GUIDELINE

UI GreenMetric World University Rankings 2022

"Collective Actions for Transforming Sustainable Universities in the Post-Pandemic Time"

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1. What is UI GreenMetric World University Rankings?

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

We based the rankings broadly on the conceptual framework of Environment, Economy, and Equity. The ranking indicators and categories are intended to be relevant to all. We have designed the indicators and weightings to be as free of bias as possible. The work of collecting and submitting data is relatively straightforward and requires reasonable staff time. Ninety-five universities from 35 countries participated in the 2010 version of UI GreenMetric: 18 from America, 35 from Europe, 40 from Asia, and 2 from Australia. In 2021, 956 universities from 80 countries around the world participated. This shows that UI GreenMetric has been recognized as the first and only world university ranking on sustainability.

Our theme this year is "Collective Actions for Transforming Sustainable Universities in the Post-Pandemic Time". We would like to focus on universities' efforts to continue their sustainability programs and policies based on UI GreenMetric and SDGs while preparing for teaching, learning, and research in post-pandemic Covid-19.

2. What are the objectives?

The rankings aim to:
- Contribute to academic discourses on sustainability in education and the greening of campus;
- Promote university-led social change about sustainability goals;
- Be a tool for self-assessment on campus sustainability for higher education institutions (HEIs) around the globe;
- Inform governments, international and local environmental agencies, and society about sustainability programs on campus.

3. Who can participate?

All universities in the world with a strong commitment to sustainability issues can participate in the annual UI GreenMetric World University Rankings.

4. What are the benefits?

Universities that participate in UI GreenMetric rankings by submitting their data can expect to enjoy several benefits such as internationalization and recognition, increasing awareness of sustainability issues, social change and action, and networking. Registration is free of charge.

a. Internationalization and recognition

Participation in UI GreenMetric can help the university's efforts in internationalization and recognition by getting its sustainability efforts on the global map. Participation in UI GreenMetric can result in an increase of hits to your university website, more mentions of the institution relative to the issues of sustainability on web pages, more correspondence with institutions interested to collaborate with your university, and recognition from your alumni and public as a university with strong concern with sustainability.

b. Increasing awareness of sustainability issues

Participation can help to increase awareness in the university and beyond about the importance of sustainability issues. The world faces unprecedented global challenges such as population trends, global warming, overexploitation of natural resources, oil-dependent energy, water, and food shortages, and sustainability. We realize that higher education has a crucial role to play in addressing these challenges. UI GreenMetric leverages the crucial role that HEIs can play in raising awareness by doing an assessment and comparing efforts in education for sustainable development, sustainability research, campus greening, and social outreach.

c. Social change and action

UI GreenMetric is more than raising awareness; it is about encouraging concrete change. It is crucial that understanding move forward to action to address emerging global challenges. Only by working together can we tackle global challenges on sustainability.

d. Networking

All participants of UI GreenMetric are automatically members of UI GreenMetric World University Rankings Network (UIGWURN) which was established in 2017. In this network, participants can share their best practices in sustainability programs as well as network with other participants worldwide by attending the annual UI GreenMetric International Workshop and regional/national workshops hosted by approved host universities. Participants can also arrange technical workshops on UI GreenMetric at their respective universities.

As a platform to turn sustainability issues into action, the network is managed by UI GreenMetric as the secretariat. Programs and directions are proposed and decided by the steering committee comprising the UI GreenMetric secretariat, regional, and national coordinators as in the table below:

Table 1 National coordinators of UI GreenMetric World University Rankings Network

No.	National Coordinator
1	El Bosque University – Colombia
2	National University of Colombia – Colombia
3	University of Sao Paulo (USP) – Brazil
4	Universidad Tecnica Federico Santa Maria – Chile
5	Escuela Superior Politecnica De Chimborazo (ESPOCH) – Ecuador
6	University of Sonora – Mexico
7	University of Sousse – Tunisia
8	Bülent Ecevit University – Turkey
9	Istanbul University – Turkey
10	Jordan University of Science and Technology (JUST) – Jordan
11	Kazakh National Agrarian University – Kazakhstan
12	King Abdul Aziz University – Saudi Arabia
13	Mahidol University – Thailand
14	National Pingtung University of Science and Technology (NPUST) – Chinese Taipei
15	Pakistan Higher Education Commission – Pakistan
16	Weifang Institute of Technology – China
17	Universitas Diponegoro – Indonesia
18	University of Zanjan – Iran
19	Holy Spirit University of Kaslik (USEK) – Lebanon
20	University of Sharjah – United Arab Emirates
21	Universiti Putra Malaysia – Malaysia
22	OMNES Education – France
23	RUDN University – Russia
24	Riga Technical University – Latvia
25	University College Cork – Ireland
26	University of Bologna – Italy
27	University of Minho – Portugal
28	University of Navarra – Spain
29	University of Oviedo – Spain

30	Adam Mickiewicz University – Poland
31	University of Szeged – Hungary
32	University of Pecs – Hungary

Currently, the network is comprised of 956 participating universities located in the dynamic and diverse Asia, Europe, Africa, Australia, America, and Oceania, with more than 2 million faculty members, 17 million students, and 68 billion USD in total research funds for environment and sustainability. The number will continue to increase as national coordinators actively encourage other universities in their countries to join UI GreenMetric.

5. How can universities participate?

To participate in the ranking is simple. The sustainability director or other persons in charge can visit www.greenmetric.ui.ac.id to learn about the ranking and if interested they can e-mail the UI GreenMetric secretariat (greenmetric@ui.ac.id) to get an invitation letter and access to the system. If you have already participated in the rankings, you will be sent an invitation to participate. If you decide not to participate due to particular reasons, it would be appreciated if you inform the secretariat. Of course, you can join the survey again in the future. It is always useful if your university appoints a person in charge of a contact person. You are welcome to contact the secretariat for any inquiries regarding the survey.

6. How was UI GreenMetric World University Ranking developed?

The decision to establish UI GreenMetric was influenced by several factors:

a. Idealism

Future challenges to civilization include population pressure, climate change, energy security, environmental degradation, water, and food security, and sustainable development. Despite many scientific studies and public discussions, governments around the world have yet to commit to a sustainable agenda. Concerned people at Universitas Indonesia have come to the idea that universities have the privilege to help develop a consensus on key areas for action. They include such concepts as the Triple Bottom Line, the 3 Es (Equity, Economy, Environment), Green Building, and Education for Sustainable Development (ESD).

UI GreenMetric World University Rankings serves as a tool for universities to deal with sustainability challenges our world is facing. Many universities use UI GreenMetric questionnaire as a tool to measure, monitor and evaluate their sustainability strategic plan. Universities can work together to reduce negative environmental impacts. UI GreenMetric is a nonprofit institution; therefore, many universities can participate in the rankings for free.

b. UI GreenMetric World University Rankings model

Although UI GreenMetric was not based on any existing ranking system, it was developed with the awareness of several existing sustainability assessment systems and academic university rankings. Sustainability systems that were referred to during the design phase of UI GreenMetric included the Holcim Sustainability Awards, GREENSHIP (the rating system recently developed by the Green Building Council of Indonesia which was based on the Leadership in the Energy and Environmental Design (LEED) system used in the U.S. and elsewhere), the Sustainability, Tracking, Assessment and Rating System (STARS) and the College Sustainability Report Card (also known as the Green Report Card).
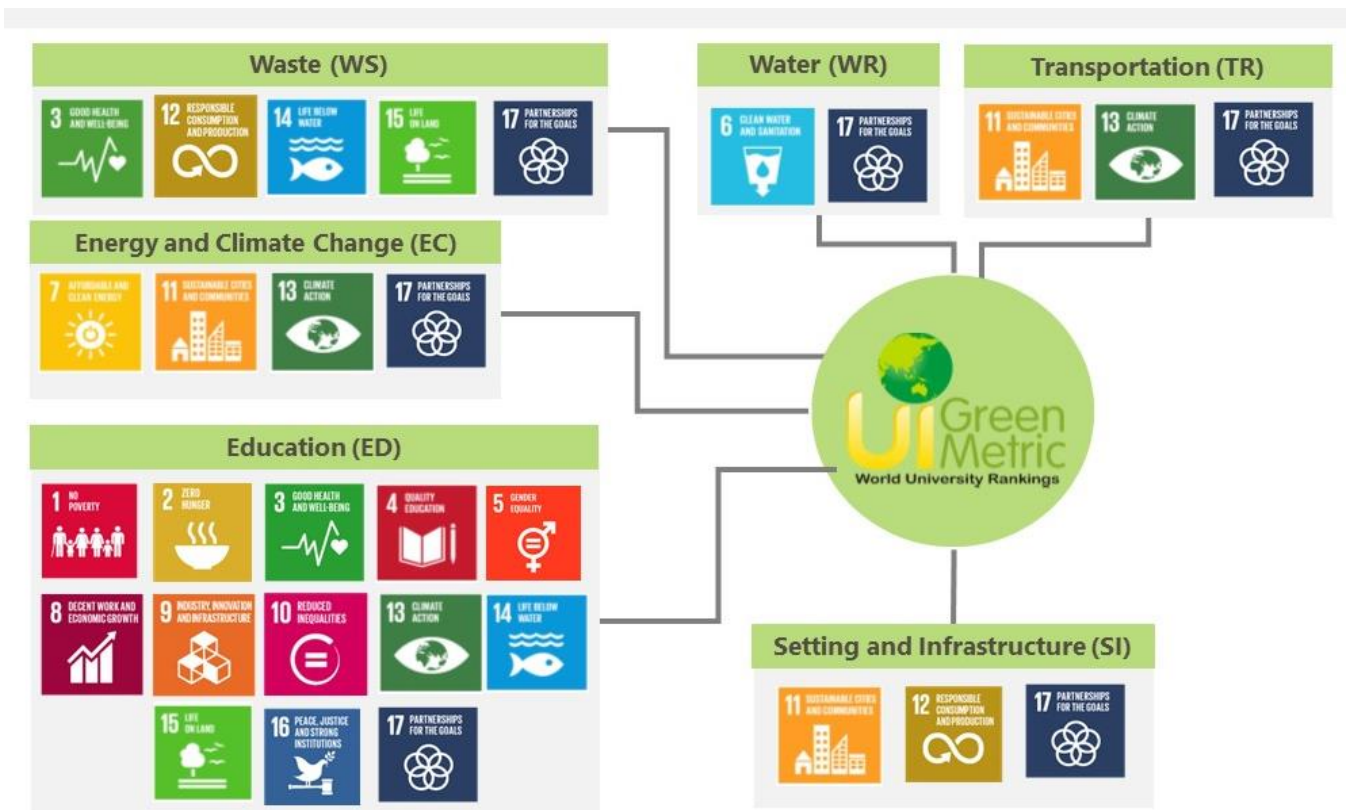
Figure 1. UI GreenMetric and SDGs

UN Environment's challenge in the 2030 Agenda is to develop and enhance integrated approaches to sustainable development – approaches that will demonstrate how improving the health of the environment will bring social and economic benefits. Aiming at reducing environmental risks and increasing the resilience of societies and the environment, UN Environment action fosters the environmental dimension of sustainable development and leads to socio-economic development (UNEP, n.d.). These 17 aspects of SDGs are captured in the UI GreenMetric criteria and indicators.

