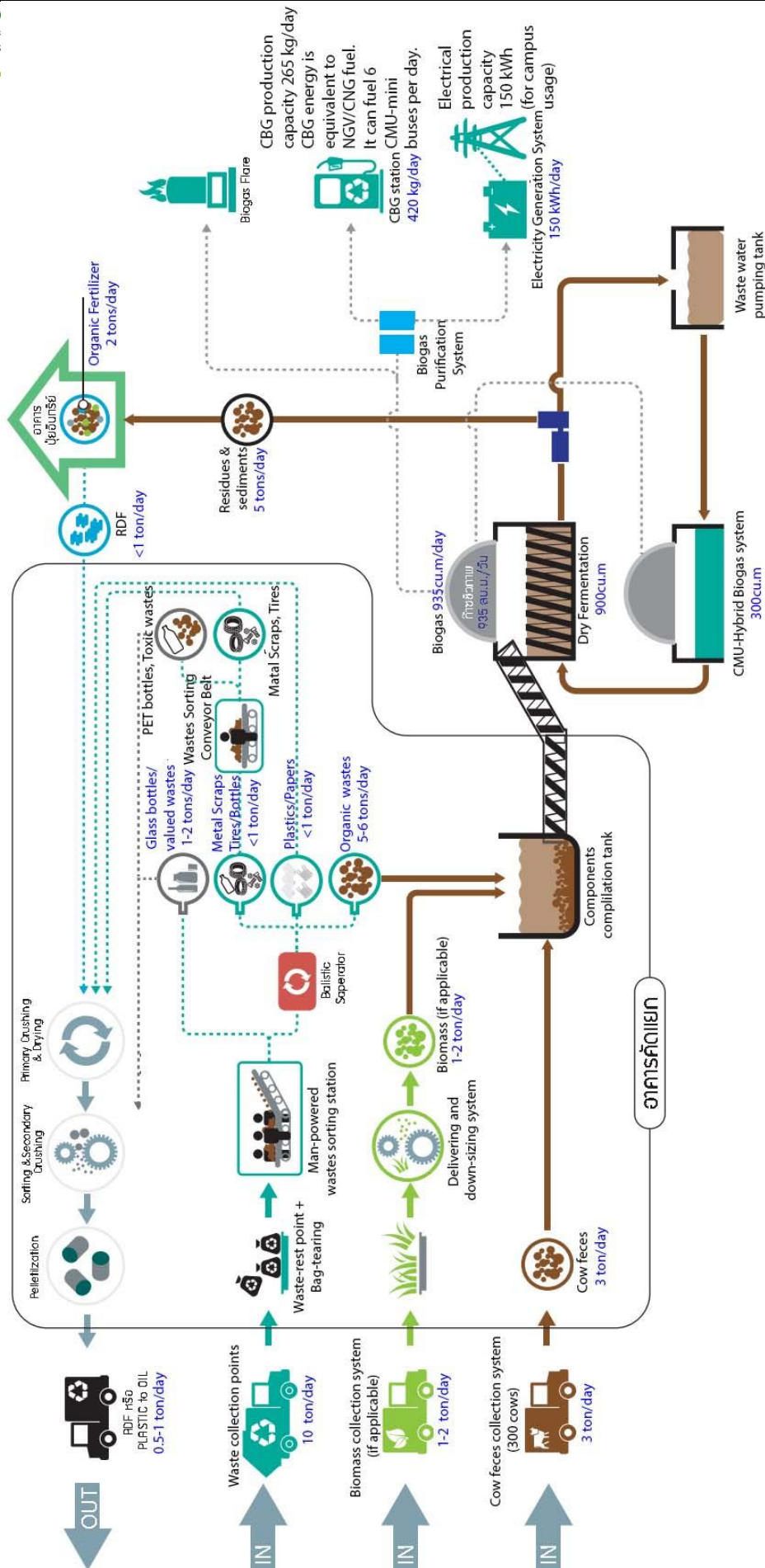
ติดตามข้อมูลข่าวสารการคัดแยกขยะได้ที่

ข้อมูล กองพัฒนานักศึกษา มช. ออกแบบ งานประชาสัมพันธ์ กองกลาง มช.

Organic waste sorting campaign



Complete-cycle waste management plant (Photographed on 20 June 2018)



Complete-cycle waste management process



Description:

According to 2016 data, Chiang Mai University has been categorized as a large-scale educational institution within special control area of Suthep foothill and Suan-dok area. The current number of its population including academic staffs, medical staffs and students accumulates around 47,000 people. It produces 18.2 tons of waste (0.39 kg/person/day) and 2-2.5 tons of infectious waste from the hospital daily. There are 6 main sources of waste producing within the campus namely 1) Residential areas with retail shops and/or cafeterias 2) Residential areas 3) Retail and Cafeteria areas 4) Activity areas 5) Office buildings and 6) Hospitals. General waste proportion and amount are shown in the table below.

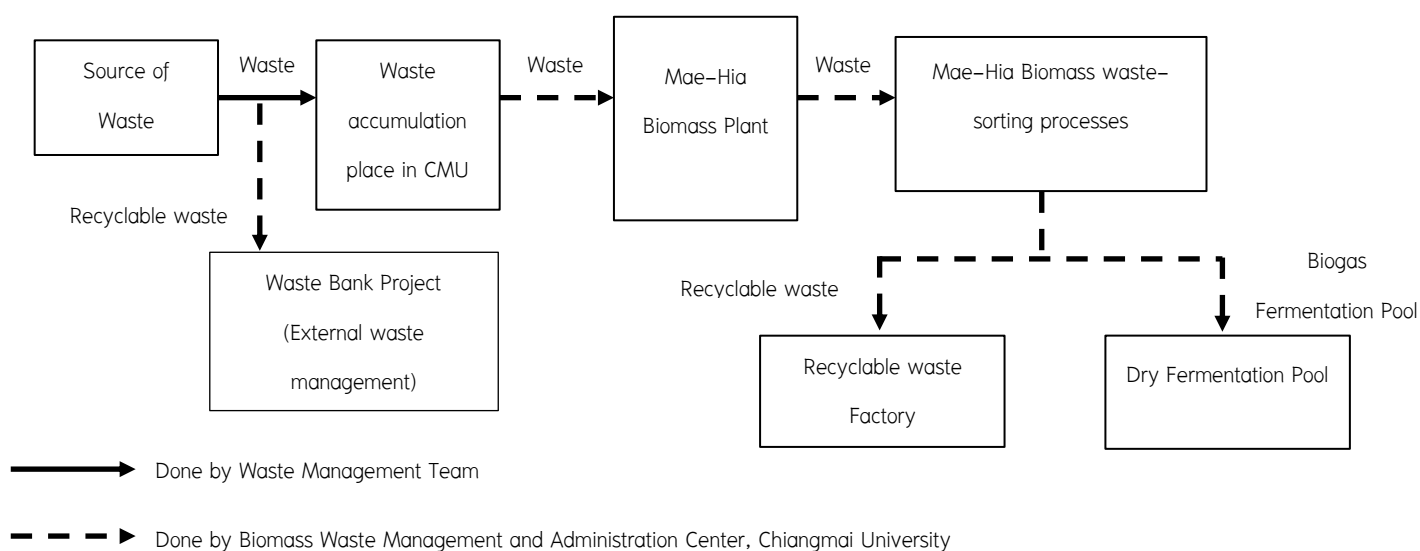


Image 2.18 Current waste management processes of Chiang Mai University

Table 2.8 Proportion and amount of waste produced at Chiangmai University

Types of waste	Percentage (%)	Amount (tons/year)
Food waste*	41.13%	2,732.00
Plastic	16.65%	1,105.95
Paper	13.27%	881.44
Plastic bottles	11.12%	738.63
Glass**	5.22%	346.73
Leaves*	4.48%	297.58
Scrap metals**	1.61%	106.94



Cloths**	1.44%	95.65
Ceramics**	1.17%	77.72
Miscellaneous*	3.91%	259.72
Total		6,642.35

General waste from recycling processes such as food waste, glasses, leaves, metal scraps, ceramics and other build up to 58.96% (10.61 tons per day). Food waste, leaves and miscellaneous waste (marked with * in the above table) are categorized as organic waste. Food waste is sorted out at food-waste collection point at 22 cafeterias before being sold as animal feed. Leaves waste is collected and used as a fertilizer at the Faculty of Agriculture and miscellaneous organic waste, other than food and leaves, will be dropped at 40 garbage collecting points across the campus. Wastes from collection points are then managed by using 6-wheel trucks in collaboration with Chiang Mai City Municipality bringing waste to landfill sites with proper garbage management. In summary, 3,916.33 tons/year of organic waste from the campus are 100% disposed (77.3% of organic waste are being used as feed and fertilizer. Only 22.7% of said waste are going to the landfill site).

