

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 as a whole, UN Environment action fosters the environmental dimension of sustainable development and leads to socio-economic development (UNEP, n.d.). These 17 aspects in 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 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 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 parking area to 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 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 explanation 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 university can provide in an effort in planning a green campus to community.

To measure the social, cultural and economic impacts and to response to the pandemic, new questions are added to UI GreenMetric world University Rankings Questionnaire in 2021.

In addition, evidence is vital to the evaluation process by the reviewer, so please ensure the evidence that you provide 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. In particular, we are fully aware of the fact that universities differ with regard to 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?

In the period of 2010-2020 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 and 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 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 total campus population	200*	
SI6	Percentage of university budget for sustainability efforts	200	
SI7	Percentage of operation and maintenance activities of building during Covid-19 pandemic	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, animal 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 innovative program(s) during covid-19 pandemic	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	Percentage of additional handwashing and sanitation facilities during Covid-19 pandemic	200*	
	Total	1000	
5	Transportation (TR)		18%
TR1	The total number of vehicles (cars and motorcycles) divided by 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 total campus population	200	
TR5	Ratio of ground parking area to total campus' area	200	
TR6	Program to limit or decrease the parking area on campus for the last 3 years (from 2018 to 2020)	200	
TR7	Number of initiatives to decrease private vehicles on campus	200	
TR8	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 cope with Covid-19 pandemic	100*	
ED10	Number of sustainability community services project organized and/or involving students	100*	
ED11	Number of sustainability-related startups	100*	
	Total	1800	

Note : Asterisk (*) indicates new scorings introduced in 2021
 : Light green indicates new questions introduced in 2021

b. New indicators

To respond to Covid-19 pandemic and to add metrics for social, cultural and economic aspects of sustainability, new indicators are added in this year's questionnaire. In Tabel 3, new questions are coloured in light green and new scorings are indicated with 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.

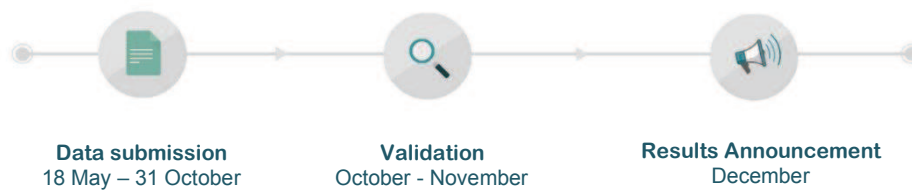
e. Refining and improving the research instrument

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

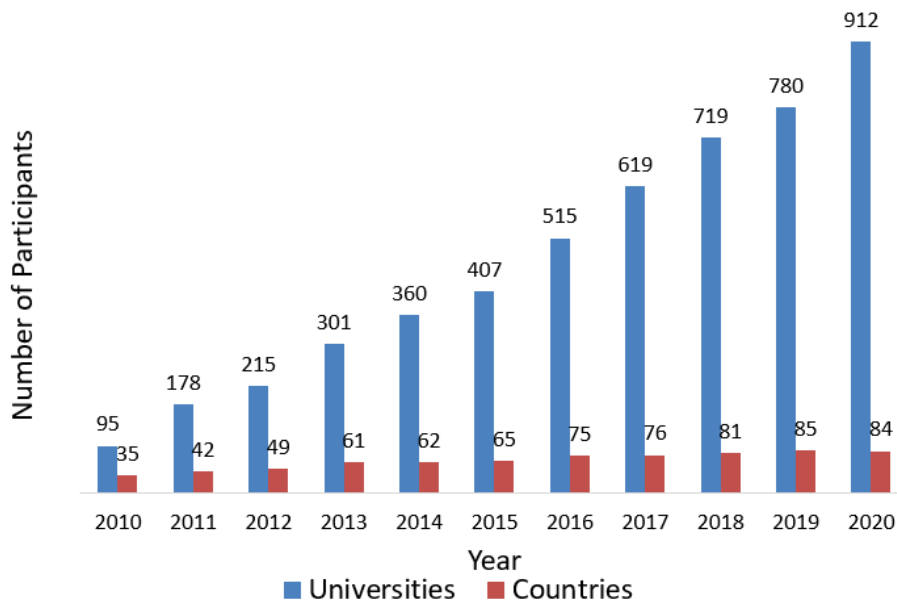
Data from the universities should be submitted through an online system between 18 May – 31 October 2021.

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



g. Results

The preliminary results of the metrics are expected to be submitted on 31 October 2021, and the final complete result will be released early December 2021.



The basic ranking results (overall rankings 2020, 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-2020/>