Sustainability Report

Srinakharinwirot University (Ongkharak Campus)

Academic Year 2020

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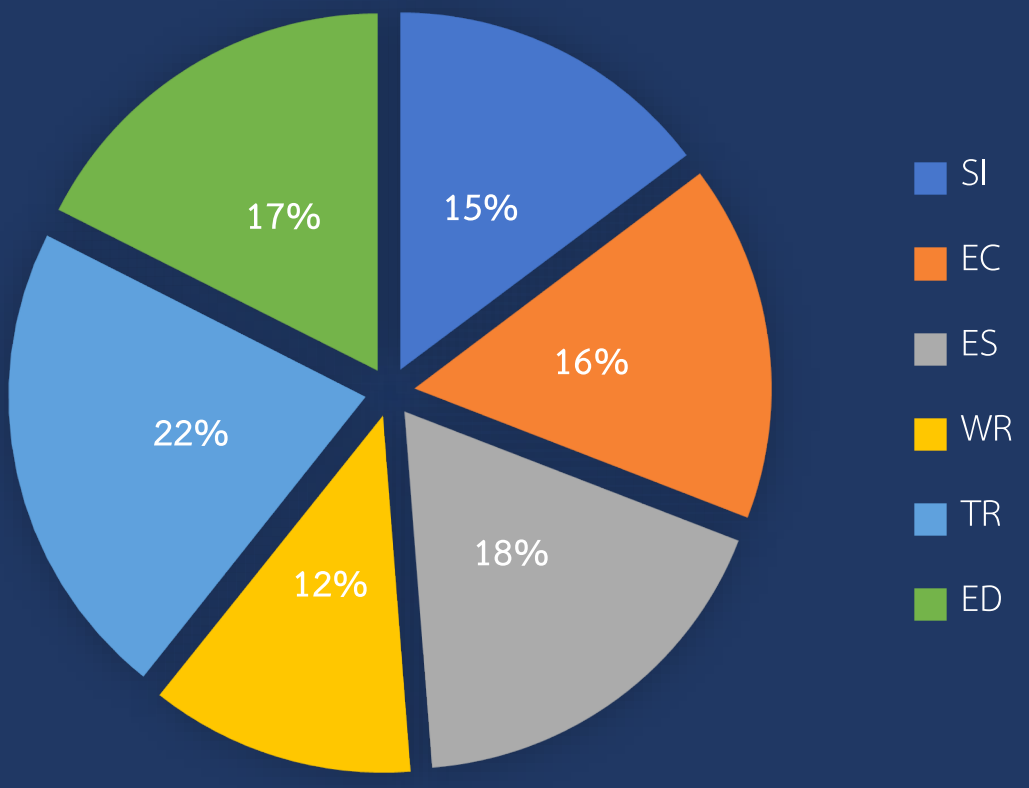
Executive Summary