With the mentioned processes, Chiang Mai University had foreseen the difficulties and established a Complete Excess Biomass Management Project and the Zero-waste Organic Garbage Disposal Project in 2017 to helped create a complete garbage management on the campus. Organic waste and fat residue are circulated in fermentation processes that create Bio Diesel fuels. The project helps remove more than 200 kilograms of fat residue per day producing more than 80 liters of Bio Diesel fuel daily. 30-100 tons of general waste, food, fat residue and manure are compiled daily on the campus. These wastes are being collected weekly on Monday, Wednesday and Friday (Every day for wastes from Energy Research and Development Institute of Nakornping) and then transported to waste management plant at Mae-Hia Agricultural Training and Research Center to be converted into Bio Methane fuel, fertilizer and solid fuel. The process implementation project is completed in 2018.

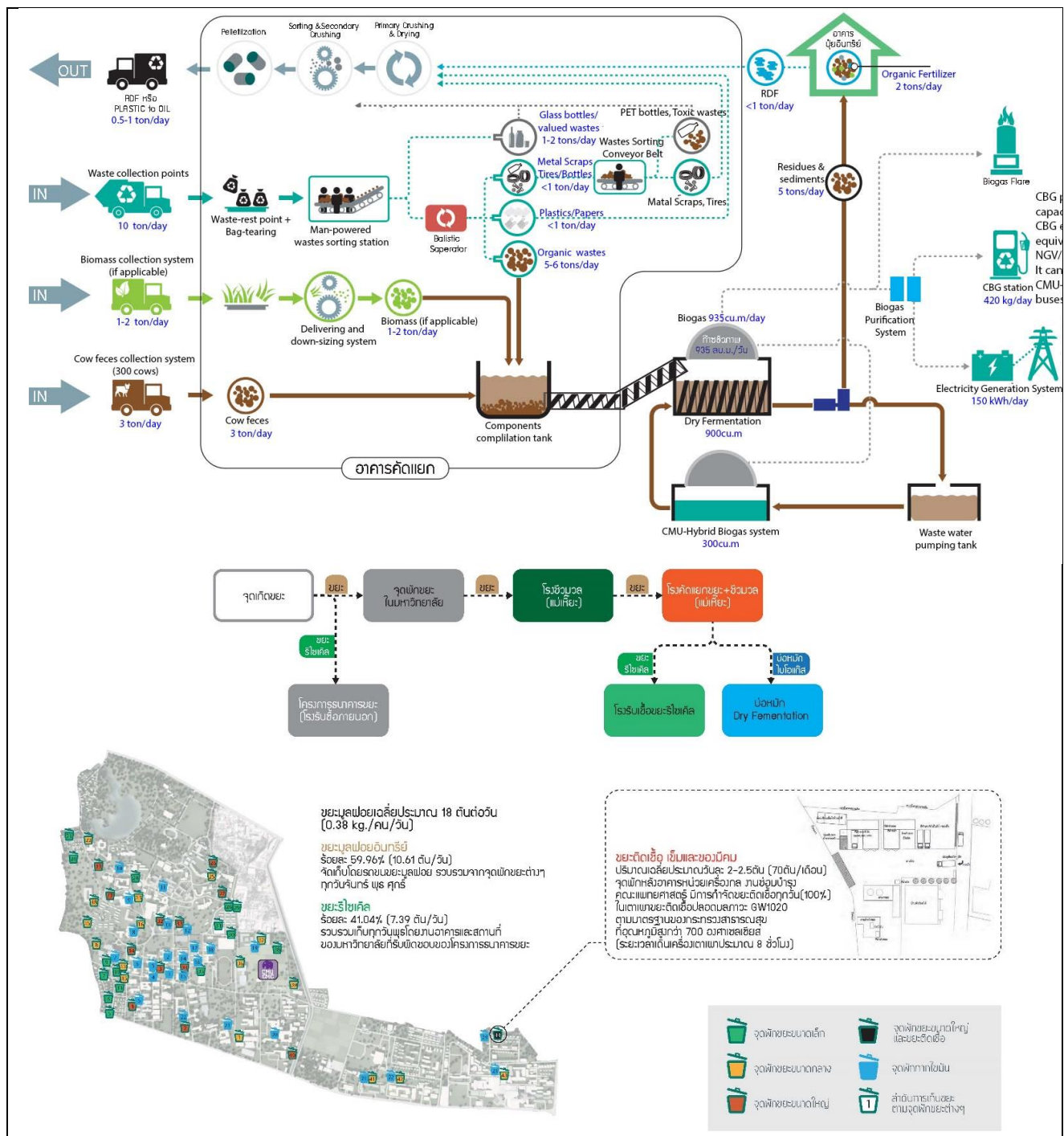


Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)

[3.4] Inorganic Waste Treatment





Description:

Chiang Mai University produces 7.39 tons inorganic waste daily.

3,612 tons daily of inorganic waste from the university campus are consisted of reusable waste such as plastic, paper and plastic bottles, which take up to 41.04% or 7.39 tons/day of inorganic waste, are collected at internal faculties and institutes. They are then collected by Buildings, Grounds and Facilities Division under the Waste Bank project every Wednesday to be recycled. Other 886 tons per day or other 9.44% of inorganic waste (highlighted with ** in table 2.8) are transported to the Chiang Mai Municipality landfill facility, managed and filled by the city municipality team. In summary, 2,726 tons or 75.5% of inorganic waste from Chiang Mai University are being recycled and another 24.5% are being transported to a landfill facility.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)

[3.5] Toxic Waste Handled



Example of Toxic Waste Sorting (CMU campaign)

Description:

Toxic wastes and infectious waste from the hospital with an average of 2-2.5 tons per day are collected at the Reparation Department Building, the Faculty of Medicine. Infectious wastes are going to be 100% disposed at pollution-free infectious waste incinerator GW 1020 under Ministry of Public Health standards using more than 700 Degree Celsius heat for 8 hours to completely burn the waste. Toxic waste and toxic chemical are stored and disposed by external toxic waste disposal experts every 6 months. Moreover, the waste sorting campaign officially declared that the toxic waste will be burnt into the hospital incinerator. (Source: https://prcmu.cmu.ac.th/scoop_detail.php?sco_sub_id=2366)



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[3] Waste (WS)

[3.6] Sewerage Disposal



Position of Sewerage Disposal (next to hospital)



Sewerage disposal plan



Description:

Chiang Mai University has sewerage disposal capacity of 10,000 cubic liters per day covering 100% of Suan-Sak and Suan-Dok areas. Sewerage are produced from university staffs, students and academic personnel daily water usage. In the treatment processes, strict standards are monitored closely to ensure treated sewerage to be clean and environmental friendly. 5,000 cubic meters of treated water or 50% of the treated water will be reused for watering plants and lawns within the campus.





Ang-Kaew Reservoir



Ang Tad Chum Poo Reservoir



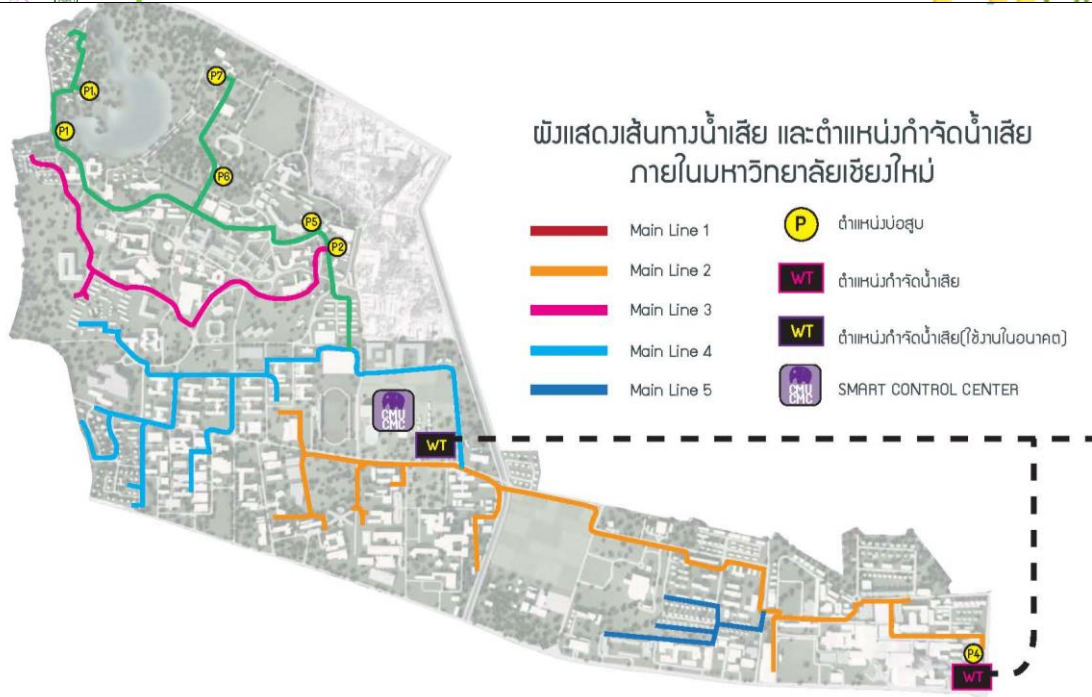
Ang Suan Palm reservoir

Description:

Water conservation program of Chiang Mai University has been processed to fully supply the campus consumption. Rain water used in the treatment processes is gathered from 6 natural reservoirs and natural creeks that constantly flow through the campus namely Huay Kaew, Huay Koo Kao, Huay Tat Chom Phoo, Huay Mae Ra-ngong, Huay Fai Hin and Huay Lae. Not only these natural streams hold surface and rain water, Chiang Mai University also utilizes the water from streams by diverting some of the water into university reservoirs for consumption.

When calculate the water reservation capacity of the university hydrographically, Chiang Mai University could reserve about 480,000 cubic meters of rain water. Estimated rain amounts from an average precipitation in Chiang Mai in the past ten years (400 millimeters). Two university reservoirs which are Kaew Reservoir and Tat Chom Phoo Reservoir could hold 83% of an average precipitation where Kaew Reservoir supplies more than 300,000 cubic meters of water and Tat Chom Phoo supplies more than 100,000 cubic meters of water.





Sewerage routes and wastewater disposal locations



Chiang Mai University water treatment system layout

Description:

Chiang Mai University is able to treat 10,000 cubic meters of water daily. Presently the university could efficiently treat 50% of wastewater from the university. Treated water is then released to natural sources. Treated water that is being released to natural sources typically came from hospital buildings and educational buildings (Suan-Dok regions WT symbol in the 2nd image). Approximately 5,000 cubic meters or 50% of the treated water will be reused for watering plants and lawns.

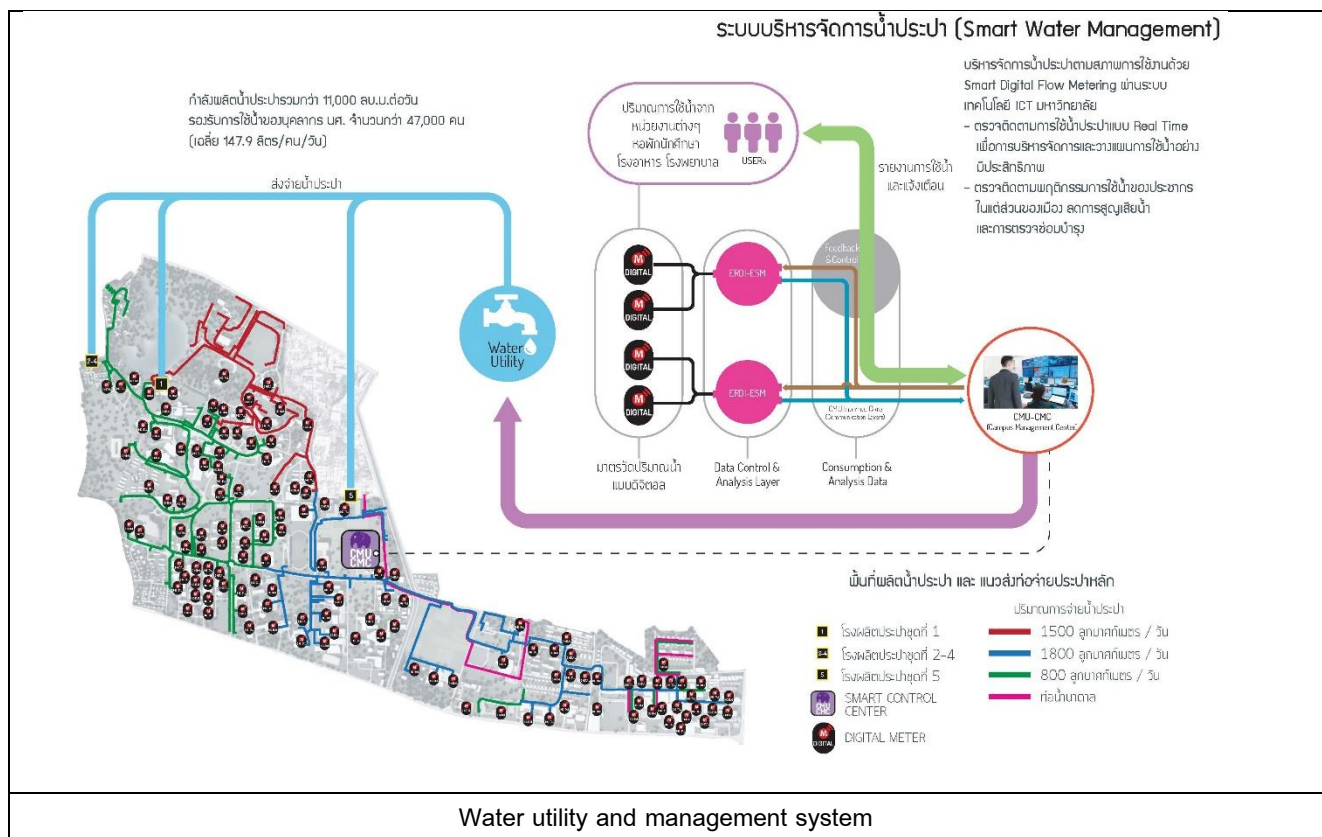


Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[4] Water (WR)

[4.3] The Use of Water Efficient Appliances (Water tap, toilet flush, etc)



Description:

Currently there is no implementation of water efficient appliances installation but the university has established projects that would refurbish old appliances for water efficient appliances and real-time water flow monitoring system for better water management. The planned projects are;

- 1) Water utility equipment's and toiletries change in 4 Smart Buildings and using only water efficient appliances in newly constructed buildings regulation. The implementation is planned to be completed by 2021.
- 2) Smart Digital Flow Metering System installation via university and faculties ICT department. Smart Metering System could monitor water amount usage in real time, follow 100% water usage area in the building during specified periods and time. The system could reduce water usage amount by 30% and would develop water usage customization and maintenance plan efficiently.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

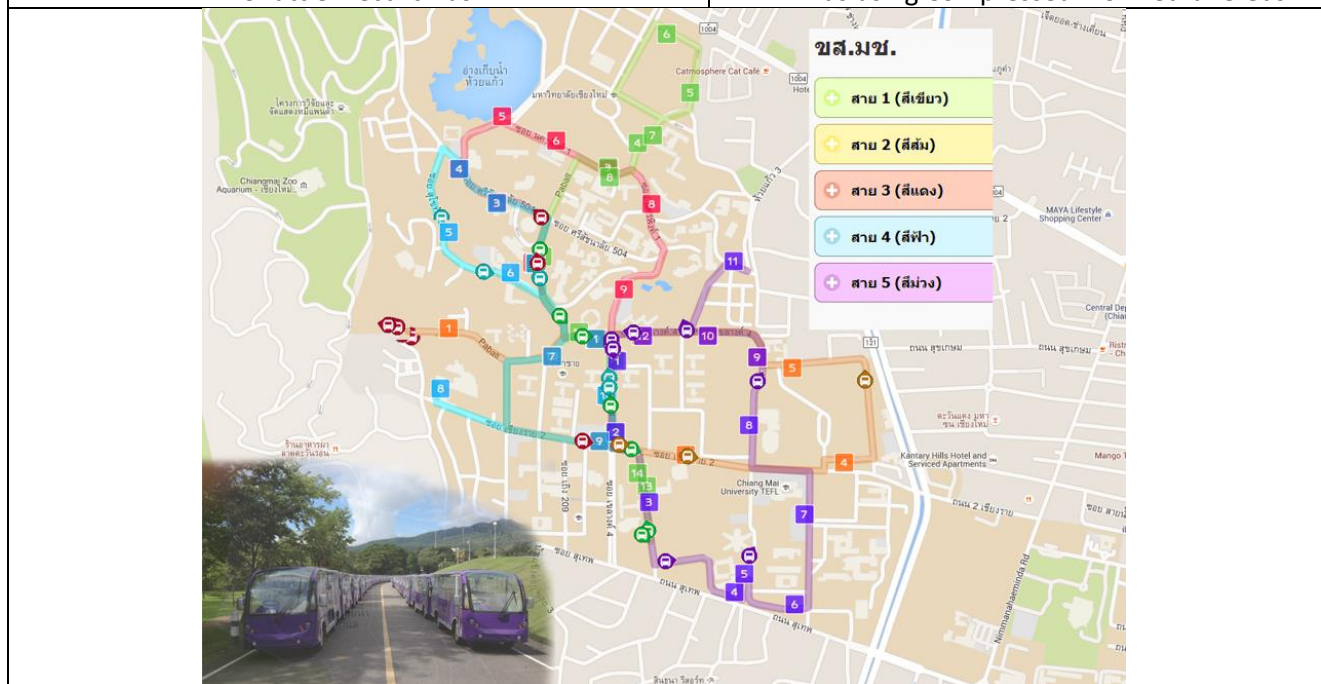
[5] Transportation (TR)