During the early stages of the design of UI GreenMetric, assistance was sought on the issues from experts in both ranking and sustainability. These included the holding of a conference on university rankings and video conferences as well as expert meetings on sustainability and green building. The latest expert workshop on UI GreenMetric, The 5th International Workshop on UI GreenMetric World University Rankings, was held on 14 - 16 April 2019 at University College Cork. Due to the pandemic, the 6th International Workshop on UI GreenMetric World University Rankings (IWGM 2020) was held virtually at the University of Zanjan, Iran in October 2020

In 2010, 23 indicators were used within the five categories to calculate the ranking scores. In 2011, 34 indicators were used. Then in 2012, the indicator of "smoke-free and drug-free campus environment" was removed and 33 indicators were used to evaluate the green campus. In 2012, the indicators were also categorized into 6 categories including the education criteria. One change being considered was the formation of a new category for sustainability education and research. In 2015, the theme was the carbon footprint. We added two questions related to this issue in the energy and climate change section. We also improved our methodology by adding a few sub-indicators that were related to water and transportation in the 2015 ranking. A major change in methodology was done in 2017 by considering new trends in sustainability issues. In 2018, the theme was Universities, Impacts, and Sustainable Development Goals (SDGs). We added detailed answer options to the following indicators: total area on campus covered in forest, planted vegetation, water absorption besides the forest and planted vegetation, energy-efficient appliances usage, smart building implementation, the ratio of renewable energy produce/production towards total energy usage per year, elements of green building

implementation, the greenhouse gas emission reduction program, all of waste and water criteria, the ratio of the parking area to the total campus area, transportation initiatives to decrease private vehicles on campus, the transportation program designed to limit or decrease the parking area on campus, shuttle services, Zero-Emission Vehicles (ZEV) and pedestrian policy on campus, and the existence of a university-run sustainability website. We also added a new question on Education Criteria, i.e., existence of a published sustainability report. We changed the question of the bicycle into Zero-Emission Vehicles by considering the green transportation related to universities worldwide. In 2019, the theme was Sustainable University in a Changing World: Lessons, Challenges, and Opportunities. We improved the questionnaire in the options for answers and more explanations about smart building indicators. In 2020, the theme of the questionnaire is Universities' Responsibility for Sustainable Development Goals and World's Complex Challenges. This year UI GreenMetric questionnaire tried to approach the impacts that universities can provide in an effort in planning a green campus for the community. To measure the social, cultural, and economic impacts and to respond to the pandemic, new questions are added to UI GreenMetric World University Rankings Questionnaire in 2021. In 2022, there will be indicator adjustments and assessments related to the current pandemic condition. There is also a new indicator related to water pollution.

In addition, evidence is vital to the evaluation process by the reviewer, so please ensure the evidence that you provide is as complete as possible.

c. Realities and challenges

The goal of creating a world university sustainability ranking was done with an understanding that the diversity of types of universities, their missions, and their contexts would pose problems for the methodology. We are fully aware of the fact that universities differ in their levels of awareness and commitment to sustainability, their budgets, the amount of green cover on their campus, and many other dimensions. These issues are complex, but UI GreenMetric is committed to continually improving the ranking so that it will be both useful and fair to all. We are open to suggestions from our members.

7. Who are the team?

From 2010 to 2020, UI GreenMetric World University Rankings was managed by a team under the Rector of Universitas Indonesia. Since 2021, UI GreenMetric has to manage itself as the university has reduced its financial support. The team members consist of management, expert members, and reviewers who come from various academic backgrounds and experiences, such as Environmental Sciences, Engineering, Architecture, Urban Design, Dentistry, Public Health, Statistics, Chemistry, Physics, Linguistics, and Cultural Studies.

8. What is the methodology?

a. The criteria

This year's categories and weighting of points have been modified to accommodate new questions and are shown as follows.

Table 2 Categories used in the rankings and their weighting

No	Category	Percentage of Total Points (%)
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 and Research (ED)	18
	TOTAL	**100**

Table 3 Indicators and categories suggested for use in the 2020 rankings

No	CRITERIA	Point	Weighting
1	**Setting and Infrastructure (SI)**		**15%**
SI1	The ratio of open space area to the total area	200	
SI2	Total area on campus covered in forest vegetation	100	
SI3	Total area on campus covered in planted vegetation	200	
SI4	Total area on campus for water absorption besides the forest and planted vegetation	100	
SI5	The total open space area divided by the total campus population	200	
SI6	Percentage of university budget for sustainability efforts	200	
SI7	Percentage of operation and maintenance activities of building in one year period	100	
SI8	Campus facilities for disabled, special needs, and/or maternity care	100	
SI9	Security and safety facilities	100	
SI10	Health infrastructure facilities for students, academics, and administrative staff's wellbeing	100	
SI11	Conservation: plant (flora), animal (fauna), and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities	100	
	Total	**1500**	
2	**Energy and Climate Change (EC)**		**21%**
EC1	Energy-efficient appliances usage	200	
EC2	Smart building implementation	300	
EC3	Number of renewable energy sources on campus	300	
EC4	Total electricity usage divided by total campus' population (kWh per person)	300	
EC5	The ratio of renewable energy production divided by total energy usage per year	200	
EC6	Elements of green building implementation as reflected in all construction and renovation policies	200	
EC7	Greenhouse gas emission reduction program	200	
EC8	Total carbon footprint divided by total campus' population (metric tons per person)	200	
EC9	Number of the innovative program(s) in energy and climate change	100	
EC10	Impactful university program(s) on climate change	100	
	Total	**2100**	
3	**Waste (WS)**		**18%**
WS1	Recycling program for university's waste	300	
WS2	Program to reduce the use of paper and plastic on campus	300	
WS3	Organic waste treatment	300	
WS4	Inorganic waste treatment	300	
WS5	Toxic waste treatment	300	
WS6	Sewage disposal	300	
	Total	**1800**	
4	**Water (WR)**		**10%**
WR1	Water conservation program & implementation	200*	

WR2	Water recycling program implementation	200	
WR3	Water-efficient appliances usage	200	
WR4	Consumption of treated water	200	
WR5	Water pollution control in the campus area	200	
	Total	**1000**	
5	**Transportation (TR)**		**18%**
TR1	The total number of vehicles (cars and motorcycles) divided by the total campus' population	200	
TR2	Shuttle services	300	
TR3	Zero-Emission Vehicles (ZEV) policy on campus	200	
TR4	The total number of Zero-Emission Vehicles (ZEV) divided by the total campus population	200	
TR5	The ratio of the ground parking area to the total campus' area	200	
TR6	Program to limit or decrease the parking area on campus for the last 3 years (from 2019 to 2021)	200	
TR7	Number of initiatives to decrease private vehicles on campus	200	
TR8	The pedestrian path on campus	300	
	Total	**1800**	
6	**Education and Research (ED)**		**18%**
ED1	The ratio of sustainability courses to total courses/subjects	300	
ED2	The ratio of sustainability research funding to total research funding	200	
ED3	Number of scholarly publications on sustainability	200	
ED4	Number of events related to sustainability	200	
ED5	Number of student organizations related to sustainability	200	
ED6	University-run sustainability website	200	
ED7	Sustainability report	100	
ED8	Number of cultural activities on campus	100	
ED9	Number of university program(s) to improve teaching and learning	100	
ED10	Number of sustainability community services projects organized and/or involving students	100	
ED11	Number of sustainability-related startups	100	
	Total	**1800**	

Note: Light green indicates new questions introduced in 2022

b. Revised indicators

To respond to the current post-pandemic situation, and to add metrics for social, cultural, and economic aspects of sustainability, some indicators have been revised in this year's questionnaire. In Table 3, some questions are colored in light green and new scorings are indicated with an asterisk.

c. Scoring

Scoring for each item will be numeric so that our data can be processed statistically. Scores will be simple counts of things or responses on a scale of some sort. Details of the scoring can be found in **Appendix 1**.

d. The weighting of criteria

Each of the criteria will be categorized in a general class of information and when the results are processed, the raw scores will be weighted to give a final calculation.

e. Refining and improving the research instrument

While we have put every effort into the design and implementation of the questionnaire, we realize that there are bound to be shortcomings. Therefore, we will be reviewing the criteria and the weightings continuously to accommodate input from participants and state-of-the-art developments in the field. We welcome your comments and input.

f. Data submission

Data from the universities should be submitted through an online system between 18 May – 31 October 2022.

We welcome any e-mail or hardcopy of your university sustainability evaluation and report as well as evidence on sustainability activities in your university.