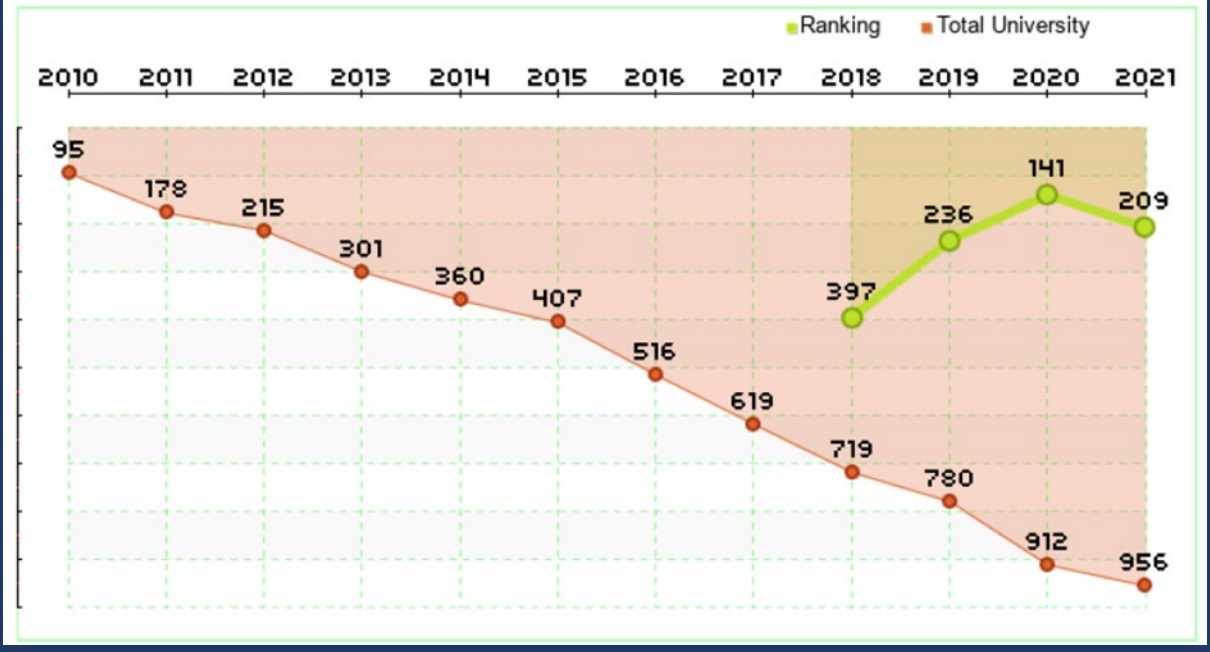
Srinakharinwirot University (SWU) has participated in the UI GreenMetric World University Ranking in 2021 and received the total score of 7,125 out of 10,000 or 71.25%. The scores received for each category are as follows:

1. Setting and Infrastructure (SI): 1,050 out of 1,500
2. Energy and Climate Change (EC): 1,150 out of 2,100
3. Waste (WS): 1,275 out of 1,800
4. Water (WR): 850 out of 1,000
5. Transportation (TR): 1,550 out of 1,800
6. Education (ED): 1,250 out of 1,800

Chart showing the proportion of the scores received this year for each category in the UI GreenMetric World University Ranking



Result Summary of UI GreenMetric World University Ranking



Result Summary of UI GreenMetric Thai University Ranking

1. Introduction

1.1 UI GreenMetric World University Ranking

Universitas Indonesia (UI) initiated a world university ranking in 2010 with the purpose to measure the efforts on sustainability of universities by conducting online surveys in order to demonstrate sustainability programs and policies available in universities around the world. This ranking was later officially known as the "UI GreenMetric World University Ranking."

The UI GreenMetric World University Ranking are broad, covering the aspects of environment, economy, and equity, with all ranking indicators and categories connected to all of these aspects. In addition, indicators and score weighting are free from bias as much as possible so as to make collecting and transmitting information straightforward.

1.2 Scoring Process

A. Ranking Categories and Score Weighting

All categories and score weighting for the UI GreenMetric World University Ranking are as follows:

No.	Category	Percentage of Score to Total Score
1	Setting and Infrastructure (SI)	15
2	Energy and Climate Change (EC)	21
3	Waste (WS)	18
4	Water (WR)	10
5	Transportation (TR)	18
6	Education (ED)	18
Total Score Percentage		100

B. Criteria for Each Category

No.	Criteria	Point
1	**Setting and Infrastructure (SI)**	
SI 1	The ratio of open space area to total area	200
SI 2	Total area on campus covered in forest vegetation	100
SI 3	Total area on campus covered in planted vegetation	200
SI 4	Total area on campus for water absorption besides the forest and planted vegetation	100
SI 5	The total open space area divided by total campus population	200
SI 6	Percentage of university budget for sustainability efforts	200
SI 7	Percentage of operation and maintenance activities of building during Covid-19 pandemic	100
SI 8	Campus facilities for disabled, special needs and or maternity care	100
SI 9	Security and safety facilities	100
SI 10	Health infrastructure facilities for students, academics and administrative staff's wellbeing	100
SI 11	Conservation: plant, animal and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities	100
	Total	**1,500**
2	**Energy and Climate Change (EC)**	
EC 1	Energy efficient appliances usage	200
EC 2	Smart building implementation	300
EC 3	Number of renewable energy sources on campus	300
EC 4	Total electricity usage divided by total campus' population (kWh per person)	300
EC 5	The ratio of renewable energy production divided by total energy usage per year	200
EC 6	Elements of green building implementation as reflected in all construction and renovation policies	200
EC 7	Greenhouse gas emission reduction program	200
EC 8	Total carbon footprint divided by total campus' population (metric tons per person)	200
EC 9	Number of innovative program(s) during covid-19 pandemic	100
EC 10	Impactful university program(s) on climate change	100
	Total	**2,100**