[5.5] Shuttle services

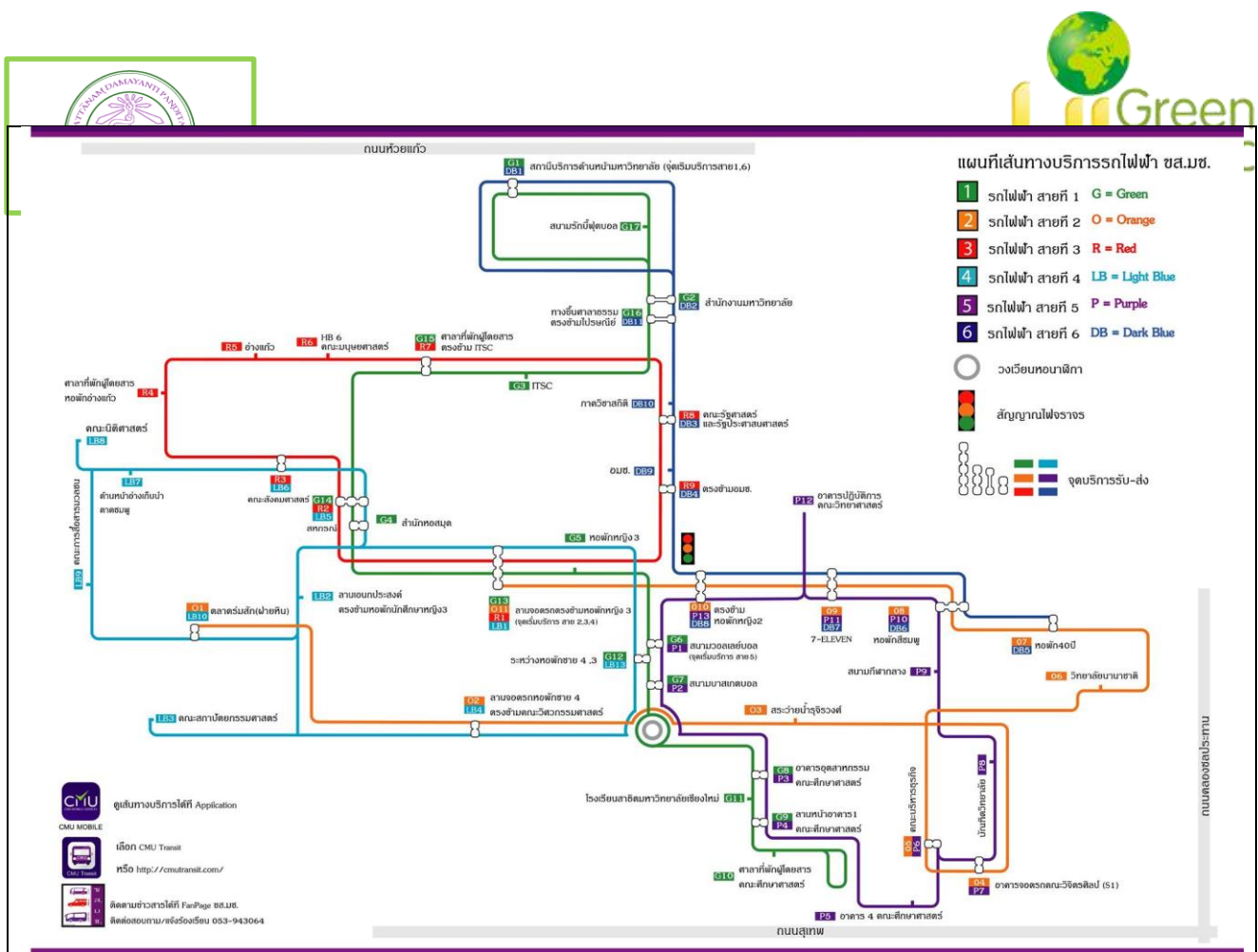


Shuttle Electric Bus

Mini Bus using Compressed Bio-Methane Gas



Bus route



Bus Route

ตารางรถเมล์ มข - Google X CMU Transit

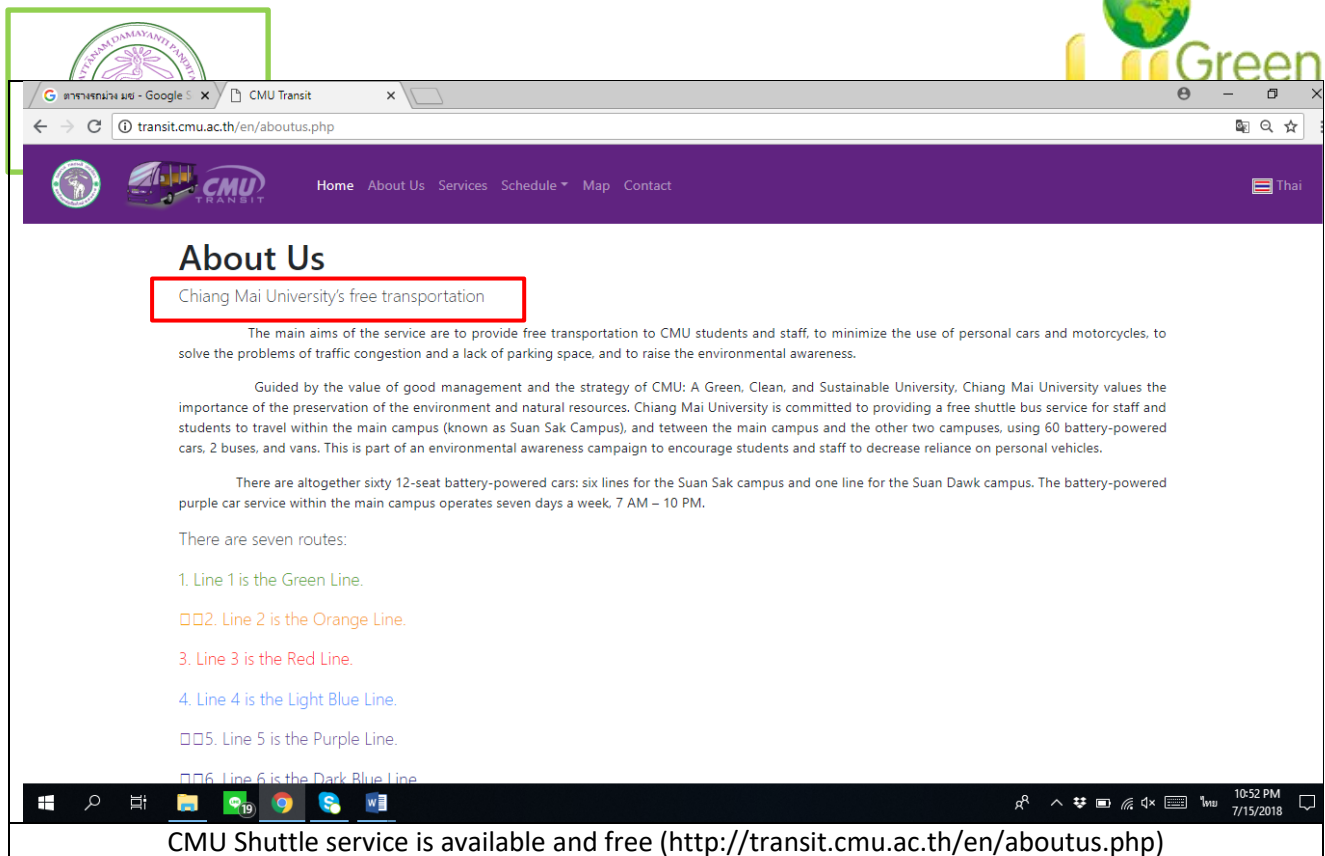
transit.cmu.ac.th/en/schedule.php?line=1&type=1&no=1