Data submission
18 May – 31 October

Validation
October - November

Results Announcement
December
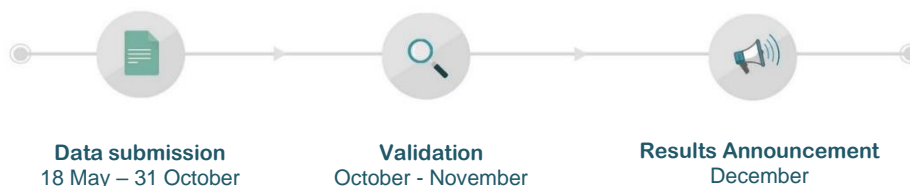
g. Results

The preliminary results of the metrics are expected to be submitted on 31 October 2022, and the final complete result will be released in early December 2022.
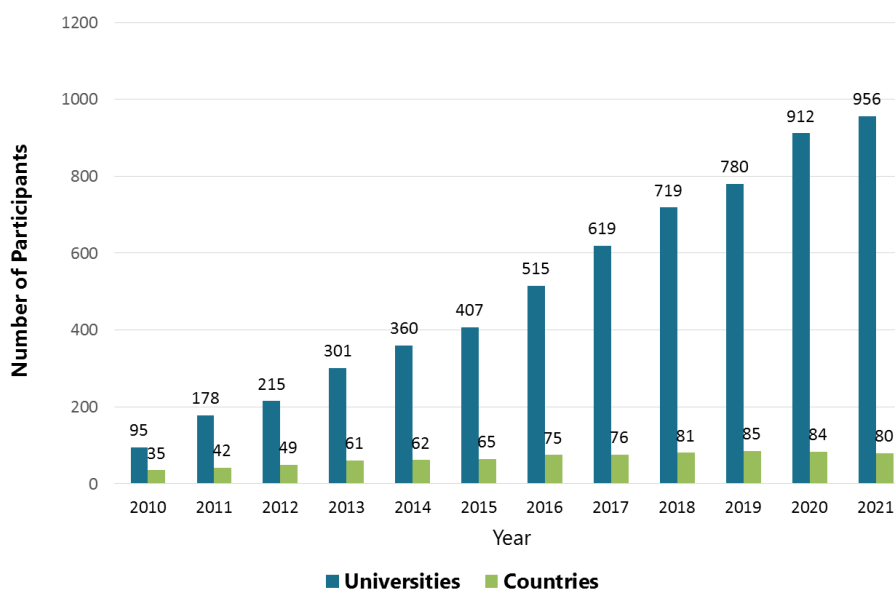
The basic ranking results (overall rankings 2021, rankings by campus setting, rankings by country, and rankings by region) and the detailed scores can be accessed via http://greenmetric.ui.ac.id/ranking/archive/2021/

9. Who are our networks?

The idealism surrounding awareness of sustainability issues is now generating a network of like-minded organizations. The network is organized and run by UI GreenMetric World University Rankings secretariat, a steering committee consisting of national and/or regional coordinator representatives, in cooperation with universities that host UI GreenMetric World University Rankings events. The national workshops were held in 2017 in many universities and countries, i.e. Kazakh National Agrarian University, Kazakhstan; El Bosque University, Colombia; University of Sao Paulo, Brazil; Diponegoro University, Indonesia; University of Bologna, Italy; Aalborg University, Denmark; King Abdulaziz University, Saudi Arabia; and Peoples' Friendship University of Russia, Russia.

In 2018, UI GreenMetric's progress was also presented in different forums such as the 4th International Workshop on UI GreenMetric (IWGM), Indonesia; IREG Forum Belgium, ISCN Conference, Sweden; CRUI Working Group on International Academic Rankings, Italy; International Association for Impact Assessment (IAIA) Conference, Malaysia; and Global Symposium on Green Campus Development, China. In the same year, UI GreenMetric also presented at the National Workshop in several universities as the hosts i.e. University of Zanjan and Ferdowsi University of Mashhad, Iran; Atyrau State University, Kazakhstan; King Abdulaziz University, Saudi Arabia; Nottingham University, United Kingdom; the National University of Colombia and University del Rosario, Colombia; University of Sao Paulo, Brazil; Pakistan Higher Education Commission, Pakistan; Universiti Utara Malaysia, Malaysia; Institut Teknologi Sepuluh Nopember, Indonesia; Riga Technical University, Latvia; Peoples' Friendship University of Russia, Russia; Universidad Tecnica Federico Santa Maria, Chile; and OMNES Education, France.

In 2019, UI GreenMetric was invited by various organizations and communities: The 4th General Assembly Meeting of Green University Union of Taiwan 2019, CRUE Meeting, World Environmental Education Congress, and Building Universities' Reputations (BUR) 2019 Conference. This year National and Regional Workshops were also held in several universities as the hosts, i.e. Universidad Autónoma de Occidente and Universidad Icesi, Colombia; University of Szeged dan University of Pecs, Hungary; Universitas Hasanuddin, Indonesia; Nazarbayev University, Kazakhstan; Universidade Federal de Lavraz, Brazil; Holy Spirit University of Kaslik (USEK), Lebanon; RUDN University, Rusia; Escuela Superior Politecnica De Chimborazo (ESPOCH), Ecuador; University of Sousse, and Tunisia; Cyprus International University, North Cyprus.

Early in 2020 two workshops have been conducted in France and Saudi Arabia. UI GreenMetric activities in 2020 continued amid the Covid-19 pandemic with more than 60 workshops and webinars successfully conducted online.

In 2020, UI GreenMetric has held a Virtual Workshops with university representatives from each country: Nottingham University (United Kingdom), Mahidol University (Thailand), Universitas Riau (Indonesia), Fundación Universidad del Norte Barranquilla (Colombia), University of Sharjah (United Arab Emirates), RUDN University (Russia), University of Campinas (Brazil), Universidad de Sonora (Mexico) and University of Zanjan (Iran).

In 2021, the Virtual Workshops continues with new representatives and more countries holding it, including Universiti Putra Malaysia (Malaysia), University of Szeged (Hungary), Mahidol University (Thailand), University of Zanjan (Iran), Tarbiat Modares University (Iran), Universitas Sebelas Maret (Indonesia), Universidad Hemisferios (Ecuador), RUDN University (Russia), Universidad Tecnologica de Pereira (Colombia), Universidad Autonoma de Nuevo Leon (Mexico), Inseec U (France).

Moreover, UI GreenMetric with University of Sao Paolo, Universitas Indonesia, El Bosque University, University of Szeged, University of Sharjah, Escuela Superior Politécnica de Chimborazo, and the University of Sousse offer UI GreenMetric Online Course on Sustainability 2021. This course is the first unique global online course offered by top universities in four continents and seven countries to their students. It gives the students an understanding of the key challenges and pathways to sustainable development in Brazil, Colombia, Ecuador, Hungary, Indonesia, Tunisia, and The United Arab Emirates. The course is designed as an undergraduate-level introduction to the most challenging question facing our generation: how can countries evolve in ways that are socially inclusive and environmentally sustainable?. The course discusses the complex interplay between the economy, social life, and

our planet's physical environment, as well as the consequences of human activities on the planet's environment and the solutions.

10. What are our plans?

UI GreenMetric always takes into consideration how to better achieve its own goals, how to learn from constructive criticism about rankings and the advancement of ESD, and how to learn from the diverse experience of participants with different goals and in different settings. We plan to continue developing the questionnaire and give more services to the members of its network. We will also strengthen our networks through innovative programs.

11. How to contact us?

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Tel: (021) – 29120936
Website: http://www.greenmetric.ui.ac.id/

Questionnaire (Criteria and Indicators)

There are six main categories in the questionnaire which consist of setting and infrastructure (SI), energy and climate change (EC), waste (WS), water (WR), transportation (TR), and education and research (ED). These categories are divided into several sections, with detailed explanations of the questions. In general, you can use the data to reflect your university in the best possible way.

1. **Setting and Infrastructure (SI)**

   The campus setting and infrastructure information will provide the basic information about the university's consideration of a green environment. This indicator also shows whether the campus deserves to be called a Green Campus. The aim is to encourage the participating universities to provide more spaces for greenery and safeguard the environment, as well as the development of sustainable energy.

   ### 1.1.   Types of the higher education institution

   Please select one of the following options:
   [1]   Comprehensive
   [2]   Specialized higher education institution

   ### 1.2.   Climate

   Please select one of the following options that clearly describes the climate in your region:
   [1]   Tropical wet
   [2]   Tropical wet and dry
   [3]   Semiarid
   [4]   Arid
   [5]   Mediterranean
   [6]   Humid subtropical
   [7]   Marine west coast/Oceanic Climate
   [8]   Humid continental
   [9]   Subarctic

   ### 1.3.   Number of campus sites

   Please state the number of separate locations in which your university runs academic purposes. For example, if your university has one campus or more than one campus in different districts, towns, or cities that are separated from one another, please state the total number of university locations.

   Evidence is required

   ### 1.4.   Campus setting

   Please select one of the following options:
   [1]   Rural
   [2]   Suburban
   [3]   Urban
   [4]   City center
   [5]   High-rise building area

   Evidence is required

   ### 1.5.   Total campus area (m^2)

   Please state the total areas of your campus (in square meters). It is expected that the total area counted is only those in which academic activities are conducted (including the administration buildings, student and staff activities buildings, classes, dormitories, and canteens). Forest and fields and other areas can only be counted if they are used for academic purposes (i.e., field lecture, practicum, educational training, etc.).

   Evidence is required

1.6. Total campus ground floor area of buildings (m^2)

Please provide information on the area occupied by buildings, by providing the total area of the ground floor parts of your university buildings on your campus.

1.7. Total campus buildings area (m^2)

Please provide information on the area occupied by buildings, by providing the total floor area (all floors) including ground floors and other floors of your university buildings on your campus.

Evidence is required

1.8. The ratio of open space area to total area (SI.1)

Please provide the percentage of ratio open space area to total area on campus.

Formula: (((1.5-1.6)/1.5) x 100%)

Please select one of the following options:
[1] ≤ 1%
[2] > 1 - 80%
[3] > 80 - 90%
[4] > 90 - 95%
[5] > 95%

Evidence is required

1.9. Total area on campus covered in forest vegetation (SI.2)

Please provide the percentage of the area on campus covered in vegetation in the form of forest (an area covered mainly with big trees and its biodiversity, natural and/or planted; a large amount of dense mass of vertical growth and undergrowth for conservation purposes), owned by the university, to the total campus area. Please select one of the following options:
[1] ≤ 2%   (provide the total area in square meters)
[2] > 2 - 9%   (provide the total area in square meters)
[3] > 9 - 22%   (provide the total area in square meters)
[4] > 22 - 35%   (provide the total area in square meters)
[5] > 35%   (provide the total area in square meters)

Evidence is required

1.10. Total area on campus covered in planted vegetation (SI.3)

Please provide the percentage of the area on campus covered in planted vegetation **excluding** forests to the total campus area. Lawns, gardens, green roofs, internal planting, and vertical garden can be counted, for vegetation purposes. Please select one of the following options:
[1] ≤ 10%   (provide the total area in square meters)
[2] > 10 - 20%   (provide the total area in square meters)
[3] > 20 - 30%   (provide the total area in square meters)
[4] > 30 - 40%   (provide the total area in square meters)
[5] > 40%   (provide the total area in square meters)

Evidence is required

1.11. Total area on campus for water absorption besides the forest and planted vegetation (SI.4)

Please provide the percentage of the total area of ground surfaces (i.e., soil, grass, concrete block, synthetic field, etc.) dedicated for water absorption to the total campus area. A larger water absorption area is desirable. Please select one of the following options:
[1] ≤ 2%   (provide the total area in square meters)

[2] > 2 - 10%   (provide the total area in square meters)
[3] > 10 - 20%   (provide the total area in square meters)
[4] > 20 - 30%   (provide the total area in square meters)
[5] > 30%   (provide the total area in square meters)

Evidence is required

1.12. Total number of regular students

Please provide the total number of regular students (full-time and part-time) at your university. A regular student is defined as a registered and active student in one semester (Effective Full-Time Students (EFTS)), excluding short-term students (i.e., foreign exchange and short course students).