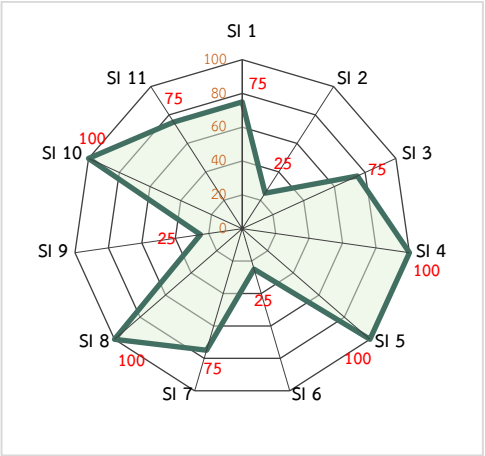
No.	Criteria	Point
3	**Waste (WS)**	
WS 1	Recycling program for university's waste	300
WS 2	Program to reduce the use of paper and plastic on campus	300
WS 3	Organic waste treatment	300
WS 4	Inorganic waste treatment	300
WS 5	Toxic waste treatment	300
WS 6	Sewage disposal	300
	Total	**1,800**
4	**Water (WR)**	
WR 1	Water conservation program & implementation	200
WR 2	Water recycling program implementation	200
WR 3	Water efficient appliances usage	200
WR 4	Consumption of treated water	200
WR 5	Percentage of additional handwashing and sanitation facilities during Covid-19 pandemic	200
	Total	**1,000**
5	**Transportation (TR)**	
TR 1	The total number of vehicles (cars and motorcycles) divided by total campus' population	200
TR 2	Shuttle services	300
TR 3	Zero Emission Vehicles (ZEV) policy on campus	200
TR 4	The total number of Zero Emission Vehicles (ZEV) divided by total campus population	200
TR 5	Ratio of ground parking area to total campus' area	200
TR 6	Program to limit or decrease the parking area on campus for the last 3 years (from 2018 to 2020)	200
TR 7	Number of initiatives to decrease private vehicles on campus	200
TR 8	Pedestrian path on campus	300
	Total	**1,800**
6	**Education and Research (ED)**	
ED 1	The ratio of sustainability courses to total courses/subjects	300
ED 2	The ratio of sustainability research funding to total research funding	200
ED 3	Number of scholarly publications on sustainability	200
ED 4	Number of events related to sustainability	200
ED 5	Number of student organizations related to sustainability	200

No.	Criteria	Point
ED 6	University-run sustainability website	200
ED 7	Sustainability report	100
ED 8	Number of cultural activities on campus	100
ED 9	Number of university program(s) to cope with Covid-19 pandemic	100
ED 10	Number of sustainability community services project organized and/or involving students	100
ED 11	Number of sustainability-related startups	100
	Total	**1,800**

1.3 Score Summary

Setting and Infrastructure (SI)

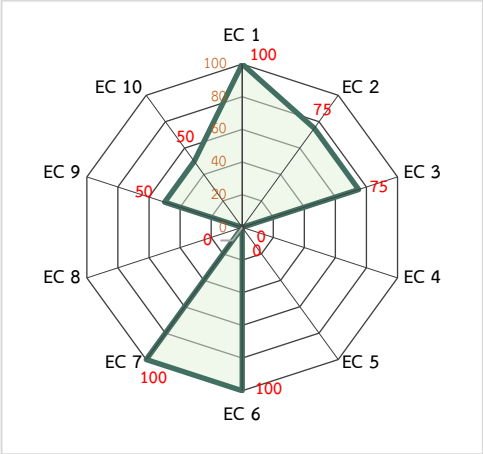
Indicator		Score
SI 1	The ratio of open space area to total area	150
SI 2	Total area on campus covered in forest vegetation	25
SI 3	Total area on campus covered in planted vegetation	150
SI 4	Total area on campus for water absorption besides the forest and planted vegetation	100
SI 5	The total open space area divided by total campus population	200
SI 6	Percentage of university budget for sustainability efforts	50
SI 7	Percentage of operation and maintenance activities of building during Covid-19 pandemic	75
SI 8	Campus facilities for disabled, special needs and or maternity care	100
SI 9	Security and safety facilities	25
SI 10	Health infrastructure facilities for students, academics and administrative staff's wellbeing	100
SI 11	Conservation: plant, animal and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities	75