Schedule

No. 1 (Green) Mon-Fri [Download](#)

Departure Times	Guardhouse (Main Gate)	Office of the President	Department Of Computer Science	University Library	Female Dormitory 3	Female Dormitory 2	Female Dormitory 6 (Basketball Court)	Industry Building, Faculty of Education	Education Library	Sala at Faculty of Education Gate	Sala at CMU Demonstration School
07:00:00AM	07:00:00AM	07:01:00AM	07:01:45AM	07:02:45AM	07:03:45AM	07:04:15AM	07:04:45AM	07:06:15AM	07:07:00AM	07:08:00AM	07:08:45AM
07:03:00AM	07:03:00AM	07:04:00AM	07:04:45AM	07:05:45AM	07:06:45AM	07:07:15AM	07:07:45AM	07:09:15AM	07:10:00AM	07:11:00AM	07:11:45AM
07:05:00AM	07:05:00AM	07:06:00AM	07:06:45AM	07:07:45AM	07:08:45AM	07:09:15AM	07:09:45AM	07:11:15AM	07:12:00AM	07:13:00AM	07:13:45AM
07:08:00AM	07:08:00AM	07:09:00AM	07:09:45AM	07:10:45AM	07:11:45AM	07:12:15AM	07:12:45AM	07:14:15AM	07:15:00AM	07:16:00AM	07:16:45AM
07:10:00AM	07:10:00AM	07:11:00AM	07:11:45AM	07:12:45AM	07:13:45AM	07:14:15AM	07:14:45AM	07:16:15AM	07:17:00AM	07:18:00AM	07:18:45AM
07:13:00AM	07:13:00AM	07:14:00AM	07:14:45AM	07:15:45AM	07:16:45AM	07:17:15AM	07:17:45AM	07:19:15AM	07:20:00AM	07:21:00AM	07:21:45AM
07:15:00AM	07:15:00AM	07:16:00AM	07:16:45AM	07:17:45AM	07:18:45AM	07:19:15AM	07:19:45AM	07:21:15AM	07:22:00AM	07:23:00AM	07:23:45AM
07:18:00AM	07:18:00AM	07:19:00AM	07:19:45AM	07:20:45AM	07:21:45AM	07:22:15AM	07:22:45AM	07:24:15AM	07:25:00AM	07:26:00AM	07:26:45AM
07:20:00AM	07:20:00AM	07:21:00AM	07:21:45AM	07:22:45AM	07:23:45AM	07:24:15AM	07:24:45AM	07:26:15AM	07:27:00AM	07:28:00AM	07:28:45AM
07:23:00AM	07:23:00AM	07:24:00AM	07:24:45AM	07:25:45AM	07:26:45AM	07:27:15AM	07:27:45AM	07:29:15AM	07:30:00AM	07:31:00AM	07:31:45AM

Example of Line 1 Bus Schedule



Description:

Chiang Mai University shuttle bus is free. The main aims of the service are to provide free transportation to CMU students and staff, to minimize the use of personal cars and motorcycles, to solve the problems of traffic congestion and a lack of parking space, and to raise the environmental awareness.

Guided by the value of good management and the strategy of CMU: A Green, Clean, and Sustainable University, Chiang Mai University values the importance of the preservation of the environment and natural resources. Chiang Mai University is committed to providing a free shuttle bus service for staff and students to travel within the main campus (known as Suan Sak Campus), and between the main campus and the other two campuses, using 60 battery-powered cars, 2 buses, and vans. This is part of an environmental awareness campaign to encourage students and staff to decrease reliance on personal vehicles.

There are altogether sixty 12-seat battery-powered cars: six lines for the Suan Sak campus and one line for the Suan Dok campus. The battery-powered purple car service within the main campus operates seven days a week, 7 AM – 10 PM.

There are 474 vehicles actively used and managed by Chiang Mai University within 46 institutes and faculties. All vehicles could be classified into 5 vehicle types consist of 99 electric cars, 240 cars, 85 motorcycles, 41 agricultural vehicles and 9 medical unit vehicles. There are 55 electric shuttles operating with the university campus distributed into 5 routes across Suan-Sak regions. There is also one shuttle bus route that carries passenger from Suan-Sak region to Suan-Dok region and the hospital.

8,327 persons are using the shuttle services daily in the university on weekdays (the least passenger amount is 2,387 persons on weekends and the most user amount is 12,233 persons on weekdays). 55 shuttle buses take an average of 151 persons per day. An average number of shuttle service at the university is 951 trips per day (minimum 347 trips per day and 1,247 trips per day at the maximum); 17.3 trips per car per day when dividing all trips with all 55 shuttles.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[5] Transportation (TR)

[5.9] Zero Emission Vehicles (ZEV) policy on campus



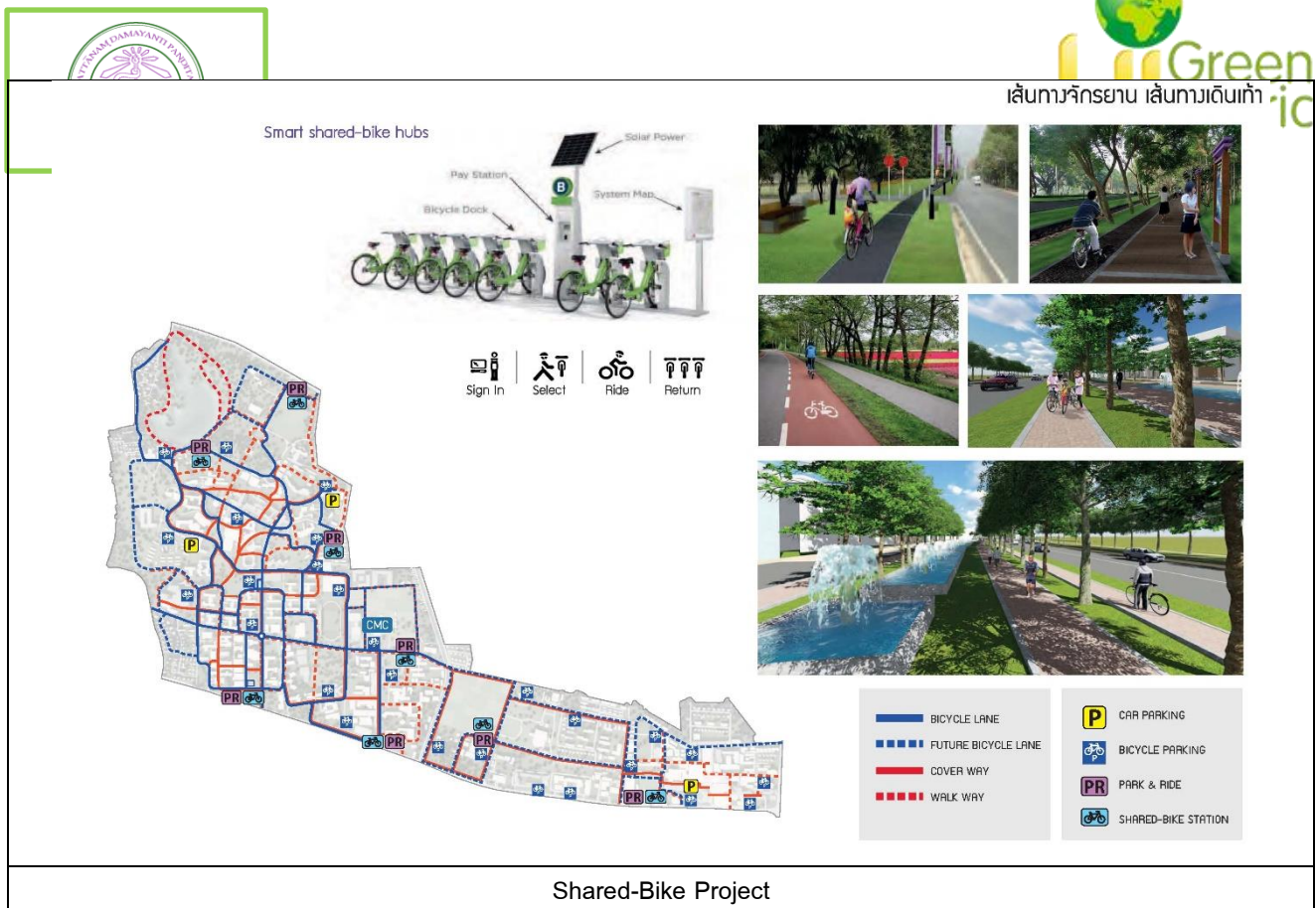
Electric shuttle bus and CBG bus on campus



Bike Way on campus



Shared-bike on campus



Shared-Bike Project

Description:

Zero Emission Vehicles (ZEV) used within Chiang Mai University are consisted of bicycles, electric shuttles and minibuses with compressed Bio-Methane (CBG) fuel.

