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Research Paper

Beyond green campuses: Sustainability rankings as strategic tools for university branding

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Abstract: The paper introduces and compares four prominent sustainable university rankings: People & Planet's University League, QS World University Rankings: Sustainability, Times Higher Education Impact Ranking, and UI GreenMetric. In the paper, the authors analyse the methodologies, thereby revealing similarities, differences, and top global performers. Additionally, the positions of Hungarian universities are evaluated in these rankings. The study addresses the need for universities to provide more information on their impacts and examines the relationship between sustainability rankings and overall university rankings. Based on the analysis of two global university rankings, no evidence was found about global leaders being the top performers in sustainability dimensions. Large international universities can benefit from overall university rankings, while sustainability rankings might be a good opportunity for smaller universities to differentiate themselves from their competitors. To put it simply: if a university is not performing super well in education and research, focusing on sustainability issues can provide a pathway to achieving a favourable position in sustainability rankings, which offers an alternative recognition and competitive advantage.

Keywords: higher education; sustainability; sustainability ranking; sustainable university

1. Introduction

Sustainability has become an increasingly unavoidable aspect across various fields. Many scientists are concerned with its challenges: disasters stemming from unsustainability are a frequent topic of popular culture, and environmental and social changes are becoming a commonplace in people's daily lives. A new approach and new solutions are needed to prevent irreversible changes. Higher education institutions have always been pioneering in generating new ideas and experimenting with new practices. The opportunities available to them are broad, but the challenges they face are complex. Like other industries, universities must re-imagine their purpose and strategies, and this is true also to the field of sustainability, which concerns their connection to their primary (students, university professors, employees, investors, etc.) and secondary stakeholders (e.g. society, environment). A university could (and must) focus on the needs of its society to thrive (Rangel, 2012). Universities are usually the agents of change therefore society requires them to lead the process of change in sustainability as well (Burmann et al., 2021).

In the modern landscape of higher education, sustainability rankings have rapidly emerged as indicators of universities' commitment to environmental, social, and economic responsibility. This sector has some specialities regarding sustainability, considering its core business, impacts, and stakeholders. Universities not only have to focus on their operations' impacts but must also integrate sustainability aspects into their research and curriculum, which results in sustainability-related innovations and creates new generations of professionals.

For prospective students, a strong position a sustainability ranking can differentiate one institution from another, making the university in question a possible choice for pursuing their further studies. As universities compete for the brightest minds, positive alignment with sustainability values often translates into an increased appeal and competitive advantage.

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However, previous research conducted by Quacquarelli Symonds (QS International, 2022) has shown that universities are not meeting the expectations of their prospective or current students because they are not communicating enough about their sustainability strategies, initiatives, and impacts. The lack of communication results in poor positions in sustainable university rankings, although this can become a significant field of competition in only a few years. The aim of this study is to present the most well-known sustainable university rankings, identify the top performers at international and local levels, and raise awareness of the need to integrate sustainability into university brand strategies.

2. The concept of sustainable universities

Sustainable development is not a new concept – it was defined as follows in 1987 by the United Nations in an attempt to create a framework for a more responsible way of development: *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* (United Nations World Commission on Environment and Development, 1987, p. 41). In 1992, the Millennium Development Goals (MDGs) were adopted by the United Nations' Member States, which was followed by the adoption of Sustainable Development Goals (SDGs) in 2015. There are altogether 17 economic, environmental, and social goals, broken down into 169 global targets to be reached by 2030 (United Nations, n.d.).

Sustainability is based on the triple-bottom-line theory, which includes three dimensions with equal weight. According to this theory, social, environmental, and economic aspects are interconnected, and users should strive for a balance between them (Ragazzi & Ghidini, 2017). However, in real-life scenarios, there are usually trade-offs between the three spheres, making it very challenging to find an optimum.

To be able to understand the complexity of sustainability challenges universities are facing nowadays, sustainable university definitions and the main dimensions of the concept of sustainable university will be introduced and analysed first.

It is important to emphasize that various approaches are employed in striving for the concept of a "sustainable university", which range from basic sustainability initiatives to more complex sustainable management systems (Amaral et al., 2015).

A sustainable university can be identified as a *"higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfil its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles"* (Velazquez et al., 2006, p. 812).

According to Alshuwaikhat and Abubakar (2008), *"[a] sustainable university campus also connotes a clean and enjoyable campus environment that promotes equity and social justice having a prosperous economy through energy and resource conservation, waste reduction and efficient environmental management that benefits the present and future university community."*.