1.13. Total number of online students

The total number of students registered as online-only students (excluding regular students), at your university.

1.14. Total number of academic and administrative staff

Please state the total number of effective full-time academic staff (lecturers, professors, and researchers) and administrative staff working in your university.

1.15. Estimated annual total population

Please state the estimated total population who participated in academic activities on campus, including students and staff who came to campus in one year period. For example, the university can calculate the average population from May 2021 to April 2022.

1.16. The total open space area divided by the total campus population (SI.5)

Please provide the open space area per person on your campus.

Formula: ((1.5-1.6)/(1.15))

Please select one of the following options:
[1] ≤ 10 m^2/person
[2] > 10 – 20 m^2/person
[3] > 20 – 40 m^2/person
[4] > 40 – 70 m^2/person
[5] > 70 m^2/person

1.17. Total university budget (in US Dollars)

Please provide the average university budget per annum over the last 3 years in US Dollars.

1.18. University budget for sustainability efforts (in US Dollars)

Please provide the average university budget for infrastructure, facilities, personnel costs, research, and others related to the sustainability efforts per annum over the last 3 years in US Dollars.

Evidence is required

1.19. Percentage of university budget for sustainability efforts (SI.6)

Please provide the percentage calculation of the sustainability budget (infrastructure, facilities, personnel cost, and others related to the sustainability efforts) to the total university budget. Please select one of the following options:
[1] ≤ 1%
[2] > 1 - 5%
[3] > 5 - 10%
[4] > 10 - 15%

[5] > 15%

1.20. Percentage of operation and maintenance activities of building in one year period (SI.7)

Please provide the percentage of operation and maintenance activities of a building (i.e., administration building, laboratory, classroom, etc.) that have been conducted in one year period (for example, from May 2021 April 2022). The percentage is defined as (Total building area operated and maintained/ Total campus buildings area) × 100%. Please select one of the following options:

[1] ≤ 25%
[2] > 25 - 50%
[3] > 50 - 75%
[4] > 75 - 99%
[5] 100%

Evidence is required

*Please provide evidence of university new building construction (if any), new meeting/class protocol arrangement, operation (i.e., management), and routine building maintenance activities.

1.21. Campus facilities for disabled, special needs, and/or maternity care (SI.8)

Please provide information on-campus facilities for disabled, special needs, and or maternity care (i.e., Toilet, lactation room, transportation, daycare). Please select one of the following options:

[1] None
[2] The policy is in place
[3] Facilities are in the planning stage
[4] Facilities are partially available and operated
[5] Facilities exist in all buildings and are fully operated

Evidence is required

1.22. Security and safety facilities (SI.9)

Please provide information on on-campus facilities' support for security and safety for campus residents. Please select one of the following options:

[1] Passive security system
[2] Security infrastructure (CCTV, emergency hotline/button) available and fully function
[3] Security infrastructure (CCTV, emergency hotline/button, personnel, fire extinguisher, hydrant) available and fully function
[4] Security infrastructure is available and fully functions and security responding time for accidents, crime, fire, and natural disasters is more than 10 minutes
[5] Security infrastructure is available and fully functions and security responding time for accidents, crime, fire, and natural disasters is less than 10 minutes

Evidence is required

1.23. Health infrastructure facilities for students, academics, and administrative staff's well-being (SI.10)

Please provide information on Infrastructure that support student, academics, and staff's well-being on campus, particularly for health services. Please select one of the following options:

[1] Health infrastructure (first aid) is not available.
[2] Health infrastructure (first aid, emergency room, clinic, and personnel) are available
[3] Health infrastructure (first aid, emergency room, clinic, and certified personnel) are available
[4] Health infrastructure (first aid, emergency room, clinic, hospital, and certified personnel) are available
[5] Health infrastructure (first aid, emergency room, clinic, hospital, and certified personnel) are available and accessible to public

Evidence is required

1.24. Conservation: plant (flora), animal (fauna), and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities (SI.11)

Please provide information on the campus program for the conservation of plant (flora), animal (fauna), and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities. Please select one of the following options:

[1] Conservation program in preparation
[2] Conservation program 1-25% implemented
[3] Conservation program 25-50% implemented
[4] Conservation program 50-75% implemented
[5] Conservation program fully implemented

Evidence is required

* If conservation is conducted in another location, your university can include them in the evidence document and put that conservation area into the total campus area (question 1.5)

2. Energy and climate change (EC)

The university's attention to the use of energy and climate change issues is the indicator with the highest weighting in this ranking. In our questionnaire, we define several indicators for this area of concern, i.e., energy-efficient appliances usage, the implementation of smart buildings/automation buildings/intelligent buildings, renewable energy usage policy, total electricity usage, energy conservation programs, elements of green buildings, climate change adaptation and mitigation programs, greenhouse gas emission reductions policy, and carbon footprint. Within these indicators, the universities are expected to increase their efforts in energy efficiency in their buildings and to care more about nature and energy resources.

2.1. Energy efficient appliances usage (EC.1)

Please compare the number of energy-efficient appliances and the number of conventional ones used on your campus and provide them in percentages. Examples of energy-efficient appliances are A/C with inverter technology, LED light bulbs, Energy Star-certified computers, etc. Please select one of the following options:

[1] < 1%
[2] 1 - 25%
[3] > 25 - 50%
[4] > 50 - 75%
[5] > 75%

Evidence is required

2.2. Total campus smart building area (m²)

Please provide the information on the total area (including ground floors and other floors) of your university smart buildings on your campus. A building that is classified as a smart building must have the general requirements of smart building features: automation, safety (physical security, presence sensors, video surveillance/CCTV), energy, water (sanitation), indoor environment (thermal comfort and air quality), and lighting (Illumination, low power lighting). An example of detailed general requirements can be found in **Appendix 2** and the **template of evidence**. We expect that your smart buildings are supported with **Building Management System (BMS)/Building Information Modelling (BIM)/Building Automation System (BAS)/Facility Management System (FMS)** and are equipped with at least 5 of the remaining identified requirements, where possible, interfaced with the BMS/BIM/BAS/FMS. BMS/BIM/BAS/FMS, which is a hardware and software system for data collection, management, control, and monitoring of the mechanical and/or electrical systems of the building, for example, ventilation, hydraulic, lighting systems, electro-motor force, security systems, fire prevention. All features should be established to generate a beneficial environmental impact over the building lifecycle. The efficiency introduced by the usage of smart appliances in the building(s) should be elaborated on an annual sustainability report.

2.3. Smart building implementation (EC.2)

Please provide the stage of smart building implementation in your university (percentage of the total floor areas of the smart building to the total all floor building areas (smart and non-smart building area)).

Formula: ((2.2/1.7) x 100%)

Please select one of the following options:
[1] < 1%
[2] 1 - 25%
[3] > 25 - 50%
[4] > 50 - 75%
[5] > 75%

Evidence is required

2.4. Number of renewable energy sources on campus (EC.3)

The availability of more sources of renewable energy is considered to indicate that a university has put more effort into providing alternative energy. Please select the number of renewable energy sources used on your campus:
[1]   None
[2]   1 source
[3]   2 sources
[4]   3 sources
[5]   > 3 sources

2.5. Renewable energy sources and their capacity (in kilowatt-hour)

Please select one or more of the following alternative energy sources used on your campus and please provide the capacity of the energy produced in kilowatt-hours:
[1]   None
[2]   Biodiesel   (provide capacity in kilowatt-hour)
[3]   Clean biomass   (provide capacity in kilowatt-hour)
[4]   Solar power   (provide capacity in kilowatt-hour)
[5]   Geothermal   (provide capacity in kilowatt-hour)
[6]   Wind power   (provide capacity in kilowatt-hour)
[7]   Hydropower   (provide capacity in kilowatt-hour)
[8]   Combine Heat and Power   (provide capacity in kilowatt-hour)

Evidence is required

2.6. Electricity usage per year (in kilowatt-hour)

Please provide the total energy used in the last 12 months in your entire university area (in kilowatt hour or kWh) for all purposes such as lighting, heating, cooling, running university laboratories, etc.

Evidence is required

2.7. Total electricity usage divided by total campus' population (kWh per person) (EC.4)

Please provide the total electricity usage divided by the total campus' population.

Formula: (2.6) / (1.15)

Please select one of the following options:
[1] ≥ 2424 kWh
[2] > 1535 – 2424 kWh
[3] > 633 - 1535 kWh
[4] > 279 - 633 kWh

[5] < 279 kWh

2.8. The ratio of renewable energy production divided by total energy usage per year (EC.5)

Please provide the ratio of renewable energy production divided by the total energy usage per year. Please select one of the following options:

[1] ≤ 0.5%
[2] > 0.5 - 1%
[3] > 1 - 2%
[4] > 2 - 25%
[5] > 25%

Evidence is required

2.9. Elements of green building implementation as reflected in all construction and renovation policies (EC.6)

Please provide information on the elements of green building implementation as reflected in the construction and renovation policies in your university (i.e., natural ventilation, full natural daylighting, the existence of a building energy manager, the existence of a Green Building, etc.). Please select one that applies from the following list:

[1]   None. Please select this option if there is no green building implementation at your university.
[2]   1 element
[3]   2 elements
[4]   3 elements
[5]   > 3 elements

Evidence is required

2.10. Greenhouse gas emission reduction program (EC.7)

Please select a condition that reflects the current condition of your university in providing formal programs (from any scope) to reduce greenhouse gas emissions. Please select from the following options:

[1] None. Please select this option if the reduction program is needed, but nothing has been done.
[2] Program in preparation (i.e., feasibility study and promotion)
[3] Program(s) aims to reduce one out of three scopes emissions (Scope 1 or 2 or 3)
[4] Program(s) aims to reduce two out of three scopes emissions (Scope 1 and 2 or Scope 1 and 3 or Scope 2 and 3)
[5] Program(s) aims to reduce all three scopes emissions (Scope 1, 2, and 3)

Evidence is required

Please use Table 4 to answer question 2.10 on GHG emissions in your university.