Chiang Mai University provides a free shuttle service for staff and students to travel within the main campus (known as Suan Sak Campus), using battery-powered cars, buses, and vans. This is part of an environmental awareness campaign to encourage students and staff to use energy-saving vehicles. The aim of the service is to minimize the use of personal cars or motorcycles, which will in turn alleviate the traffic congestion within the university.

Battery-powered cars: The battery-powered purple car service within the main campus operates seven days a week, 7 AM – 10 PM. The service between the main campus and the Suan-Dok area (the Faculty of Medicine) operates seven days a week, 7 AM – 9:30 PM., 15 minutes frequency. The service between the main campus and the Mae Hea campus (the Faculty of Veterinary Medicine Medicine and the Faculty of Agro-Industry) operates seven days a week, 7 AM – 8:30 PM., 30 minutes frequency.

The CMU Mobile Application (CMU Mobile) can be downloaded in order to access the location of the car and the expected time of arrival or Real Time Map.

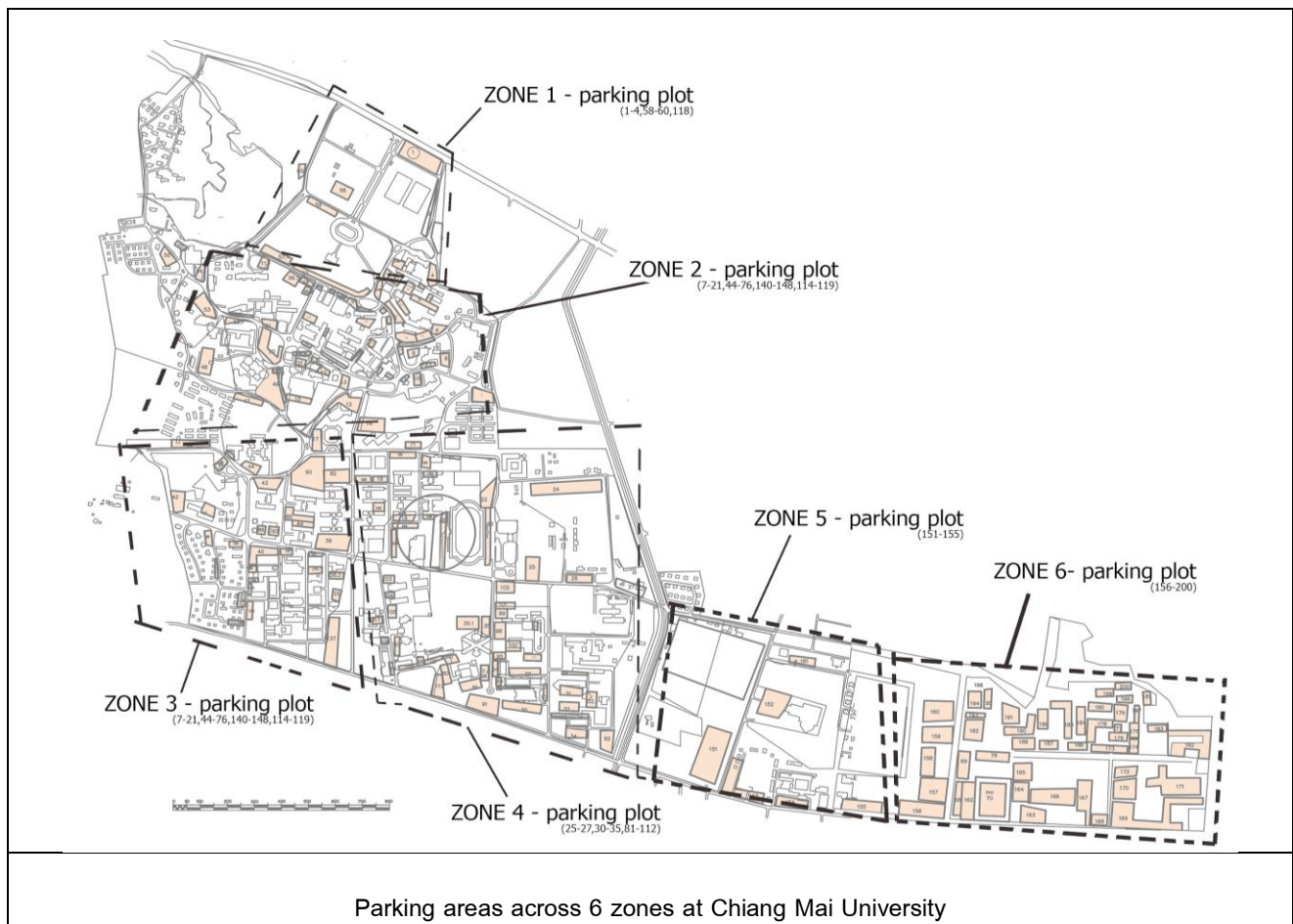


Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[5] Transportation (TR)

[5.13] Ratio of parking area to total campus area





216 parking spots throughout the campus

Description :

Total Parking area = 391,274 m²

Ratio parking area : 13.5%

All parking area of Chiang Mai University consists of open-ground areas and spaces under buildings. All 391,274 square meters of parking areas are allocated across 216 locations within 6 zones as shown in above pictures. Parking area of 391,274 square meters is considered to be 13.5% of the university area compared to 2,899,200 square meters of total campus area.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[5] Transportation (TR)

[5.16] Pedestrian path policy on campus



1. Disable friendly design pedestrian path

แนวทางการออกแบบเพื่อคนทั้งมวล

- อาคารที่มีการปรับปรุงมาตรฐานสากลเพื่อผู้พิการ
- เส้นทางปัจจุบันที่ผู้พิการสามารถใช้งานได้
- เส้นทางที่อยู่ระหว่างการพัฒนาให้ผู้พิการสามารถเดินทางได้อย่างปลอดภัย
- เส้นทางพัฒนาในอนาคตเพื่อให้ผู้พิการสามารถเดินทางได้อย่างปลอดภัย

โครงการมหาวิทยาลัยเชียงใหม่ สำหรับผู้ที่มีความบกพร่องทางการเห็นและการได้ยิน

- โครงการช่วยเหลือผู้พิการทางสายตา
- โครงการช่วยเหลือผู้พิการทางหู
- บริการคอมพิวเตอร์ PC ที่ใช้โปรแกรม JAWS (โปรแกรมอ่านหน้าจอคอมพิวเตอร์)
- บริการ Zoom Text (ขยายอักษรให้ใหญ่ขึ้นสำหรับคนสายตาสั้น)
- บริการ Scanner เพื่อแปล Text ภาษาอังกฤษเพื่อนำไปแปลเป็นอักษรเบรลล์
- บริการผลิตสื่อประกอบการเรียนการสอน ภาษามือให้คนหูหนวก
- บริการให้บริการสื่อเสียงระบบ MP3 จำนวน 1,400 เรื่อง
- บริการให้บริการแปลคำบรรยายของสื่อลงในทุกชั่วโมงเรียน
- บริการให้บริการรถเข็นนักเรียน MP3
- ให้บริการให้บริการรถเข็นนักเรียนพิการทางกาย (Trackball)
- บริการให้บริการสำหรับนักศึกษาพิการทางกาย (Trackball)
- บริการให้บริการแบบอักษรอักษรเบรลล์ (Talking Dictionary)
- บริการให้บริการแบบอักษรอักษรเบรลล์ (Talking Dictionary)

2. Transportation Development for Disabilities Project



3. Cross light for deaf and blind people



4. Roof for pedestrian way and lamp for night

Description:

1. Ramps and guiding blocks which have suitable design for pedestrian having physical disabilities.
2. Shuttle bus for people with physical disabilities
3. Cross light for deaf and blind people
4. Street lamp for pedestrian at night

Chiang Mai University has laid down plans for convenient, safe and disabled-friendly pedestrian ways throughout Chiang Mai University and have been partially executed. Voice-activating crossing (see below image) and Walking and Cycling Encouragement Research and Development Project are also in consideration.