A comparison of the two definitions shows that both descriptions focus on minimizing negative environmental, social, and economic impacts, and on benefiting the university community. While the second definition focuses more on campus operations and the university community, the first definition applies an extended view: it includes universities' responsibility towards society in supporting the transition towards a more sustainable lifestyle, as well as extends to universities' main functions: teaching, researching, outreach, partnership, and stewardship.

The fact that quality education is one of the seventeen UN Sustainable Development Goals (SDGs) highlights the importance of universities in preparing students for their future careers and responsibilities. As a result, an increasing number of universities are integrating sustainability modules into their curricula (Gerholz & Heinemann, 2015). In addition to preparing students for their roles as future societal leaders, universities contribute to addressing sustainability-related challenges by generating relevant knowledge and sharing it with the society (Stough et al., 2018). However, the adoption of sustainability within the curricula of universities appears to be slow (Macgregor, 2015).

A third dimension of sustainable universities is campus operations. Like other organisations, universities are responsible for a wide range of positive and negative impacts on their immediate environment and society. Considering the large size of university campuses and the large number of students spending years on those campuses, the complexity of campus operations, which includes impacts like energy and water consumption, waste generation and transportation, can be outlined (Alshuwaikhat & Abubakar, 2008). Chambers highlights the following dimensions of sustainable campus operation: energy and emissions, water, campus buildings, transportation, sustainable IT, and sustainable purchasing (Chambers, 2015). Imaz et al. (2015) also suggest eight axes but some of them are different from the aforementioned ones: energy, water, waste management, responsible consumption, green areas, mobility, sustainable construction, and electronic administration. These fields have a significant impact on universities' direct and indirect environment and the society around them (Ragazzi & Ghidini, 2017).

This aligns with Mcmillin and Dyball's institutional sustainability model, which identifies the core functions of universities to be research, curriculum, and campus operations. These dimensions are interconnected. For instance, faculty members can research sustainable operations within the university or teaching methods to enhance students' awareness of environmental and social issues. Alternatively, students can study campus operations and collaborate on developing more advanced sustainable practices as part of their coursework. Researchers can cooperate with governmental, corporate or NGO partners to address global or local sustainability challenges (Mcmillin & Dyball, 2009).

The United Nations' Environment Programme identifies four dimensions in its sustainable university framework (United Nations Environment Programme, 2021): Environment & Climate, People & Society, Teaching & Research, Administration & Governance. It can be concluded that it contains two out of the three elements of the triple-bottom-line theory (environmental and social dimension) and two main functions of universities (teaching and research) besides the operative function of administration and governance (leadership, HR, ethics, etc.), which can be connected to sustainable campus operations.

Several additional dimensions can be considered like community engagement (Stephens et al., 2008), outreach (Von Hauff & Nguyen, 2014) or ethical and moral responsibilities towards the future (Monteiro et al., 2019). An extended version of the sustainable university concept identified altogether eight different areas: education, community engagement, research, institutional framework, campus operations, on-campus experiences, assessment, and reporting (Lozano et al., 2015).

The present study examines the application of three dimensions (campus operations, curriculum, research) identified by Mcmillin and Dyball (2009) with respect to the leading university sustainability rankings. A systems approach can be added as a further aspect, according to Sharp (2009), as without it, higher education institutes may achieve significant progress in one area without recognising some negative aspects in another dimension. The lack of complexity and systems approach are characteristic of the methodologies used to rank universities. There are several rankings for evaluating university sustainability worldwide or on a local level, some of which are based on the UN Sustainable Development Goals, such as the UI Green Metric. However, none of these rankings quantitatively measures the extent to which universities' sustainability strategies contribute to achieving the SDGs (Alawneh et al., 2021).

3. Sustainable university rankings

University rankings have gained increasing popularity worldwide and playing a significant role in shaping reputations and influencing student application choices (Hazelkorn, 2011). While global university rankings have a rich tradition in assessing higher education institutes' teaching and research activities, their methodologies do not incorporate the measurement of sustainability performance (Burmann et al., 2021) despite stakeholders' expectations.