Percentage of Score to Maximum Score

Energy and Climate Change (EC)

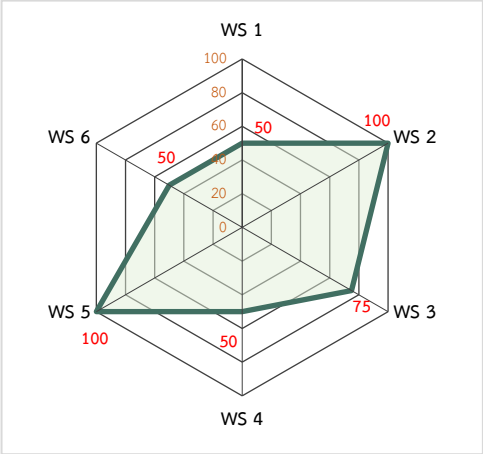
Indicator		Score
EC 1	Energy efficient appliances usage	200
EC 2	Smart building implementation	225
EC 3	Number of renewable energy sources on campus	225
EC 4	Total electricity usage divided by total campus' population (kWh per person)	0
EC 5	The ratio of renewable energy production divided by total energy usage per year	0
EC 6	Elements of green building implementation as reflected in all construction and renovation policies	200
EC 7	Greenhouse gas emission reduction program	200
EC 8	Total carbon footprint divided by total campus' population (metric tons per person)	0
EC 9	Number of innovative program(s) during covid-19 pandemic	50
EC 10	Impactful university program(s) on climate change	50



Percentage of Score to Maximum Score

Waste (WS)

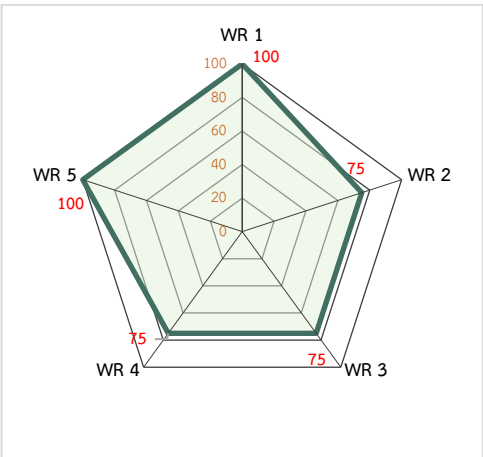
Indicator		Score
WS 1	Recycling program for university's waste	150
WS 2	Program to reduce the use of paper and plastic on campus	300
WS 3	Organic waste treatment	225
WS 4	Inorganic waste treatment	150
WS 5	Toxic waste treatment	300
WS 6	Sewage disposal	150



Percentage of Score to Maximum Score

Water (WR)

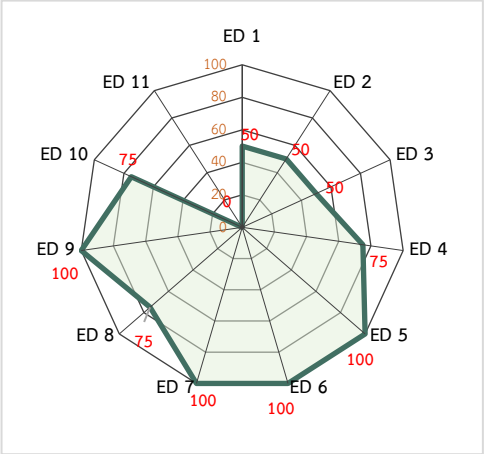
Indicator		Score
WR 1	Water conservation program & implementation	200
WR 2	Water recycling program implementation	150
WR 3	Water efficient appliances usage	150
WR 4	Consumption of treated water	150
WR 5	Percentage of additional handwashing and sanitation facilities during Covid-19 pandemic	200