Table 4 List of greenhouse gas emission sources (Woo & Choi, 2013)

	Emission data	Definition
Scope 1	Stationary combustion	Stationary combustion refers to the burning of fuels to produce electricity, steam, and heat in a fixed location, such as boilers, burners, heaters, kilns, and engines.
	Mobile combustion	Burning of fuels by institution-owned transportation devices
	Process emissions	Direct greenhouse gas (GHG) emissions from physical or chemical processes rather than from fuel combustion
	Fugitive emissions	Hydrofluorocarbon releases during the use of refrigeration and air conditioning equipment and methane leakage from natural gas transport
Scope 2	Purchased electricity	Indirect GHG emissions result from the generation of the electricity purchased and used by the institution

Scope 3	Waste	Indirect GHG emissions resulting from the incineration or landfill of your institution's solid waste
	Purchased waste	Indirect GHG emissions resulting from the generation of water supply purchased and used by the institution
	Commuting	Indirect GHG emissions resulting from regular commuting from and to institutions by students and employees (i.e., reducing regular commuting by using shared vehicles, carpooling)
	Air travel	Indirect GHG emissions resulting from air travels paid by institutions (i.e., reducing the number of staff air travel opportunities)

2.11. Total carbon footprint (CO$_2$ emission in the last 12 months, in metric tons)

Please provide the total carbon footprint of your university. Please exclude carbon footprint from flights and secondary carbon sources, such as dishes and clothes. To calculate your university carbon footprint, please refer to **Appendix 3**.

Evidence is required

2.12. Total carbon footprint divided by total campus' population (metric tons per person) (EC.8)

Please provide the total carbon footprint divided by the total campus population.

Formula: (2.11)/(1.15)

Please select one of the following options:
[1] ≥ 2.05 metric tons
[2] > 1.11 - 2.05 metric tons
[3] > 0.42 - 1.11 metric tons
[4] > 0.10 - 0.42 metric tons
[5] < 0.10 metric tons

2.13. The number of innovative program(s) in Energy and Climate Change (EC.9)

Please provide the total number of innovative program(s) in energy and climate change, i.e. (Smart Indoor Health and Comfort System, new energy approach, new climate change mitigation problem solutions, etc). Please select one of the following options:
[1] None
[2] 1 program
[3] 2 programs
[4] 3 programs
[5] more than 3 programs

Evidence is required

2.14. Impactful university program(s) on climate change (EC.10)

Please select program(s) on climate change risks, impacts, mitigation, adaptation, impact reduction, and early warning. Please select one of the following options:
[1] None
[2] Program in preparation
[3] Provide training, educational materials, and activities for surrounding communities
[4] Provide training, educational materials, and activities for surrounding communities and at the national level
[5] Provide training, educational materials, and activities for surrounding communities, at national, regional, and international levels

Evidence is required

3. Waste (WS)

Waste treatment and recycling activities are major factors in creating a sustainable environment. The activities of university staff and students on campus will produce a lot of waste; therefore, some recycling and waste treatments programs should be among the concern of the university, i.e., recycling program, organic waste treatment, inorganic waste treatment, toxic waste recycling, sewage disposal, policies to reduce the use of paper and plastic on campus.

3.1. Recycling program for university's waste (WS.1)

Please select a condition that reflects the current condition of your university's efforts to encourage staff and students to recycle waste, from the following options:
[1]   None. Please select this option if there is no program at your university.
[2]   Partial (1 - 25% of waste)
[3]   Partial (> 25 - 50% of waste)
[4]   Partial (> 50 - 75% of waste)
[5]   Extensive (> 75% of waste)

Evidence is required

3.2. Program to reduce the use of paper and plastic on campus (WS.2)

Please select one from the following options which best reflects the current condition of your university in establishing a formal policy to reduce the use of paper and plastic (i.e., double-sided printing policy program, the use of tumblers, the use of reusable bags, print, when necessary, free water distribution, policies for dematerialization of administrative procedures, etc.):
[1]   None. Please select this option if there is no program at your university.
[2]   1 program
[3]   2 programs
[4]   3 programs
[5]   More than 3 programs

Evidence is required

3.3. Organic waste treatment (WS.3)

The method of organic waste (i.e., garbage, discarded vegetable, food, and plant matter) treatment in your university. Please select an option that best describes your university's overall treatment of the bulk of organic waste:
[1]   Open dumping
[2]   Partial (1 - 25% treated)
[3]   Partial (> 25 - 50% treated)
[4]   Partial (> 50 - 75% treated)
[5]   Extensive (> 75% treated)

Evidence is required

3.4. Inorganic waste treatment (WS.4)

Please describe the method of inorganic waste (i.e., rubbish/garbage, trash, discarded paper, plastic, metal, electronic, etc.) treatment in your university. Please select an option that best describes your university's overall treatment of the bulk of the inorganic waste:
[1]   Burned in the open
[2]   Partial (1 - 25% treated)
[3]   Partial (> 25 - 50% treated)

[4]   Partial (> 50 - 75% treated)
[5]   Extensive (> 75% treated)

Evidence is required

3.5.   Toxic waste treatment (WS.5)

Please select a condition that reflects the current condition of how your university handles toxic wastes. The handling process includes whether toxic wastes are dealt with separately, for example, by classifying and handling them over to a third party or certified handling companies.

Please select one of the following options:
[1]   Not managed
[2]   Partial (1 - 25% treated)
[3]   Partial (> 25 - 50% treated)
[4]   Partial (> 50 - 75% treated)
[5]   Extensive (> 75% treated) or campus produces a minimum amount of toxic waste

Evidence is required

3.6.   Sewage disposal (WS.6)

Please describe the primary method of sewage treatment at your university. Please select an option that best describes how the bulk of the sewage is disposed of:
[1]   Untreated into waterways
[2]   Treated conventionally
[3]   Treated technically for reuse
[4]   Treated technically for downcycling
[5]   Treated technically for upcycling

Evidence is required

4.   Water (WR)

Water usage on campus is another important indicator in the UI GreenMetric. The aim is to encourage universities to decrease groundwater usage, increase conservation programs, and protect habitats. Water conservation programs, water recycling programs, water-efficient appliances usage, and treated water usage are among the criteria.

4.1.   Water conservation program and implementation (WR.1)

Please select a condition describing your current stage in a program that is systematic and formalized, and supports water conservation (i.e., for lakes and lake management systems, rain harvesting systems, water tanks, bio pore, recharge well, etc.) in your university, from the following options:
[1]   None. Please select this option if the conservation program is needed, but nothing has been done.
[2]   Program in preparation (i.e., feasibility study and promotion)
[3]   1 - 25% implemented at an early stage (i.e., measurement of potential surface runoff volume)
[4]   > 25 - 50% water conserved
[5]   > 50% water conserved

Evidence is required

4.2.   Water recycling program implementation (WR.2)

Please select a condition that reflects the current condition of your university in establishing formal policies for water recycling programs (i.e., the use of recycled water for toilet flushing, car washing, watering plants, etc.). Please select an option that describes the current stage of your program:
[1]   None. Please select this option if the water recycling program is needed, but nothing has been done.
[2]   Program in preparation (i.e., feasibility study and promotion)

[3]   1 - 25% Implemented at an early stage (i.e., measurement of wastewater)
[4]   > 25 - 50% water recycled
[5]   > 50% water recycled

Evidence is required

4.3.   Water-efficient appliances usage (WR.3)

Water-efficient appliance usage are replacing conventional appliances. This also includes the use of water-efficient appliances (i.e., using censored/automated handwashing taps, highly efficient toilet flush, etc.). Please select one of the following options:

[1]   None. Water-efficient appliances are needed, but nothing has been done.
[2]   Program in preparation (i.e., feasibility study and promotion)
[3]   1 - 25% of water-efficient appliances installed
[4]   > 25 - 50% of water-efficient appliances installed
[5]   > 50% of water-efficient appliances installed

Evidence is required

4.4.   Consumption of treated water (WR.4)

Please indicate the percentage of treated water consumed from water system treatment compared to all water sources (i.e., rainwater tank source, groundwater, surface water, etc.) in your university. The water source can be from the treated water installation inside and/or outside your university. Please select one of the following options:

[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

Evidence is required

4.5.   Water pollution control in campus area (WR.5)

Please indicate the stage of your campus water pollution control to prevent polluted water from entering the water system. For example, the mechanism to regularly check water quality (Physical, Chemical, and biological parameters) on your campus. Please select one of the following options:

[1]   Policy and programs for water pollution control are in the designing stage
[2]   Policy and programs for water pollution control are in the construction stage
[3]   Policy and programs for water pollution control are in the early implementation stage
[4]   Policy and programs for water pollution control are fully implemented and monitored occasionally
[5]   Policy and programs for water pollution control are fully implemented and monitored regularly

Evidence is required

5.   Transportation (TR)

Transportation systems play an important role in carbon emission and pollutant levels in universities. Transportation policies that limit the number of motor vehicles on campus and encourage the usage of campus buses and bicycles will encourage a healthier environment. The pedestrian policy will encourage students and staff to walk around campus and minimize the use of private vehicles. The use of environmentally friendly public transportation will decrease the carbon footprint around campus.

5.1. Number of cars actively used and managed by the university

Please indicate the number of cars operated on campus owned and managed by the university (including those outsourced to third parties). Please consider only cars with emissions (i.e. cars with combustion engines).

5.2. Number of cars entering the university daily

Please indicate the average number of cars that enter your university daily based on a balanced sample, taking into consideration terms and holiday periods. Please consider only cars with emissions (i.e., cars with combustion engines).

5.3. Number of motorcycles entering the university daily

Please indicate the average number of motorcycles that enter your university daily based on a balanced sample, taking into consideration terms and holiday periods. Please consider only motorcycles/motorbikes with emissions (i.e., motorcycles/motorbikes with combustion engines).

5.4 The total number of vehicles (cars and motorcycles with combustion engines) divided by the total campus' population (TR.1)

Please provide the total number of vehicles divided by the total campus' population.