At a general level, global university rankings quickly achieved an important place in university marketing strategies. However, due to their focus on excellence and exclusivity, in many cases they ignore the SDGs such as quality education (SDG4), gender equality (SDG5), or reducing inequalities (SDG10) (Torabian, 2019). Instead of integrating SDGs into global

university rankings, research companies like QS or Times Higher Education created separate lists for evaluating universities' sustainability. A noteworthy change, however, is the inclusion of sustainability in the methodology of QS World University Ranking from 2023 onwards, although it is weighted at only 5% (Ocallaghan, 2023). If sustainability aspects could gain a higher level of relevance in global university rankings, good practices could be better promoted, which would benefit the entire higher education system (Basso et al., 2017).

The increasing need for a more significant presence of sustainability-related aspects in university rankings is underpinned by a strong demand from current and prospective students for information on the sustainability of universities. Typically, some universities are not currently meeting this goal and fail to provide sufficient information on their sustainability strategy and the success of its implementation. According to a recent global survey among students, 78% of respondents thought that universities could do more for the environment. This expectation is somewhat surprising since 84% of respondents considered universities to be already more or less environmentally friendly. It can be concluded that, according to students, there is room for improvement in becoming more sustainable. It is interesting to note that among the expectations towards universities, actions identified by students were mainly those related to campus operations like reducing the amount of single-use plastics or installing energy-efficient lighting (QS International, 2022).

Not only in the case of sustainability-related issues but also in general, a gap in substantial information can be identified between the factors important to prospective students before choosing a university and the amount and type of information provided by universities in their communications (Hemsley-Brown & Oplatka, 2006). A recent survey conducted by Csillag et al. (2022) found that half of the top 100 business schools do not address sustainability in their online communication of education-related topics. Moreover, Csillag et al.'s (2022) research results were in line with previous research findings about the majority of universities still failing to systematically integrate sustainability in their communication.

As Salvioni et al. (2017) stated based on their research, most universities they analysed have not yet been able to use sustainability to enhance their image as a result of their economic effectiveness and socio-environmental efficiency. This phenomenon, together with the limited attention of management scholars can unfortunately slow down the spread of sustainability principles and values in universities' governance strategies.

University rankings can be good solutions for this challenge, as they provide a complex framework, define the main priorities and requirements, and this way support the creation of detailed and well-founded sustainability strategies. Ranking the performance of universities in a variety of sustainability-related fields and aggregating their performance make them easier to compare, while this can also identify areas for future development. Moreover, university rankings can better meet the demand of their stakeholders for information, and serve as guidance for prospective students, while universities can use them to build their brand (Burmann et al., 2021).

Based on the previous subchapters, it can be concluded that while potential and current students require sustainability-related information from higher education institutes, these institutions often fall short to deliver the type and amount of information about data and initiatives. Universities usually publish their sustainability strategies and reports on their website, but the different types of documents are difficult to compare, which makes transparency and comparability difficult. To address this challenge and to gain a better understanding of highlights, challenges, and trends in sustainable universities, the study will analyse university sustainability performance rankings. After describing the importance of sustainability university rankings, 4 well-known sustainability rankings and their methodology will be presented.

3.1. People & Planet University League

As the United Kingdom has a long tradition of university education and hosts a large number of international students, it was important for the researchers of this study to look at the results of a UK ranking as part of this paper.

The People & Planet University League ranked 153 UK-based universities in 2022 (People & Planet University League, 2023a). The ranking relies on information published by the universities on their websites (weight: 55%), and on information published by the Higher Education Statistics Agency Estates Management Record (weight: 45%). The methodology

applied focuses on evaluating campus operations (91%), and curriculum (9%), but does not analyse the dimension of research. In the case of campus operations, analysts evaluate information regarding environmental strategy, resource management, ethics, and HR (People & Planet University League, 2023b). The methodology does not integrate the UN SDGs.

3.2. QS World University Rankings: Sustainability

To compile the QS World University Rankings: Sustainability 2023 ranking, analysts assessed 700 universities worldwide to evaluate their environmental and social impacts (QS International, 2023a). To be eligible for the first edition of this ranking, universities had to be published in the QS World or Regional Rankings in 2022. To be included in the analysis, potential participants had to prove their commitment to mitigating the climate crisis and were to show evidence of a research culture aligned with the UN SDGs (QS International, 2023b).

Besides the universities which participated in the QS World University Rankings, the researchers added non-applicant universities, based on their strong and clear environmental and social impact. The ranking evaluates eight dimensions (QS International, 2023a):

- Environmental impact:
  - Sustainable institutions
  - Sustainable education
  - Sustainable research
- Social Impact:
  - Equality
  - Knowledge exchange
  - Impact of education
  - Employability and opportunities
  - Quality of life.