Percentage of Score to Maximum Score

Education (ED)

Indicator		Score
ED 1	The ratio of sustainability courses to total courses/subjects	150
ED 2	The ratio of sustainability research funding to total research funding	100
ED 3	Number of scholarly publications on sustainability	100
ED 4	Number of events related to sustainability	150
ED 5	Number of student organizations related to sustainability	200
ED 6	University-run sustainability website	200
ED 7	Sustainability report	100
ED 8	Number of cultural activities on campus	75
ED 9	Number of university program(s) to cope with Covid-19 pandemic	100
ED 10	Number of sustainability community services project organized and/or involving students	75
ED 11	Number of sustainability-related startups	0



Percentage of Score to Maximum Score

2. UI GreenMetric Data Submission

2.1 Setting and Infrastructure (SI)

No.	Question	Answer	Score
1.1	Type of higher education institution	Comprehensive	
1.2	Climate	Tropical Wet and Dry	
1.3	Number of campus site	2	
		Includes: 1. Ongkharak Campus (main campus for consideration) 2. Prasanmit Campus	
1.4	Campus setting	Rural	
1.5	Total campus area	1,802,847 m^2	
1.6	Total campus ground floor area of buildings	127,865 m^2	
1.7	Total campus buildings area	299,690 m^2	
1.8	The ratio of open space to total area.	>90-95 %	**SI 1** 150 / 200
		= ((No. 1.5 - No. 1.6) / No. 1.5) x 100% = ((1,802,847 - 127,865) / 1,802,847 x 100% = 92.91%	
1.9	Total area on campus covered in forest vegetation (please provide total area in square meters)	>2-9 %	**SI 2** 25 / 100
		Total area on campus covered in forest vegetation = 124,632 m^2, or 6.91% of the total area of Ongkharak Campus	

No.	Question	Answer	Score
1.10	Total area on campus covered in planted vegetation (please provide total area in square meters)	>30-40 %	**SI 3** 150 / 200
		Total area on campus covered in planted vegetation = 637,872 m^2, or 35.38% of the total area of Ongkharak Campus	
1.11	Total area on campus for water absorption besided forest and planted vegetation	>30 %	**SI 4** 100 / 100
		= ((No. 1.5 - No. 1.6 - No. 1.9 - No. 1.10) / No. 1.5) x 100% = ((1,802,847 - 127,865 - 124,632 - 637,872) / 1,802,847 x 100% = 912,478 / 1,802,847 x 100% = 50.61 %	
1.12	Total number of regular students (part time and full time)	5,916	
1.13	Total number of online students (part time and full time)	0	
1.14	Total number of academic and administrative staff	2,297	
1.15	Estimated total population in campus during pandemic	3,383	
1.16	The total open space area divided by total campus population.	>70 m^2 / person	**SI 5** 200 / 200
		= ((No. 1.5 - No. 1.6) / (No. 1.12 + No. 1.14) = (1,802,847 - 127,865) / (5,916 + 2,297) = 1,674,982 / 8,213 = 203.94 m^2 / person	
1.17	Total university's budget	268,856,000 USD	
1.18	University's budget for sustainability effort	8,613,000 USD	
1.19	Percentage of University's budget for sustainability effort	>1-5 %	**SI 6** 50 / 200

No.	Question	Answer	Score
		= No. 1.18 / No. 1.17 = 8,613,000 / 268,856,000 USD * 100% = 3.2%	
1.20	Percentage of Operation and Maintenance activities during Covid-19 pandemic	>75-99 %	**SI 7** 75 / 100
1.21	Campus facilities for disable and maternity care	Facilities availiable	**SI 8** 100 / 100
1.22	Security and safety facilites	Security infrastructure (CCTV, panic button) available	**SI 9** 25 / 100
1.23	Health infrastructure facilities for students and academic and administrative staff wellbeing	Health infrastructure available (first aid, emergency room, clinic, hospital and certified personel), system and accessible for public	**SI 10** 100 / 100
1.24	Conservation: plant, animal and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities	Conservation program 50-75% implemented	**SI 11** 75 / 100