Formula: (5.1+5.2+5.3)/(1.15)

Please select one of the following options:
[1] ≥ 1
[2] > 0.5 - 1
[3] > 0.125 - 0.5
[4] > 0.045 - 0.125
[5] < 0.045

> **Evidence is required**

5.5. Shuttle services (TR.2)

Please describe the condition of the availability of shuttles for journeys within the campus and whether the ride is free or charged, operated by a university or by other parties. Please select an option from the following options. If shuttle service is not provided due to positive reason(s) such as the campus area is small, another zero-emission transportation service is available, please select "not applicable".
[1] Shuttle service is possible, but not provided by the university;
[2] Shuttle service is provided (by the university or other parties) and regular, but not free;
[3] Shuttle service is provided (by the university or other parties) and the university contributes a part of the cost;
[4] Shuttle service is provided by the university, regular, and free;
[5] Shuttle service is provided by the university, regular, and zero-emission vehicle. Or shuttle use is not possible (not applicable).

> **Evidence is required**

5.6. Number of shuttles operating in the university

Please indicate the number of campus shuttles operating in your university. The campus shuttle can be in the form of buses, multi-purpose vehicle (MPV) cars, or minivans which are operated inside the campus.

5.7. The average number of passengers of each shuttle

Please indicate the average number of passengers of each shuttle on one trip. You can estimate from the seat availability of the shuttle.

5.8. Total trips of each shuttle service each day

Please indicate the total number of trips for each shuttle service per day.

5.9. Zero-Emission Vehicles (ZEV) policy on campus (TR.3)

Please describe the extent to which the use of Zero Emission Vehicles (i.e. bicycles, canoes, snowboards, electric cars, etc.) is supported for transportation on your campus. Please select an option from the following list that applies to your 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 the university;
[4] Zero-Emission Vehicles are available, provided by the university, and charged;
[5] Zero-Emission Vehicles are available and provided by the university for free.

Evidence is required

5.10. Average number of Zero-Emission Vehicles (ZEV) on campus per day

Please indicate the average number of Zero Emission Vehicles (i.e., bicycles, canoes, snowboards, electric cars, compressed bio-methane gas shuttle cars, etc.) on your campuses daily which include vehicles both owned by the university and privately owned.

5.11. The total number of Zero-Emission Vehicles (ZEV) divided by the total campus population (TR.4)

Please provide the total number of Zero-Emission Vehicles (ZEV) divided by the total campus population.

Formula: (5.10)/(1.15)

Please select one of the following options:
[1] ≤ 0.002
[2] > 0.002 - 0.004
[3] > 0.004 - 0.008
[4] > 0.008 - 0.02
[5] > 0.02

5.12. Total ground parking area (m²)

Please provide the information on the total parking area in your university. You can estimate or validate this area by using the Google maps feature.

5.13. The ratio of the ground parking area to total campus area (TR.5)

Please select a ratio of the parking area to the total campus area of your university.

Formula: ((5.12/1.5) x 100%)

Please select one of the following options:
[1] > 11 %
[2] > 7 – 11 %
[3] > 4 – 7 %
[4] > 1 – 4 %
[5] < 1 %

Evidence is required

5.14. Program to limit or decrease the parking area on campus for the last 3 years (from 2019 to 2021 (TR.6)

Please select a condition that reflects the current university program on transportation designed to limit or decrease the parking area on your campuses. Please select an option that best describes your university from

the following options:

[1] None
[2] Program in preparation (i.e., feasibility study and promotion)
[3] The program resulted in less than 10% decrease in the parking area
[4] The program resulted in 10 - 30% decrease in the parking area
[5] The program resulted in more than 30% decrease in parking area or parking area reduction reaching its limit

Evidence is required

5.15. Number of initiatives to decrease private vehicles on campus (TR.7)

Please select a condition that reflects your university's current initiatives on the availability of transportation to limit or decrease the number of private vehicles on your campuses (i.e., car-free days, car sharing, charging high parking fees, metro/tram/bus services, bike-sharing, low fare subscriptions, etc.). Please select an option that best describes your university from the following:

[1] No initiative
[2] 1 initiative
[3] 2 initiatives
[4] 3 initiatives
[5] > 3 initiatives or initiative is no longer required

Evidence is required

5.16. Pedestrian path on campus (TR.8)

Please describe the extent to which the use of the pedestrian path is supported. Please select an option from the following list that applies to your campus:

[1] None;
[2] Pedestrian paths are available;
[3] Pedestrian paths are available and designed for safety;
[4] Pedestrian paths are available, designed for safety and convenience;
[5] Pedestrian paths are available, designed for safety and convenience, and in some parts provided with disabled-friendly features.

Evidence is required

Note:
- **Safety:** equipped with enough lighting, separator between road for vehicle and pedestrian path, and some handrail.
- **Convenience:** Level difference with a mild slant for walking alongside the pavement, some area covered, using soft (rubber, woods, etc.) material, availability of location information and directions
- **Disabled-friendly:** ramps and guiding blocks that have a suitable design for pedestrians having physical disabilities.

5.17. The approximate daily travel distance of a vehicle inside your campus only (in Kilometers)

Please provide the approximate daily travel distance of a vehicle (i.e., bus, car, motorcycle) inside your campus only in kilometers.

6. Education and Research (ED)

6.1. Number of courses/subjects related to sustainability offered

The number of courses/subjects of which the contents are related to sustainability offered at your university. Some universities have already tracked how many courses/subjects are available for this. The definition of the extent to which a course can be seen as related to sustainability (environmental, social, cultural, economics) or both, can be defined according to your university's situation. If a course/subject contributes

in more than a minor or passes the way to increase awareness, knowledge, or action related to sustainability, then it counts. The number of courses/subjects can be counted by specifying related sustainability keywords used in the subjects. For example, Environmental Chemistry is the subject of the Chemistry study program.

Evidence is required

6.2. Total number of courses/subjects offered

It is the total number of courses/subjects offered at your university yearly. This information will be used to calculate to what extent environment and sustainability education have been defined in your university teaching and learning.

Evidence is required

6.3. The ratio of sustainability courses to total courses/subjects (ED.1)

Please select the ratio of sustainability courses to the total number of courses (subjects) in your university.

Formula: ((6.1/6.2) x 100%)

Please select one of the following options:
[1] ≤ 1%
[2] > 1 - 5%
[3] > 5 - 10%
[4] > 10 - 20%
[5] > 20%

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

Please provide the average funding for research on sustainability per annum over the last 3 years.

Evidence is required

6.5. Total research funds (in US Dollars)

The average total research funds per annum over the last 3 years. This information will be used to calculate the percentage of environment and sustainability research funding to the overall research funding.

Evidence is required

6.6. The ratio of sustainability research funding to total research funding (ED.2)

Please select a ratio of sustainability research funding to the total research funding in your university.

Formula: ((6.4/6.5) x 100%)

Please select one of the following options:
[1] ≤ 1%
[2] > 1 - 8%
[3] > 8 - 20%
[4] > 20 - 40%
[5] > 40%

6.7. Number of scholarly publications on sustainability (ED.3)

Please provide the average number of indexed publications (Google scholar) on environment and sustainability published annually over the last 3 years, using keywords: green, environment, sustainability, renewable energy, climate change. Please select one of the following options:
[1] 0
[2] 1 - 20
[3] 21 - 83

[4] 84 - 300
[5] > 300

Evidence is required

6.8. Number of events related to sustainability (ED.4)

Please provide the number of events (i.e., conferences, workshops, awareness raising, practical training, etc.) related to the issues of environment and sustainability hosted or organized by your university (average per annum over the last 3 years). Please select one of the following options:
[1] 0
[2] 1 - 4
[3] 5 - 17
[4] 18 - 47
[5] > 47

Evidence is required

6.9. Number of student organizations related to sustainability (ED.5)

Please provide the total number of student organizations in a faculty or university level. For example, a student association on a green campus in a faculty or university level can be considered as an organization. Please select one of the following options:
[1] 0
[2] 1 - 2
[3] 3 – 4
[4] 5 - 10
[5] > 10

Evidence is required

6.10. University-run sustainability website (ED.6)

If your university has a sustainability website, please provide the address of the web. Some detailed information on a university website to educate students and staff as well as providing information about their latest involvement on green campus, environment and sustainability programs, will be very useful. Please select the following options:
[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 (URL) if available

Please provide your university sustainability link/website (URL).

6.12. Sustainability report (ED.7)

If your university has a sustainability report. Please select the following options:
[1] Not available;
[2] Sustainability report is in preparation;
[3] Available but not publicly accessible;
[4] Sustainability report is accessible and published occasionally;
[5] Sustainability report is accessible and published annually.

Evidence is required

6.13. Number of cultural activities on campus (ED.8)

The fact that 'green' facilities in campus are accessible for public, such as during cultural activities, indicates wider impact of green campus' existence to its surroundings. Please provide the total number of cultural activities on campus (i.e., Cultural Festival) including virtual activities. Please select the following options:
[1] None
[2] 1 event per year
[3] 2 events per year
[4] 3 events per year
[5] More than 3 events per year

Evidence is required

6.14. Number of university program(s) to improve teaching and learning (ED.9)

Please provide the total number of university program(s) to improve teaching and learning (i.e., internet bandwidth improvement, video conferencing facilities, online teaching methods workshop, Helpdesk group for E-Learning etc.). Please select the following options:
[1] None
[2] 1 Program
[3] 2 Programs
[4] 3 Programs
[5] More than 3 programs

Evidence is required

6.15. Number of sustainability community services project organized and/or involving students (ED.10)

Please provide the total number sustainability community services project organized and/or involving students. Please select the following options:
[1] None
[2] 1 project
[3] 2 projects
[4] 3 projects
[5] More than 3 projects

Evidence is required

6.16. Number of sustainability-related startups (ED.11)

Please provide the total number of sustainability-related startups initiated and managed by university. You can count any level of startup (profit/non-profit, digital/non-digital, managed by university involving student or not). Please select the following options:
[1] None
[2] 1 – 5 startups
[3] 6 – 10 startups
[4] 11 – 15 startups
[5] More than 15 startups

Evidence is required

Data submission

1. Please submit the latest yearly (annual) data that you have according to your 12 months data gathering schedule (i.e., for Questions 1.15, 1.20, 2.6, 2.8) unless otherwise requested.
2. Please note that the scale of answer options is determined based on clasification results of 2018 questionnaire.
3. Options in 6.15 & 6.16 are based on clasification results of 2019 Community Service and Start Up form

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Evidence Guidelines

This is the third year we request evidence for the questionnaire. The purpose of the evidence is to support your university submission when reviewed by our validators. For this purpose, please observe the following guidance:

1. Evidence is mandatory, except for some questions which can be uploaded.
2. Lack of evidence may result in a declined score.
3. All evidence should comply with the template provided in the website link:
   https://s.id/UIGMEvidence
4. Evidence could be pictures, graphs, tables, data, etc.
5. Please provide an explanation in the description section for the pictures submitted.
6. Explanation of evidence should be in English.
7. For each question provided with evidence, the maximum size for evidence is 2 MB (.doc/.docx/.pdf).