3.3. Times Higher Education Impact Ranking

The Times Higher Education Impact Rankings evaluated altogether 1705 universities from 115 countries (Times Higher Education, 2023a). According to the summary about the methodology, this is *"the only global performance table that assesses universities against the United Nations' Sustainable Development Goals (SDGs)"* (Times Higher Education, 2023b). The indicators cover four main areas (Times Higher Education, 2023b):

- Research: creating research on relevant topics;
- Stewardship: acting as stewards towards stakeholders;
- Outreach: working together with local, regional, national, and international communities;
- Teaching: Ensuring to have enough skilled practitioners to deliver on the SDGs.

Unfortunately, the organization did not define the weight assigned to the assessed four areas. Instead, according to the description of the methodology, universities are evaluated on their best-performing SDGs, thereby creating a unique weighting system for each university, which makes the comparison of the results difficult. The analysts use three different categories for evaluating the sustainability performance of participating universities: Research metrics are derived from data supplied by Elsevier, continuous metrics are normalised to the size of the institution, and data are collected and provided by universities (Times Higher Education, 2023b). The strength of this methodology is that it covers all three dimensions of sustainable universities: operations, curriculum, and research.

3.4. UI GreenMetric

The UI GreenMetric was developed by Universitas Indonesia in 2010 as the first ranking dedicated to evaluating the level of sustainability among higher education institutes. At the beginning, it focused on environmental aspects and sustainability of buildings, but was later developed by feedback and was extended by further dimensions of sustainability (Basso et

al., 2017). According to Ragazzi and Ghidini (2017), this ranking is a good method for incorporating the principles of sustainability into the evaluation of the universities and reflects the need for the quantification of sustainability efforts.

Altogether 1050 universities from 85 countries participated in the latest, 2022 edition of the ranking (GreenMetric, 2023a). The methodology contains six criteria (GreenMetric, 2023b):

- Settings and infrastructure (15%)
- Energy and climate change (21%)
- Waste (18%)
- Water (10%)
- Transportation (18%)
- Education & Research (18%).

As we can see, the weight of campus operations in the ranking is 82%, while the remaining 18% is split between education and research. To be included in the ranking, universities must fill in a questionnaire and provide numeric data on several criteria. While the methodology is not fully based on the UN SDGs, the initiative has placed more emphasis on them in the past few years (GreenMetric, 2023a).

4. Methodology and data

This section describes the comparative analysis framework and the research questions employed to scrutinize the four selected ranking methodologies. In the scope of this paper, altogether four sustainable university rankings have been analysed and compared: People & Planet's University League, QS World University Rankings: Sustainability, Times Higher Education Impact Ranking, as well as the UI GreenMetric.

The People & Planet's University League evaluates the sustainability-related performance of universities in the United Kingdom, the UI GreenMetric is an Indonesian initiative, while the other two rankings are sustainability-focused lists of companies specialised in higher education rankings on the international level. These top lists have been identified as the most well-known and the most acknowledged methodologies for measuring universities' sustainability performance and communication.

The four rankings have already been introduced in the literature review. The data analysed in the next chapter have been collected by the authors from the websites of the rankings. Both international and local data will be presented and analysed (where applicable). The critical review of the rankings' results focuses on identifying patterns, discrepancies, and unique insights yielded by each method. Tables will be applied to visualize the outcomes.

The authors formulated the following research questions to be answered through examining the methodology and results of the rankings.

Q1. What are the main differences between the different methodologies used to rank higher education institutes based on their sustainability performance?

The authors of the study intend to identify the main methodological differences of the selected sustainable university rankings to understand the generalisability and reliability of the methods.

Q2. Which countries' universities dominate these ratings? Are there any countries with outstanding performance?

The researchers will look for patterns in the top lists of the selected sustainable university rankings to identify the best-performing countries and will attempt to understand the reasons for such outstanding performance.

Q3. Are universities that score high in sustainability rankings situated at the top of the overall university rankings or is there no correlation between the two?

This concerns the examination whether high university performance translates into excellent sustainability performance, or in case there is no direct correlation, other universities' excellence in sustainability rankings and the adoption of this as a distinctive business strategy present an intriguing research question.

Q4. Which sustainability rankings do Hungarian universities prefer and how have they performed in these rankings?