2.2 Energy and Climate Change (EC)

No.	Question	Answer	Score
2.1	Energy efficient appliances usage	>75 %	**EC 1** 200 / 200
		In 2018, SWU replaced 30,000 out of 34,000 conventional light bulbs with LED ones and 375 out of 5,185 conventional air-conditioners with inverter ones. or = (30,000+375) / (34,000+5,185) x 100% = 77.52%	
2.2	Total campus smart building area	155,849 m^2	
		includes: automatic doors and fingerprint scanning system	
2.3	Smart Building implementation (percentage of the total floor area of smart building to the total all floors building area (smart and non-smart buildings area).	>50-75 %	**EC 2** 225 / 300
		= (No. 2.2 / No. 1.7) x 100% = (155,849 / 299,690) x 100% = 52%	
2.4	Number of renewable energy sources in campus (solar power, bio diesel, wind power, etc)	3 sources	**EC 3** 225 / 300
		includes: 1) solar cell system for lights in the parking and pavement areas 2) production of petroleum from plastic with Pyrolysis method, and 3) production of biomass fuel	
2.5	Please specify renewable energy sources in campus and provide capacity produced in kilowatt hour	Not Applicable	
2.6	Electricity usage per year	21,758,281 kWh	

No.	Question	Answer	Score
2.7	The total electricity usage divided by total campus population (kWh per person).	>=2,424 kWh per person	**EC 4** 0 / 300
		= No. 2.6 / No. 1.15 = 21,758,281 / 3,383 = 6,431.65 kWh per person	
2.8	The ratio of renewable energy production divided by total energy usage per year	<=0.5 %	**EC 5** 0 / 200
2.9	Elements of green building implementation as reflected in all construction and renovation policies	>3 elements	**EC 6** 200 / 200
		includes: 1) clear windows 2) clear glasses 3) building manager, and 4 natural air vent	
2.10	Greenhouse gas emission reduction program	Program(s) aims to reduce all three scopes emissions (Scope 1, 2 and 3)	**EC 7** 200 / 200
		includes: Scope 1: Direct GHG emission (Project: production of petroleum from plastic with Pyrolysis method) Scope 2: Indirect GHG emission from energy purchase (Project: reduction of electricity usage by using solar cell system) Scope 3: Other indirect GHG emission (Project: reduction of water consumption)	
2.11	Please provide the total carbon footprint (CO_2 emission in the last 12 months)	13,638 metric tons	
2.12	The total carbon footprint divided by total campus population	>=2.05 metric tons / person	**EC 8** 0 / 200
		= No. 2.11 / No. 1.15 = 13,638 / 3,383 = 4.03 metric tons / person	
2.13	Number of innovative program(s) during covid-19 pandemic	2 programs	**EC 9** 50 / 100

No.	Question	Answer	Score
		includes: 1. Positive pressure cabinet to assist medical personnel in HRH Princess Maha Chakri Sirindhorn Medical Center 2. Mask testing center to provide the mask efficiency test for the public	
2.14	Impactful university program(s) on climate change	Provide training and educational materials for surrounding communities	**EC 10** 50 / 100