Research projects promoting the pedestrian use and bicycle way

1	Walking and bicycling promotion for everyday life	The Faculty of Architecture
2	Green design route in the area of Chiang Mai University.	The Faculty of Engineering
3	Light helmet for bicycle	The College of Art, Media and Technology



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[6] Education and Research (ED)

[6.1] Number of courses/modules related to environment and sustainability offered

	Degrees	Programs	Faculty/College
1	Doctor's	Doctor of Philosophy Program in Sustainable Land Use and Natural Resource Management	Social Sciences
2	Master's	Master of Science Program in Sustainable Land Use and Natural Resource Management	
3	Master's	Master of Science Program in Environmental Science (International Program)	Sciences
4	Master's	Master of Science Program in Environmental Science	
5	Doctor's	Doctor of Philosophy Program in Environmental Science	
6	Bachelor's	Bachelor of Engineering Program in Environmental Engineering	Engineering
7	Master's	Master of Engineering Program in Environmental Engineering	
8	Master's	Master of Engineering Program in Energy Engineering	
9	Doctor's	Doctor of Engineering Program in Environmental Engineering	
10	Doctor's	Doctor of Philosophy Program in Energy Engineering	
11	Bachelor's	Bachelor of Science Program in Agriculture (Branch [Eng] 7) Soil Science and Natural Resources Management	Agriculture
12	Master's	Master of Science Program in Soil Science and Natural Resource Management	
13	Master's	Master of Science Program in Agricultural Extension and Rural Development	
14	Master's	Master of Science Program in Sustainable Agriculture and Integrated Watershed Management (International Program)	
15	Doctor's	Doctor of Philosophy Program in Soil Science and Natural Resource Management	
16	Doctor's	Doctor of Philosophy Program in Agricultural Extension and Rural Development	
17	Doctor's	Doctor of Philosophy Program in Sufficiency Economy (International Program/ Interdisciplinary)	Economics
18	Master's	Master of Arts Program in Man and Environment Management (Interdisciplinary Program)	The Graduate School
Example of Courses/Modules Related to Environment and Sustainability Offered (Chiang Mai University, Thailand)			



Description:

Number of courses/modules related to environment and sustainability offered in 2017 = **18 courses**

From all 303 courses across the university, there are 18 courses from 6 faculties that are distinctively related to sustainability as above.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[6] Education and Research (ED)

[6.2] Total number of courses/modules offered

	Faculty/College		Degrees			Total
			Bachelor's	Master's	Doctor's	
1	Faculty of	Humanity	14	10	1	24
2	Faculty of	Education	12	6	2	20
3	Faculty of	Fine Arts	9	3	1	13
4	Faculty of	Social Sciences	6	7	4	16
5	Faculty of	Sciences	13	20	17	47
6	Faculty of	Engineering	10	16	11	36
7	Faculty of	Medicine	1	10	13	24
8	Faculty of	Agriculture	2	11	8	21
9	Faculty of	Dentistry	1	3	2	6
10	Faculty of	Pharmacy	1	4	2	7
11	Faculty of	Associated Medical Sciences	4	6	1	11
12	Faculty of	Nursing	2	10	2	14
13	Faculty of	Agro-Industry	6	3	2	11
14	Faculty of	Veterinary Medicine	1	3	2	6
15	Faculty of	Business Administration	2	4	1	7
16	Faculty of	Economics	2	2	2	6
17	Faculty of	Architecture	3	2	-	5
18	Faculty of	Mass Communication	1	1	-	2
19	Faculty of	Political Science and Public Administration	3	3	-	6
20	Faculty of	Law	1	1	-	2
21	College of Arts, Media and Technology		3	2	1	6
22	The Graduate School		-	10	1	11
23	Faculty of	Public Health	-	2	-	2
			97	139	73	303



Total number of courses offered in 2017 (Chiang Mai University)

	Faculty/College		Subjects
1	Faculty of	Humanity	1,101
2	Faculty of	Education	1,188
3	Faculty of	Fine Arts	426
4	Faculty of	Social Sciences	528
5	Faculty of	Sciences	1,637
6	Faculty of	Engineering	1,189
7	Faculty of	Medicine	1,102
8	Faculty of	Agriculture	744
9	Faculty of	Dentistry	512
10	Faculty of	Pharmacy	495
11	Faculty of	Associated Medical Sciences	418
12	Faculty of	Nursing	485
13	Faculty of	Argo-Industry	433
14	Faculty of	Veterinary Medicine	249
15	Faculty of	Business Administration	400
16	Faculty of	Economics	187
17	Faculty of	Architecture	211
18	Faculty of	Mass Communication	119
19	Faculty of	Political Science and Public Administration	222
20	Faculty of	Law	134
21	College of Arts, Media and Technology		288
22	The Graduate School		216
23	Faculty of	Public Health	78
Total			12,362
Total number of subjects offered in 2017 (Chiang Mai University)			

Description:

Total number of courses offered in 2017 = 12,362 courses/modules

Chiang Mai University has 23 faculties and institutes that are providing 303 academic courses across the university. The university offers 91 Bachelor's Degrees, 139 Master's Degrees and 73 Doctoral Degrees as shown in Table 2.16 – 2.17 with the total of 12,362 subjects.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[6] Education and Research (ED)

[6.4] Total research funds dedicated to sustainability research (in US Dollars)

	2015	2016	2017
Total research funding (\$US)	36,015,759	38,821,948	41,115,431
Total sustainability research funding (\$US)	5,407,786	5,227,173	7,173,751
Exchange rate (Baht/\$US)	33.776	32.133	32.521
The ratio of sustainability research funding towards total research funding (%)	15.06	13.46	17.45
Number of research projects (projects)	2,865	2,242	1,666
Number of sustainable research projects (projects)	123	149	137
The ratio of sustainability research projects towards total research projects (%)	4.29	6.65	8.22
Research fund dedicated to sustainability research 2015-2017 (Chiang Mai University)			

Note: Exchange rate from <https://www.poundsterlinglive.com/best-exchange-rates/us-dollar-to-thai-baht-exchange-rate-on-2015-06-30>

Description:

Total research fund dedicated to sustainability research in 2015 = 5,407,786 US Dollars
Total research fund dedicated to sustainability research in 2016 = 5,227,173 US Dollars
Total research fund dedicated to sustainability research in 2017 = 7,173,751 US Dollars
The averaged annum last 3 years of research fund = 16,145,494 US Dollars
Average research fund dedicated to sustainability research in 2015-2017 = 5,936, 237 US Dollars

Funding for sustainability-related research project were 74 million baht (\$5.8M) in 2015, 50 million baht (\$5.4M) in 2016 and 27 million baht (\$7.5M) in 2017. They could be apportioned to 6.16%, 4.03% and 2.08 accordingly with an average of 4.09%. Total number of research projects about sustainability from year 2015 – 2017 are 123, 149 and 137 projects.