While the study focuses on international sustainability rankings, it is important to check and evaluate the performance of Hungarian universities, as the higher education sector becomes more and more international, which also extends the competition on the domain of sustainability. Therefore, it is important to identify the best-performing Hungarian universities and analyse their performance in view of international competition.

To answer the above research questions, the researchers have analysed international and local results of the selected sustainable university rankings. To make the research comparable, the focus was on the year 2022, therefore, in several cases, the most recent rankings were not taken into account.

The following chapter will identify the best-performing universities. Where applicable, the performance of participating Hungarian universities will be analysed as well. Based on the analysis of the methodologies and the results, the research questions will be answered.

5. Results

5.1. People & Planet University League

The People & Planet University League ranks only higher education institutes located in the United Kingdom, therefore the analysis of the performance of Hungarian universities is not applicable in this case. In 2022, altogether 153 UK-based universities participated in this ranking. As mentioned previously, this methodology does not integrate the UN SDGs. Out of the three main dimensions of university sustainability, it evaluates only campus operations and curriculum, but does not analyse the research activity of universities.

Table 1 shows the top 10 universities of the People & Planet University. It was the first time that Cardiff Metropolitan University became the best performer. Moreover, this is the first Welsh university leading the ranking in the history of the League. This outstanding performance is the result of a significant decrease in carbon emissions, while the majority of UK universities failed to reach their carbon reduction target (People & Planet University League, 2023a).

Table 1. People & Planet University League top list (2022/2023).
Source: People & Planet University League (2023c)

Rank	Name of University
1	Cardiff Metropolitan University
2	University of Bedfordshire
3	Manchester Metropolitan University
4	University of Reading
5	University of The Arts London
6	University of Exeter
7	University College London
8	University of Greenwich
9	University of Salford
10	Bangor University

The analysis of this ranking was useful to identify the best-performing UK-based universities. However, none of these universities will appear in the top lists of the other, international rankings. This finding draws attention to the increasingly intense international competition among universities in the field of sustainability. There is an emerging international elite that can effectively implement and communicate its sustainability strategy with the resources at its disposal and can strive to meet the often divergent requirements of different

rankings. By contrast, universities with more limited resources do not have the opportunity to be at the top of the largest, best-known rankings and are therefore much less likely to be able to integrate sustainability messages into their brand strategies.

5.2. QS World University Rankings: Sustainability

QS World University Rankings: Sustainability is a relatively new initiative of Quacquarelli Symonds QS, a global higher education network well-known for its global higher education ranking system. Their analysts assessed altogether 700 universities worldwide to evaluate their environmental and social impact.

It can be concluded that this ranking evaluates all three dimensions of sustainable universities (campus operations, curriculum, research), but no evidence was found regarding the weight assigned to these aspects. Another speciality of this methodology was the splitting of sustainability into environmental and social dimensions: sustainability strives to find a balance between environmental, social, and economic aspects. Therefore, it is challenging to evaluate the performance in one dimension without analysing its impact on the other. As a result, it can be concluded that the environmental and social results of the best-performing universities were unbalanced. Except for the leader of the ranking, University of California, Berkeley it was true for all top 10 universities that they could deliver good performance either in the environmental or in the social impact ranking. This, on the universities' side, shows the lack of integration of sustainability dimensions.

Table 2 lists the top 10 universities of the QS World University Ranking 2023, and also indicates their Word University Rank 2023 as well.

Table 2. QS World University Ranking top list (2023).
Sources: QS International (2023c), and QS International (2023d)

Sustainability Rank	World University Rank	Name of University	Country
1	27	University of California, Berkeley	USA
2	34	University of Toronto	Canada
3	47	University of British Columbia	Canada
4	15	The University of Edinburgh	United Kingdom
5	45	The University of New South Wales	Australia
6	41	The University of Sydney	Australia
7	23	The University of Tokyo	Japan
8	13	University of Pennsylvania	USA
9	18	Yale University	USA
10	87	The University of Auckland	Australia

In the top list, there are a total of three universities from Australia and the USA, respectively, while there are two universities from Canada, and 1 from both Japan and the United Kingdom. Based on these results, it can be concluded that Anglo-Saxon universities are overrepresented among the top 10 universities, which demonstrates outstanding performance in the analysed sustainability dimensions. These universities were able not only to create but also to successfully implement their sustainability strategy. Moreover, they were able to communicate their impacts to their stakeholders as well.