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Appendix 1

Below are how we score your data. Please note that the final score will be based on our validators' review. Details of the scoring are described as follows:

No	Category and Indicator	Point	Score	Weighting
1	**Setting and Infrastructure (SI)**			**15%**
SI 1	**The ratio of open space area to the total area***	**200**		
	≤ 1%		0.05x200*	
	> 1 - 80%		0.25×200	
	> 80 - 90%		0.50×200	
	> 90 - 95%		0.75×200	
	> 95%		1.00×200	
SI 2	**Total area on campus covered in forest vegetation***	**100**		
	≤ 2%		0.05x100*	
	> 2 - 9%		0.25×100	
	> 9 - 22%		0.50×100	
	> 22 - 35%		0.75×100	
	> 35%		1.00×100	
SI 3	**Total area on campus covered in planted vegetation***	**200**		
	≤ 10%		0.05x200*	
	> 10 - 20%		0.25×200	
	> 20 - 30%		0.50×200	
	> 30 - 40%		0.75×200	
	>40%		1.00×200	
SI 4	**Total area on campus for water absorption besides the forest and planted vegetation***	**100**		
	≤ 2%		0.05x100*	
	> 2 - 10%		0.25×100	
	> 10 - 20%		0.50×100	
	> 20 - 30%		0.75×100	
	> 30%		1.00×100	
SI 5	**The total open space area divided by total campus population***	**200**		
	≤ 10 m^2/person		0.05x200*	
	> 10 – 20 m^2/person		0.25×200	
	> 20 – 40 m^2/person		0.50×200	
	> 40 – 70 m^2/person		0.75×200	
	> 70 m^2/person		1.00×200	
SI 6	**Percentage of university budget for sustainability efforts***	**200**		
	≤ 1%		0.05x200*	
	> 1 - 5%		0.25×200	
	> 5 - 10%		0.50×200	
	> 10 - 15%		0.75×200	
	> 15%		1.00×200	
SI7	**Percentage of operation and maintenance activities of building in one year period**	**100**		
	≤ 25%		0.05x100*	
	> 25 - 50%		0.25×100	
	> 50 - 75%		0.50×100	
	> 75 - 99%		0.75×100	
	100%		1.00×100	
SI8	**Campus facilities for disabled, special needs and or maternity care**	**100**		
	None		0	
	Policy is in place		0.25×100	

	Facilities are in planning stage		0.50×100	
	Facilities are partially available and operated		0.75×100	
	Facilities exist in all buildings and are fully operated		1.00×100	
SI9	**Security and safety facilities**	**100**		
	Passive security system		0	
	Security infrastructure (CCTV, emergency hotline/button) available and fully function		0.25×100	
	Security infrastructure (CCTV, emergency hotline/button, personel, fire extinguisher, hydrant) available and fully function		0.50×100	
	Security infrastructure available and fully function and security responding time for accident, crime, fire and natural dissaster more than 10 minutes		0.75×100	
	Security infrastructure available and fully function and security responding time for accident, crime, fire and natural dissaster less than 10 minutes		1.00×100	
SI10	**Health infrastructure facilities for students, academic and administrative staff's wellbeing**	**100**		
	Health infrastructure (first aid) is not available		0	
	Health infrastructure (first aid, emergency room, clinic and personnel) are available		0.25×100	
	Health infrastructure (first aid, emergency room, clinic and certified personnel) are available		0.50×100	
	Health infrastructure (first aid, emergency room, clinic, hospital and certified personnel) are available		0.75×100	
	Health infrastructure (first aid, emergency room, clinic, hospital and certified personnel) are available and accessible for public		1.00×100	
SI11	**Conservation: plant (flora), animal and wildlife (fauna), genetic resources for food and agriculture secured in either medium or long-term conservation facilities**	**100**		
	Conservation program in preparation		0.05x100*	
	Conservation program 1-25% implemented		0.25×100	
	Conservation program 25-50% implemented		0.50×100	
	Conservation program 50-75% implemented		0.75×100	
	Conservation program fully implemented		1.00×100	
	Total	**1500**		
2	**Energy and Climate Change (EC)**			**21%**
EC 1	**Energy efficient appliances usage**	**200**		
	< 1%		0.05x200*	
	1 - 25%		0.25×200	
	> 25 - 50%		0.50×200	
	> 50 - 75%		0.75×200	
	> 75%		1.00×200	
EC 2	**Smart building implementation**	**300**		
	< 1%		0.05x300*	
	1 - 25%		0.25×300	
	> 25 - 50%		0.50×300	
	> 50 - 75%		0.75×300	
	> 75%		1.00×300	
EC 3	**Number of renewable energy sources in campus**	**300**		
	None		0	
	1 source		0.25×300	
	2 sources		0.50×300	
	3 sources		0.75×300	
	> 3 sources		1.00×300	

EC 4	The total electricity usage divided by total campus population (kWh per person)	300		
	≥ 2424 kWh		0.05x300*	
	> 1535 - 2424 kWh		0.25×300	
	> 633 - 1535 kWh		0.50×300	
	> 279 - 633 kWh		0.75×300	
	< 279 kWh		1.00×300	
EC 5	The ratio of renewable energy production divided by total energy usage per year	200		
	≤ 0.5%		0.05x200*	
	> 0.5 - 1%		0.25×200	
	> 1 - 2%		0.50×200	
	> 2 - 25%		0.75×200	
	> 25%		1.00×200	
EC 6	Elements of green building implementation as reflected in all construction and renovation policies	200		
	None		0	
	1 element		0.25×200	
	2 elements		0.50×200	
	3 elements		0.75×200	
	> 3 elements		1.00×200	
EC 7	Greenhouse gas emission reduction program	200		
	None		0	
	Program in preparation		0.25×200	
	Program(s) aims to reduce one out of three scopes emissions		0.50×200	
	Program(s) aims to reduce two out of three scopes emissions		0.75×200	
	Program(s) aims to reduce all three scopes emissions		1.00×200	
EC 8	The total carbon footprint divided by total campus population	200		
	≥ 2.05 metric ton		0.05x200*	
	> 1.11 - 2.05 metric ton		0.25×200	
	> 0.42 - 1.11 metric ton		0.50×200	
	> 0.10 - 0.42 metric ton		0.75×200	
	< 0.10 metric ton		1.00×200	
EC 9	Number of innovative program(s) in Energy and Climate Change	100		
	None		0	
	1 program		0.25×100	
	2 programs		0.50×100	
	3 programs		0.75×100	
	More than 3 programs		1.00×100	
EC 10	Impactful university program(s) on climate change	100		
	None		0	
	Program in preparation		0.25×100	
	Provide training, educational materials and activities for surrounding communities		0.50×100	
	Provide training, educational materials and activities for surrounding communities and at national level		0.75×100	
	Provide training, educational materials and activities for surrounding communities, at national, regional, and international level		1.00×100	
	Total	2100		

3	Waste (WS)			18%
WS 1	Recycling program for university waste	300		
	None		0	
	Partial (1 - 25% of waste)		0.25×300	

	Partial (> 25 - 50% of waste)		0.50×300	
	Partial (> 50 - 75% of waste)		0.75×300	
	Extensive (> 75% of waste)		1.00×300	
WS 2	**Program to reduce the use of paper and plastic on campus**	**300**		
	None		0	
	1 program		0.25×300	
	2 programs		0.50×300	
	3 programs		0.75×300	
	More than 3 programs		1.00×300	
WS 3	**Organic waste treatment**	**300**		
	Open dumping		0	
	Partial (1 - 25% treated)		0.25×300	
	Partial (> 25 - 50% treated)		0.50×300	
	Partial (> 50 - 75% treated)		0.75×300	
	Extensive (> 75% treated)		1.00×300	
WS 4	**Inorganic waste treatment**	**300**		
	Burned in open		0	
	Partial (1 - 25% treated)		0.25×300	
	Partial (> 25 - 50% treated)		0.50×300	
	Partial (> 50 - 75% treated)		0.75×300	
	Extensive (> 75% treated)		1.00×300	
WS 5	**Toxic waste treatment**	**300**		
	Not managed		0	
	Partial (1 - 25% treated)		0.25×300	
	Partial (> 25 - 50% treated)		0.50×300	
	Partial (> 50 - 75% treated)		0.75×300	
	Extensive (> 75% treated) or campus produces a minimum amount of toxic waste		1.00×300	
WS 6	**Sewage disposal**	**300**		
	Untreated into waterways		0	
	Treated conventionally		0.25×300	
	Treated technically for reuse		0.50×300	
	Treated technically for downcycling		0.75×300	
	Treated technically for upcycling		1.00×300	
	Total	**1800**		
4	**Water (WR)**			**10%**
WR 1	**Water conservation program and implementation**	**200**		
	None		0	
	Program in preparation		0.25×200	
	1 - 25% implemented at early stage (i.e., measurement of potential surface runoff volume)		0.50×200	
	> 25 - 50% water conserved		0.75×200	
	> 50% water conserved		1.00×200	
WR 2	**Water recycling program implementation**	**200**		
	None		0	
	Program in preparation		0.25×200	
	1 - 25% implemented at early stage		0.50×200	
	> 25 - 50% water recycled		0.75×200	
	> 50% water recycled		1.00×200	
WR 3	**Water efficient appliance usage**	**200**		
	None		0	
	Program in preparation		0.25×200	
	1 - 25% of water efficient appliances installed		0.50×200	
	> 25 - 50% of water efficient appliances installed		0.75×200	
	> 50% of water efficient appliances installed		1.00×200	