Example of research projects dedicated to sustainability in 2015-2017

No	Code	Title	Fund
Examples of research projects for sustainability in 2015			
47	R000009261	Selection and Improvement of Poultry Breedlines as New Sustainable Alternative Economic Animals in Highland	592,591.22
50	R000010145	Promoting Small Scale Biomass Power Plants in Rural Thailand for Sustainable Renewable Energy Management and Community Involvement in Thailand	1,884,662.18
574	R000011467	Promotion and raising system improvement for sustainable production of Thai indigenous chicken (Pradu Hangdam) farmer network in Doi Lor district, Chiang Mai province	210,582.79
746	R000011776	Towards a healthier and environmentally sustainable edible oil consumption profile for Asia	462,123.91
912	R000012119	Increasing Value Added of Sustainable Economic Value of Elephant Tourism Industry in Chiang Mai	1,731,205.48
943	R000012201	Towards sustainable, site adapted, and economically viable greenhouse systems for tropical countries (Thai-German Project)	1,892,097.86
1620	R000013315	Sustainable community development guideline: A case study of northern community in Thailand	10,081.74
Examples of research projects for sustainability in 2016			
17	R000009261	Selection and Improvement of Poultry Breedlines as New Sustainable Alternative Economic Animals in Highland	594,214.76
50	R000010145	Promoting Small Scale Biomass Power Plants in Rural Thailand for Sustainable Renewable Energy Management and Community Involvement in Thailand	1,889,825.64
66	R000010603	An Ecohealth Approach to Develop a Strategy for the Prudent Use of Antimicrobials to Control Antimicrobial Resistance in Human, Animal, and Environmental Health in Asia	1,308,809.75
98	R000011384	An Ecohealth Approach to Develop a Strategy for the Prudent Use of Antimicrobials to Control Antimicrobial Resistance in Human, Animal and Environmental Health in Asia	1,839,416.06
2160	R000016409	Development on Biogas and Bio-Fuel Upgrading under Friendly Environmental Management	997,264.02
2210	R000016867	Towards a healthier and environmentally sustainable edible oil consumption profile for Asia: Palm Oil: Sustainability, Health and Economics (POSHE)	13,618.42



145	R000011608	The Impacts of Climate Change on Hydrology and Water Resources of the Upper Ping River Basin	120,246.41
274	R000012352	Study on Climate Change Affecting on Impacts of Fruits Production in Highlands	116,666.67
Examples of research projects for sustainability in 2017			
21	R000010145	Promoting Small Scale Biomass Power Plants in Rural Thailand for Sustainable Renewable Energy Management and Community Involvement in Thailand	717,720.67
121	R000012557	Development of Farmer and Community Capacity Building for Sustainable Agricultural Production and Related Resource Management in Nan Province	3,966,570.89
993	R000016409	Development on Biogas and Bio-Fuel Upgrading under Friendly Environmental Management	1,497,948.02
1008	R000016428	Create a Safer Urban Environment for Tourist Cyclists- A Design Study in Chiang Mai, Thailand	124,590.16
1232	R000016825	Enhancement and Encouragement of Logistics and Transport Management Application ; LTMA2	224,000.00

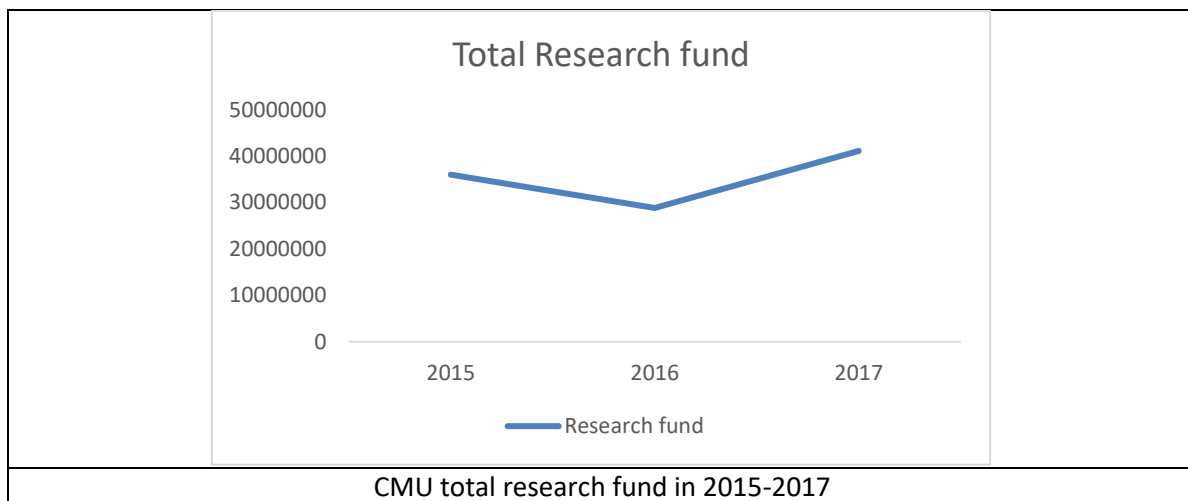


Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[6] Education and Research (ED)

[6.5] Total research funds (in US Dollars)



Description:

Total research fund in 2015 = 36,015,759 US Dollars
Total research fund in 2016 = 38,821,948 US Dollars
Total research fund in 2017 = 41,115,431 US Dollars
The averaged annum last 3 years of research fund = 38,651,046 US Dollars

Chiang Mai University is a research university that has been supported and funded by internal and external institutes for more than 1 billion baht annually supporting more than 2,000 projects. However, the university has never classified sustainability-related projects into one distinctive category. The categorization of the report mainly utilizes keywords for the consideration thus the process only classified projects that have direct sustainability-related objectives only so projects and researches that encourage minor or indirect sustainability results are not considered. Also, number of sustainability-related projects, researches and funding amounts shown might be more than the actual amount. Accurate evaluation on sustainability funds will have to be considered after the university has officially specified precise keywords for sustainability-related subject later. Keywords used for this categorization are Sustainable, Sustainability, Environment and Environmental.

From research projects data from year 2015 to 2017, Chiang Mai University had 1,216 million baht (\$36,015,759) in 2015, 1,247 million baht (\$38,821,948) and 1,337 million baht (\$41,115,431) for research projects consecutively.



Template for Evidence(s) UI GreenMetric Questionnaire

University : Chiang Mai University
Country : Thailand
Web Address : www.cmu.ac.th

[6] Education and Research (ED)

[6.8] Number of events related to environment and sustainability

Seminar on Smog Issue in Chiang Mai and how to adapt by Natural and Environmental conservation Club		Conservation Youth Camp by Natural and Environmental conservation Club		
		2015	2016	2017
Number of sustainability and environment events	Activities to promote environmental and natural resources fertility for locals and communities	37	56	4
	Natural resources conservation activities	28	0	0
Total		65	56	4
Grand Total		1629	2199	1924
Percentage of activities		4	2.55	0.21
Total Events Related to Environment and Sustainability (Chiang Mai University)				

Description:

There are **over 1,600** events related to sustainability organized by student organization in CMU.



Chiang Mai University composed of 81 student organizations which is a collection of 21 student unions, 28 student clubs and 30 sport clubs. There are 3 sustainability-related student organizations among mentioned groups namely Community Development Voluntary Service, Natural and Environmental Conservation Club and Community Voluntary Service – the Faculty of Architecture (trees and forest plantation, dikes and dams construction). Detailed groups are as follows;

Table 2.21 All student organizations

Student Unions		Student Clubs		Student Sport Club	
1	Chiang Mai University	1	International music	1	Indoor Sports
2	Faculty of Humanity	2	Christians	2	Table-tennis
3	Faculty of Education	3	Buddhism art	3	Softball - Baseball
4	Faculty of Fine Arts	4	Lanna folk	4	Tennis
5	Faculty of Social Sciences	5	Muslim students	5	Aikido
6	Faculty of Sciences	6	North-Eastern students	6	Rugby
7	Faculty of Engineering	7	Southern Cultural Promotion	7	Water
8	Faculty of Medicine	8	Thai dancing art and music	8	Judo
9	Faculty of Agriculture	9	Performance	9	Badminton
10	Faculty of Dentistry	10	Merit honor	10	Takraw (Rattan ball)
11	Faculty of Pharmacy	11	Orchestra	11	Archery
12	Faculty of Associated Medical Sciences	12	Rotaract	12	Football
13	Faculty of Nursing	13	Ethnic students	13	Thai-fighting swords
14	Faculty of Agro-Industry	14	Disable friends	14	Basketball
15	Faculty of Veterinary Medicine	15	Reserved officers' training corps	15	Shooting
16	Faculty of Business Administration	16	International students	16	Hockey
17	Faculty of Economics	17	Scholarship Gratitude students	17	Fencing
18	Faculty of Architecture	18	Photography	18	Volleyball
19	Faculty of Mass Communication	19	Literature	19	Athletics



20	Faculty of Political Science and Public Administration	20	Democracy	20	Taekwondo
21	Faculty of Law	21	Art and Design	21	Golf
22	College of Arts, Media and Technology	22	Elephant Calve Against Corruption	22	Social dance
23	Faculty of Public Health	23	Community Development Voluntary Service	23	Sailing

Student Unions	Student Clubs		Student Sport Club	
	24	Natural and Environmental conservation	24	Petanque
	25	Volunteer's Club	25	Thai Boxing
	26	To Be Number One	26	Diving
	27	Have a nice student in a classroom	27	Karate
	28	Community Voluntary Service – Faculty of Architecture	28	Bicycling
			29	Health promotion
			30	B-B-gun