However, it is interesting to observe that a good position in the world university ranking does not necessarily lead to a sustainability rank. None of the top 10 universities in the sustainability ranking could come close to this result with their world university rank. This can be a sign of these universities' different business and marketing strategies as well as of intense competition to achieve a high position in a well-recognised university ranking in the hope of raising awareness among talented prospective students.

The latest world university ranking, QS World University Rankings 2024 includes three new dimensions: sustainability, employment outcomes, and international research network. The weight of sustainability was only five per cent despite *"the crucial role universities play in charting the course and driving change towards a more sustainable future"* (Ocallaghan, 2023), which was the reason for adding this dimension to the current methodology.

As QS Sustainability and QS World University Ranking is an international initiative, the authors searched for participating universities from Hungary. There were altogether three

Hungarian universities included in the first sustainability ranking compiled by QS. Their results are displayed in Table 3.

Table 3. QS World University Ranking Hungarian top list (2023).
Sources: QS International (2023b), and QS International (2023c)

Sustainability Rank	World University Rank	Name of University
341-360	801-1000	Budapest University of Technology and Economics
381-400	551-560	University of Szeged
601+	701-750	Eötvös Loránd University

Based on the results, it can be concluded that none of these universities belong to the top performers of this ranking. Moreover, similarly to the top 10 universities on the international level, there is a significant difference between these Hungarian universities' performance in the two rankings. The low number of Hungarian participants may be attributed to the eligibility criteria defined by QS. This means that to be ranked in the QS World University Ranking: Sustainability, universities first have to be eligible for QS World's other rankings. As the methodology favours larger universities due to its specificities, this sustainability ranking is only a good opportunity for the largest universities in Hungary.

5.3. Times Higher Education Impact Ranking

The Times Higher Education Impact Rankings evaluated altogether 1705 universities from 115 countries, assessing universities against the United Nations' Sustainable Development Goals (SDGs). It is a great advantage of this methodology that the SDGs are known by many people around the world; therefore, it is easy to understand the main priorities. As mentioned before, the methodology includes four dimensions: research, stewardship, outreach, and teaching.

The latest 2023 version is the fifth edition: this is headed by Australia's Western Sydney University for the second year in a row (Times Higher Education, 2023a). Table 4 summarises the Impact and the World University Rankings of the top 11 universities from the Impact Ranking because of tie-in scores. As we can see, there are 4 Canadian, and 3 Australian universities among the best performers, along with 1 university each from Denmark, Malaysia, the United Kingdom, and the United States. 9 out of 11 universities represent Anglo-Saxon countries, which means that, also in this case, these universities are overrepresented in the top list.

Table 4. Times Higher Education Impact Ranking top list (2023).
Sources: Times Higher Education (2023a, 2023c)

Impact Ranking	World University Ranking	Name of University	Country
1	201-250	Western Sydney University	Australia
2	54	University of Manchester	United Kingdom
3	251-300	Queen's University	Canada
4	601-800	Universiti Sains Malaysia	Malaysia
5	301-350	University of Tasmania	Australia
6	156	Arizona State University	USA
7	118	University of Alberta	Canada
7	301-350	RMIT University	Australia
9	251-300	Aalborg University (DNK)	Denmark
9	301-350	University of Victoria	Canada
9	201-250	Western University	Canada

Similarly to the previous ranking, it can be stated here as well that there are significant differences between universities' performance in the Impact Ranking and the World University Ranking. However, in this case, the differences between the two ranks are bigger. Out of the 11 best performers of the Impact Ranking, only the University of Manchester made it into the top 100 of the World University Ranking. The other 10 universities' ranks are significantly

worse. The leader of the Impact Ranking, Western Sydney University was ranked only between 201-250, while University Sains Malaysia (Rank 4) held a position of only between 601-800. However, it should be highlighted that in the latter situation, coming from an emerging economy, the Indonesian university has significantly overperformed others in the dimension of sustainability, compared with its ranking in the international competition among universities.

The authors have found altogether eleven Hungarian universities in the Impact Ranking, but only six of them were evaluated in the World University Ranking as well. Interestingly, out of these six higher education institutions, the University of Debrecen – the university with the best Impact Ranking – got the weakest rank in the World University Ranking. At the same time, the university with the weakest Impact Ranking, Semmelweis University got the best rank in the World University Ranking. This is once again proof of the methodological differences between the two rankings but also of the wide variety of expectations members of the higher education sector must meet. For a university that is relatively small in an international comparison and comes from a relatively small country, it can be a good differentiating strategy to focus more on sustainability and position itself as a regional or international leader in this dimension.