WR 4	**Treated water consumed**	**200**		
	None		0	
	1 - 25% treated water consumed		0.25×200	
	> 25 - 50% treated water consumed		0.50×200	
	> 50 - 75% treated water consumed		0.75×200	
	> 75% treated water consumed		1.00×200	
WR 5	**Water pollution control in campus area**	**200**		
	Policy and preparation		0.05x200*	
	Design and construction		0.25×200	
	Guideline standard available and initial implementation		0.50×200	
	Full implementation and monitored occasionally		0.75×200	
	Full implementation and monitored regularly		1.00×200	
	Total	1000		
5	**Transportation (TR)**			**18%**
TR 1	**The total number of vehicles (cars and motorcycles) divided by total campus population***	**200**		
	≥ 1		0	
	> 0.5 - 1		0.25×200	
	> 0.125 - 0.5		0.50×200	
	> 0.045 - 0.125		0.75×200	
	< 0.045		1.00×200	
TR 2	**Shuttle services**	**300**		
	Shuttle service is possible but not provided by university		0	
	Shuttle service is provided (by university or other parties) and regular but not free		0.25×300	
	Shuttle service is provided (by university or other parties) and the university contributes part of the cost		0.50×300	
	Shuttle service is provided by university, regular, and free		0.75×300	
	Shuttle service is provided by university, regular, and zero emission vehicle. Or shuttle use is not possible (not applicable)		1.00×300	
TR 3	**Zero Emission Vehicles (ZEV) policy on campus**	**200**		
	Zero Emission Vehicles are not available		0	
	Zero Emission Vehicles use is not possible or practical		0.25×200	
	Zero Emission Vehicles are available, but not provided by university		0.50×200	
	Zero Emission Vehicles are available, provided by university and charged		0.75×200	
	Zero Emission Vehicles are available, and provided by university free		1.00×200	
TR 4	**The total number of Zero Emission Vehicles (ZEV) divided by total campus population***	**200**		
	≤ 0.002		0.05x200*	
	> 0.002 to ≤ 0.004		0.25×200	
	> 0.004 to ≤ 0.008		0.50×200	
	> 0.008 to ≤ 0.02		0.75×200	
	> 0.02		1.00×200	
TR 5	**The ratio of the ground parking area to total campus area***	**200**		
	> 11%		0	
	> 7 - 11 %		0.25×200	
	> 4 - 7 %		0.50×200	
	> 1 – 4 %		0.75×200	
	< 1%		1.00×200	
TR 6	**Transportation program designed to limit or decrease the parking area on campus for the last 3 years (from 2019 to 2021)**	**200**		
	None		0	

		Program in preparation (i.e., feasibility study and promotion)		0.25×200	
		Program resulting in less than 10% decrease in parking area		0.50×200	
		Program resulting in 10 - 30% decrease in parking area		0.75×200	
		Program resulting in more than 30% decrease in parking area or parking area reduction reaching its limit		1.00×200	
TR 7	**Number of transportation initiatives to decrease private vehicles on campus**		**200**		
	No initiative			0	
	1 initiative			0.25×200	
	2 initiatives			0.50×200	
	3 initiatives			0.75×200	
	> 3 initiatives, or initiative is no longer required			1.00×200	
TR 8	**Pedestrian path on campus**		**300**		
	None			0	
	Pedestrian paths are available			0.25×300	
	Pedestrian paths are available, and designed for safety			0.50×300	
	Pedestrian paths are available, designed for safety and convenience			0.75×300	
	Pedestrian paths are available, designed for safety, convenience, and in some parts provided with disabled-friendly features			1.00×300	
	Total		**1800**		
6	**Education and Research (ED)**				**18%**
ED 1	**The ratio of sustainability courses to total courses/subjects**		**300**		
	≤ 1%			0.05x300*	
	> 1 - 5%			0.25×300	
	> 5 - 10%			0.50×300	
	> 10 - 20%			0.75×300	
	> 20%			1.00×300	
ED 2	**The ratio of sustainability research funding to total research funding**		**200**		
	≤ 1%			0.05x200*	
	> 1 - 8%			0.25×200	
	> 8 - 20%			0.50×200	
	> 20 - 40%			0.75×200	
	> 40%			1.00×200	
ED 3	**Number of scholarly publications on sustainability**		**200**		
	0			0	
	1 − 20			0.25×200	
	21 − 83			0.50×200	
	84 - 300			0.75×200	
	> 300			1.00×200	
ED 4	**Number of events related to sustainability**		**200**		
	0			0	
	1 − 4			0.25×200	
	5 − 17			0.50×200	
	18 - 47			0.75×200	
	> 47			1.00×200	
ED 5	**Number of student organizations related to sustainability**		**200**		
	0			0	
	1 − 2			0.25×200	
	3 − 4			0.50×200	
	5 - 10			0.75×200	
	> 10			1.00×200	
ED 6	**University-run sustainability website**		**200**		
	Not available			0	

	Website in progress or under construction		0.25×200	
	Website is available and accessible		0.50×200	
	Website is available, accessible, and updated occasionally		0.75×200	
	Website is available, accessible, and updated regularly		1.00x200	
ED 7	**Sustainability report**	**100**		
	Not available		0	
	Sustainability report is in preparation		0.25×100	
	Available but not publicly accessible		0.50×100	
	Sustainability report is accessible and published occasionally		0.75×100	
	Sustainability report is accessible and published annually		1.00x100	
ED 8	**Number of cultural activities on campus**	**100**		
	None		0	
	1 event per year		0.25×100	
	2 events per year		0.50×100	
	3 events per year		0.75×100	
	More than 3 events per year		1.00x100	
ED 9	**Number of university program(s) to improve teaching and learning**	**100**		
	None		0	
	1 Program		0.25×100	
	2 Programs		0.50×100	
	3 Programs		0.75×100	
	More than 3 programs		1.00x100	
ED 10	**Number of sustainability community services project organized and/or involving students**	**100**		
	None		0	
	1 project		0.25×100	
	2 projects		0.50×100	
	3 projects		0.75×100	
	More than 3 projects		1.00x100	
ED 11	**Number of sustainability-related startups**	**100**		
	None		0	
	1 – 5 startups		0.25×100	
	6 – 10 startups		0.50×100	
	11 – 15 startups		0.75×100	
	More than 15 startups		1.00x100	
	Total	**1800**		
	TOTAL	**10000**		

Note : Light green indicates new questions introduced in 2022

: Asterisk (*) indicates new scorings introduced in 2022

Appendix 2

List and Description of Smart Building Requirements

Field		Requirement		Description
B	Automation	B1	BMS	Presence of Building Management System (BMS)/Building Information Modelling (BIM)/Building Automation System (BAS)/Facility Management System (FMS) **(recommended requirement)**
		B2	APP	Interactive support for users via APP or online service
S	Safety	S1	Intruder Alarm System	Intruder alarm system (recommended: interfaced with BMS)
		S2	Firefighting	Firefighting system (recommended: interfaced with BMS)
		S3	Video surveillance	Video surveillance system (recommended: interfaced with BMS)
		S4	Anti-flooding	Anti-flooding system (recommended: interfaced with BMS)
E	Energy	E1	Monitoring	Automatic acquisition and logging system of energy consumption (recommended: interfaced with BMS)
		E2	Management	Automatic management system for energy supplies and production (recommended: interfaced with BMS)
A	Water	A1	Monitoring	Automatic acquisition and logging system of water consumption (recommended: interfaced with BMS)
		A2	Recovery	Rainwater recovery system for covering the flushing and irrigation
I	Indoor environment	I1	Thermal comfort	Monitoring (recommended: interfaced with BMS) of environmental parameters related to thermo-hygrometric comfort (i.e., air temperature, relative humidity, air velocity, etc.)
		I2	Air quality	Monitoring (recommended: interfaced with BMS) of pollutants (i.e., VOC, PM, CO_2 ...)
		I3	Real-time	Programming and management in real time according to the occupancy profile of the premises (recommended: interfaced with BMS)
		I4	Passive system	Passive cooling and/or exploitation/limitation systems for free supplies
L	Lighting	L1	LEDs	High-efficiency luminaires (LEDs)
		L2	Sensors	Automatic lighting control (recommended: presence/illuminance sensors interfaced with BMS)
		L3	Shielding	Shielding adjustment and solar control
		L4	Natural light	Passive systems for natural light exploitation

Note:

Please state the Building Management System (BMS)/Building Information Modelling (BIM)/Building Automation System (BAS)/Facility Management System (FMS) used in your university

Adapted from 'UI GreenMetric 2018: Energy and Climate Change Guidelines for Compilation', by RUS Energia, 2019.

Appendix 3

Calculation of Carbon Footprint Per Year

The Carbon footprint calculation can be conducted based on the stage of calculation as stated in www.carbonfootprint.com, which is the sum of electricity usage per year and transportation per year.

a. **Electricity usage per year (EC 2.7)**
The CO_2 emission from electricity
= (electricity usage per year in kWh/1000) x 0.84
= (1633286 kWh/1000) x 0.84
= 1371.96 metric tons
Notes:
Electricity usage per year= 1633286 kWh
0.84 is the coefficient to convert kWh to metric tons (source: www.carbonfootprint.com)

b. **Transportation per year (Shuttle) (TR 5.6)**
= (Number of the shuttle bus in your university x total trips for shuttle bus service each day x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 240/100) x 0.01
= ((15 x 150 x 5 x 240)/100)) x 0.01
= 270 metric tons
Notes:
240 is the number of working days per year
0.01 is the coefficient (source: www.carbonfootprint.com) to calculate the emission in metric tons per 100 km for bus

c. **Transportation per year (Car) (TR 5.2)**
= (Number of cars entering your university x 2 x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 240/100) x 0.02
= ((2000 x 2 x 5 x 240)/100)) x 0.02
= 960 metric tons
Notes:
240 is the number of working days per year
0.02 is the coefficient (source: www.carbonfootprint.com) to calculate the emission in metric tons per 100 km car

d. **Transportation per year (Motorcycle) (TR 5.3)**
= (Number of motorcycle entering your university x 2 x approximate travel distance of a vehicle each day inside campus only (in kilometers) x 240/100) x 0.01
= ((4000 x 2 x 5 x 240)/100)) x 0.01
= 960 metric tons
Notes:
240 is the number of working days per year
0.01 is the coefficient (source: www.carbonfootprint.com) to calculate the emission in metric tons per 100 km for motorcycle

e. **Total emission per year**
= total emission from electricity usage + transportation (bus, car, motorcycle)
= 1371.96 + (270 + 960 + 960)
= 3561.96 metric tons

Note: You can use your own method and put it in evidence (i.e., figure, link, etc.)

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