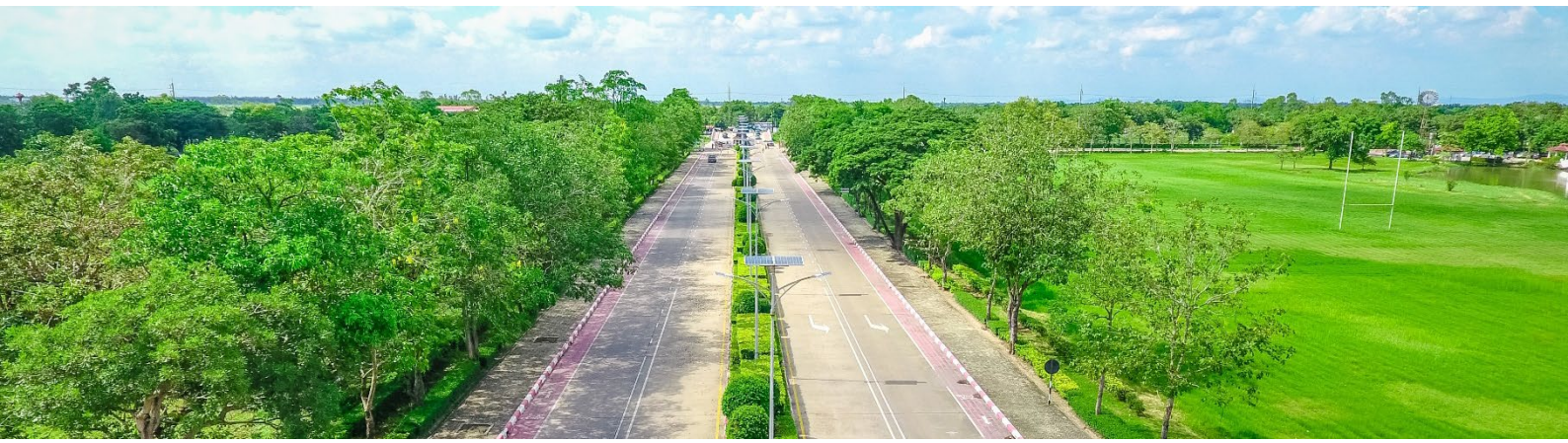
2.3 Waste (WS)

No.	Question	Answer	Score
3.1	Recycling program for university waste	Partial (> 25% - 50% of waste)	**WS 1** 150 / 300
3.2	Program to reduce the use of paper and plastic on campus	more than 3 programs	**WS 2** 300 /300
		includes: 1. Reuse of paper that has been used on only one page 2. Promotion of archiving documents in electronic format 3. Paper printing only when necessary 4. Reducing the use of plastic cups by giving out hard water bottles to students during the freshman welcome event 5. Providing paper cups to reduce the use of plastic cups 6. Providing natural food containers (such as banana-leaf containers) to reduce the use of plastic containers 7. Providing 100%-biodegradable straws 8. Stop handing out plastic bags at all convenient stores on campus 9. Providing cloth bags to students 10. Policies to reduce the use of plastic boxes and prohibit the use of styrofoam boxes on campus	
3.3	Organic waste treatment	Partial (> 50% - 75% of treated)	**WS 3** 225 / 300
3.4	Inorganic waste treatment	Partial (> 25% - 50% of treated)	**WS 4** 150 /300
3.5	Toxic waste treatment	Extensive (> 75% treated)	**WS 5** 300 / 300
3.6	Sewage disposal	Treated conventionally	**WS 6** 150 /300

2.4 Water (WR)

85.00%

No.	Question	Answer	Score
4.1	Water conservation program and implementation	> 50% water conserved	**WR 1** 200 / 200
		Natural lakes and rivers interconnecting waterways across the campus for water conservation	
4.2	Water recycling program implementation	> 25 - 50% water recycled	**WR 2** 150 / 200
4.3	Water efficient appliance usage	> 25 - 50% of water efficient appliances installed	**WR 3** 150 / 200
		SWU has replaced 1,590 out of 5,007 conventional taps and flushes with water-efficient ones. or = 1,590 / 5,007 x 100% = 31.76%	
4.4	Treated water consumed	> 50% - 75% treated water consumed	**WR 4** 150 / 200
4.5	Percentage of additional hand washing and sanitation facilities during pandemic	> 75% of total number of bulding	**WR 5** 200 / 200



2.5 Transportation (WR)

No.	Question	Answer	Score
5.1	Number of cars actively used and managed by university	100	
5.2	Number of cars entering the university daily	580	
5.3	Number of motorcycles entering the university daily	906	
5.4	The total number of vehicles (cars and motorcycles) divided by total campus population.	> 0.125-0.5	**TR 1** 100 / 200
		= (No. 5.1 + No. 5.2 + No. 5.3) / No. 1.15 = (100 + 580 + 906) / 3,383 = 0.47	
5.5	Shuttle service	Shuttle service is provided by university, regular, and environment friendly.	**TR 2** 300 / 300
5.6	Number of shuttles operated in your university	20	
5.7	Average number of passengers of each shuttle	24	
5.8	Total trips of shuttle services each day	108	
5.9	Zero Emission Vehicles (ZEV) policy on campus	Zero Emission Vehicles are available, and provided by university for free	**TR 3** 200 / 200
		includes: 1) free-of-charge bicycles on campus 2) free-of-charge electric carts and electric car charging stations, and 3) canoes	