Table 5. Times Higher Education Impact Ranking Hungarian top list (2023). *Sources: Times Higher Education (2023a, 2023c)*

Impact Ranking	World University Ranking	University
301-400	1001-1200	University of Debrecen
401-600	601-800	Eötvös Loránd University Budapest
401-600	1201-1500	Hungarian University of Agriculture and Life Sciences
401-600	1001-1200	University of Szeged
601-800	1001-1200	University of Pécs
601-800	201-250	Semmelweis University
801-1000	-	Széchenyi István University
1001+	-	Budapest Business School
1001+	-	Eszterházy Károly Catholic University
1001+	-	John von Neumann University
1001+	-	University of Sopron

5.4. UI GreenMetric

Table 6. UI Green Metric top list (2022). *Source: GreenMetric (2023c)*

Rank	Name of University	Country
1	Wageningen University	Netherlands
2	Nottingham Trent University	United Kingdom
3	University of Nottingham	United Kingdom
4	University of Groningen	Netherlands
5	University of California, Davis	USA
6	Umwelt-Campus Birkenfeld	Germany
7	University College Cork	Ireland
8	University of Connecticut	USA
9	Universidade de Sao Paulo	Brazil
10	Universita di Bologna	Italy

The UI GreenMetric was developed in Indonesia, and it was the first sustainability ranking of higher education institutes, and at the beginning it mainly focused on environmental aspects of sustainability. As described earlier, the methodology now includes three main dimensions of university sustainability: campus operations, research, and education. However, the weight of campus operations is the largest (82%), while education and research activities only account for 18% of universities' results.

Table 6 introduces the top 10 universities according to this methodology. When compared to the two international university rankings, this list is the most international with 2 universities each from the Netherlands, the United Kingdom, and the United States, and 1 each from Germany, Ireland, Brazil, and Italy. At the same time, this is the most European ranking with 7 out of 10 top performers representing the European continent. None of these 10 higher education institutions featured on the previously described top lists of the other rankings. The reason can be methodological differences, but also the fact that this ranking focuses only on sustainability, which enables smaller universities to participate and compete in an international environment.

Table 7 summarises the ranks and names of Hungarian universities from the latest GreenMetric list.

Table 7. UI Green Metric Hungarian top list (2022). *Source: GreenMetric (2023c)*

Rank	Name of University
21	University of Pécs
73	University of Szeged
206	University of Sopron
229	Eötvös Loránd University Budapest
266	University of Debrecen
398	Semmelweis University
519	University of Pannonia
514	Budapest Business School
577	Corvinus University of Budapest
761	University of Miskolc

Similarly to the Times Higher Education Sustainability Ranking, the authors have found 11 Hungarian universities featuring in this ranking as well. Two of them made it into the top 100 out of the total sample of 1050 universities, which is an outstanding performance.

Considering the 3 analysed sustainability rankings, two Hungarian universities, Eötvös Loránd University Budapest and the University of Szeged were featured in all of them, while the following 5 universities appeared in 2 rankings:

- Budapest Business School
- Semmelweis University
- University of Debrecen
- University of Pécs
- University of Sopron.

This again shows the growing significance of sustainability as an important factor in competing for international students.

Undoubtedly, competing in this dimension is challenging. In Anglo-Saxon cultures, universities are typically situated in smaller, local areas outside cities, thereby forming their small community and exerting significant control over the environmental impacts of buildings, facilities, and parks. In the case of European type universities, higher education institutions are typically found in urban environments, and are often located in protected buildings with limited opportunities for becoming greener.

6. Discussion

The discussion will address the research questions, identify limitations, and explore future directions.

Three out of the four analysed methodologies evaluated all three dimensions of sustainable universities (campus operations, curriculum, and research). However, the weight of the latter two aspects was either low or unknown. This leads to the conclusion that sustainable university rankings lack focus or are unbalanced, this way providing too much weight to campus operations, while the core businesses of the higher education sector are education and research. Companies usually focus on all the three dimensions, i.e. the

environmental, social, and economic impacts of their core businesses, which could be a good future direction for the academic sector as well.