No.	Question	Answer	Score
5.10	Average number of Zero Emission Vehicles (e.g. bicycles, canoe, snowboard, electric car, etc.) on campus per day	1,618	
5.11	The total number of Zero Emission Vehicles (ZEV) divided by total campus population.	>0.02	**TR 4** 200 / 200
		= No. 5.10 / No. 1.15 = 1,618 / 3,383 = 0.48 vehicle / person	
5.12	Total ground parking area	37,751 m^2	
5.13	Ratio of parking area to total campus area.	>1-4 %	**TR 5** 150 / 200
		= (No. 5.12 / No. 1.5) x 100 % = (37,751 / 1,802,847) x 100% = 2.09 %	
5.14	Transportation program designed to limit or decrease the parking area on campus for the last 3 years (from 2017 to 2019)	Less than 10% decrease	**TR 6** 100 / 200
		includes: program to switch parking lots to recreational areas	
5.15	Number of transportation initiatives to decrease private vehicles on campus	> 3 initiatives	**TR 7** 200 / 200
		includes: 1) shuttle service 2) free-of-charge bicycles 3) policy to reduce the number of vehicles in campus, and 4) policy to switch parking lots to recreational areas	
5.16	Pedestrian path on campus	Pedestrian paths are available, designed for safety, convenience, and in some parts provided with disabled-friendly features	**TR 8** 300 / 300

No.	Question	Answer	Score
5.17	Approximate daily travel distance of a vehicle inside campus only	2 km	

2.6 Education (ED)

No.	Question	Answer	Score
6.1	Number of courses/subjects related to sustainability offered	361	
6.2	Total number of courses/subjects offered	5,631	
6.3	The ratio of sustainability courses to total courses/subjects	> 5-10 %	**ED 1** 150 / 300
		= (No. 6.1 / No. 6.2) x 100 % = (361 / 5,631) x 100 % = 6.41 %	
6.4	Total research funds dedicated to sustainability research	848,584 USD	
6.5	Total research funds	8,509,019 USD	
6.6	The ratio of sustainability research funding to total research funding	> 8-20 %	**ED 2** 100 / 200
		= (No. 6.4 / No. 6.5) x 100 % = (848,584 / 8,509,019) x 100 % = 9.97 %	
6.7	Number of scholarly publications on sustainability published	21-83	**ED 3** 100 / 200
6.8	Number of events related to sustainability	18-47	**ED 4** 150 / 200
6.9	Number of student organizations related to sustainability	>10	**ED 5** 200 / 200
6.10	University-run sustainability website	Website is available, accessible, and updated regularly	**ED 6** 200 / 200
6.11	Sustainability website address (URL)	https://green.swu.ac.th/	
6.12	Sustainability report	Sustainability report is published annually	**ED 7** 100 / 100

No.	Question	Answer	Score
6.13	Number of cultural activities on campus	More than 3 events per year	**ED 8** 75 / 100
			Score is lower than expected due to insufficient evidence
6.14	Number of university program(s) to cope with covid-19 pandemic	More than 3 Programs	**ED 9** 100 / 100
6.15	Number of sustainability community services project organised and/or involving students	More than 3 Programs	**ED 10** 75 / 100
			Score is lower than expected due to insufficient evidence
6.16	Number of sustainability-related startups	None	**ED 11** 0 / 100

Appendices

Appendix A: UI GreenMetric World University Ranking

Appendix B: Details of Data Submission

Appendix C: Related Evidence for Data Submission

For further information, please contact:

Sustainable Development Office

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ส่วนพัฒนาความยั่งยืน
มหาวิทยาลัยศรีนครินทรวิโรฒ