The UN Sustainable Development Goals were somewhat integrated into the methodologies in the case of QS University Rankings – Sustainability and GreenMetric. However, it was only the Times Higher Education Impact Ranking that fully integrated the 17 SDGs. This well-known and worldwide acknowledged framework could serve as a blueprint for higher education institutions and for the research companies evaluating them from a sustainability aspect as well.

Sustainable university rankings apply various methods for collecting and evaluating data about the entities under review. Typically, universities must collect and submit information, or their publicly available information is assessed. In some cases, research companies collect data from other dedicated sources (*Q1*). As many universities participate in different sustainability rankings, the standardisation of data collection methods could facilitate the submission of data to several evaluations.

In fact, Anglo-Saxon universities dominate in international sustainability rankings (*Q2*). This may be due to their rich university culture or to the fact that they reside in their own city with huge potential for optimising their impacts on their local environment, society, and economy. In contrast, universities in other countries often lack a centralized campus and operate across separate buildings, potentially presenting challenges for holistic sustainability initiatives at a broader scale.

Researchers found significant differences between sustainability and overall university rankings (*Q3*). It seems there is competition of a different nature and intensity in the case of the two types of rankings. Large international universities can benefit from overall university rankings, while sustainability rankings might be a good opportunity for smaller universities to differentiate themselves from their competitors. To put it simply: if a university is not performing super well in education and research, its focusing on sustainability issues can provide a pathway to achieving a favourable position in sustainability rankings, which offers an alternative recognition and competitive advantage.

An equal number of 11 Hungarian universities participated in the Times Higher Education Impact Ranking and GreenMetric, therefore a clear preference could not be identified from the side of Hungarian universities. The University of Pécs achieved rank 21 in GreenMetric 2022, which is the best Hungarian performance in sustainability rankings in a field of 1050 competitors (*Q4*). It was interesting to observe that several Hungarian universities participated in two or three different sustainable university rankings. This shows not only the growing importance of sustainability as an important factor in competing for international students but also the lack of one dominant sustainability ranking. In the next few years, an existing or a new methodology could emerge and develop and become the most widely used framework for evaluating and comparing the sustainability performance of higher education institutions.

Due to the large number of indicators analysed by the different methodologies, and the sometimes non-transparently communicated variables and weight, the research suffered from several limitations. Future research with a more focused methodology and a deeper analysis of best-performing universities could allow the drawing of more complex conclusions. Nevertheless, the results of this paper can provide a solid framework and could especially serve as a helpful resource for Hungarian universities to enhance their sustainability practices and strategic positioning in global rankings.

7. Conclusions

The paper analysed and compared four prominent sustainable university rankings: the People & Planet University League, QS World University Rankings: Sustainability, Times Higher Education Impact Ranking, and UI GreenMetric. It found that while most methodologies evaluated the three dimensions of campus operations, curriculum, and research, their weights were often unknown or imbalanced. The Times Higher Education ranking had the strongest integration of the UN Sustainable Development Goals.

There were differences between sustainability and overall university rankings, which indicates different competition dynamics. Anglo-Saxon universities, especially from Australia, the UK, and the US, dominated the top ranks, potentially due to their campus models.

However, none of the top 10 universities appeared among the best rankers in other sustainable university rankings. Among Hungarian universities, the University of Pécs achieved the best result with its rank 21 on the GreenMetric rankings.

The main limitation of the study is its methodological approach: The authors did not aim to provide a detailed, variable-level comparison of the methodologies of the most well-known sustainable university rankings. Instead, they focused more on highlighting the different approaches applied by the founders of the selected methodologies. The main aim of the study was to raise awareness of the opportunity for universities to differentiate themselves from their competitors with the help of a good position in a sustainability ranking. However, this is currently challenging due to the methodological differences of the most well-known sustainable university rankings.

The analysis revealed limited transparency and standardisation between methodologies. While sustainability rankings offer opportunities for differentiation, standardizing data collection and emphasizing the impact of education and research could enhance effectiveness in advancing progress across the higher education sector towards environmental, social, and economic responsibility.

A possible future direction for research could be to start developing and validating a common methodology that is transparent and standardised for universities and that is in line with the internationally recognised SDG framework. This could include a focus on the environmental, economic and social impacts of universities and a detailed analysis of the variables of the current methodology for sustainable university rankings.

In addition, it would be worthwhile to develop a future guide based on the research results: this guide could support universities in the initial steps of designing, implementing and communicating their sustainability strategy thus enabling them to be successfully ranked as sustainable universities and thereby strengthening their competitiveness on the international stage.

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