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Posted Date: 25 February 2026

doi: 10.20944/preprints202602.1357.v1

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Sustainability Without Prestige? The Rise of UI GreenMetric and the Persistent Decoupling from Global University Rankings (2010–2025)

Elizane Maria de Siqueira Wilhelm [1], Camila Lopes Ferreira [1], José Roberto Herrera Cantorani [2] and Luiz Alberto Pilatti [1,*]

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Abstract

Universities are fundamental to transitions towards sustainability, but academic prestige is still primarily shaped by overall rankings. This study assesses whether sustainability leadership is becoming associated with academic prestige and, for this assessment, analyzes the UI GreenMetric World University Rankings (2010–2025) and its overlap with the QS World University Rankings (QS WUR) and Times Higher Education World University Rankings (THE WUR) Top 100; triangulation utilizes THE Impact (2019–2025) and QS Sustainability (2023–2025). A longitudinal institution-year panel was constructed and analyzed based on Top 100/Top 10 participation, Borda points, Jaccard stability, and conditional access risk (RR) indices. Participation increased from 95 institutions (2010) to 1,745 (2025), with the Global South representing 90% of participants in 2025. Although the South occupied more positions in the Top 100 in 2025 (63 vs. 37), conditional access to the Top 100 remained unequal (21.1% North vs. 4% South; RR = 5.27), and the Top 10 was dominated by the North (9 vs. 1). The stability of the Top 100 increased (Jaccard 0.33 in 2010–2011 to 0.86 in 2023–2024), while overlap with the overall Top 100 remained minimal in 2025 (three institutions with QS WUR ranking and three with THE WUR ranking). Overall, sustainability appears institutionalized in GreenMetric participation and elite stability, but remains weakly associated with conventional academic prestige, suggesting a limited alignment of incentives in higher education.

Keywords: higher education institutions; campus sustainability; university rankings; sustainability assessment rankings; UI GreenMetric; academic prestige; Global North–Global South; decoupling

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1. Introduction

Transitions toward more sustainable societies depend strongly on institutional capacities to produce knowledge, educate human capital, and catalyse socio-technical innovation. In this context, higher education institutions (HEIs) have been widely recognised as key actors in the literature on sustainable development, socio-technical transitions, and systemic transformation [1–6]. HEIs occupy a distinctive position: beyond contributing through teaching, research, and societal engagement, they can serve as living laboratories that implement and demonstrate solutions that diffuse from campus to surrounding communities [7,8].

At the same time, HEIs are operationally complex organisations comprising multiple buildings, uses, services, and consumption patterns. This complexity makes campus sustainability governance resemble challenges typical of urban systems and turns sustainability into an institutional coordination problem, frequently compared to managing complex urban infrastructures with multiple decision levels and competing internal incentives [4,9–13].

Within this environment, the global higher education field has been shaped by infrastructures of comparison—most notably rankings—which do not merely describe differences but can generate

 doi:10.20944/preprints202602.1357.v1

performative effects by reorienting institutional priorities, communication strategies, resource allocation, and even the operational definitions of 'academic quality' [14–18]. In practical terms, rankings function as inducers. By establishing relatively stable hierarchies and metrics, they create incentives for conformity and reactivity, reinforcing dominant prestige trajectories and cumulative advantage mechanisms akin to the 'Matthew effects' discussed in the science and institutional reputation literature [17,19].

Historically, the global rankings that structure reputation and competition have privileged indicators of research productivity, reputation, and internationalisation. At the same time, sustainability has remained peripheral to the core metrics of academic prestige, despite the parallel expansion of sustainability assessment instruments [15,20,21]. Recent changes suggest partial inflection—for example, the introduction of a sustainability-related indicator in the QS WUR from the 2024 edition, with an approximate 5% weight in the overall score [22]. However, the relative weight of sustainability remains limited compared with traditional prestige indicators. Similarly, the Academic Ranking of World Universities (ARWU) retains a research-excellence methodology centred on bibliometrics and major international prizes (Nobel, Fields), highly cited researchers, and indexed scientific output, with no explicit sustainability criteria [23]. Consequently, institutional advances in environmental and climate agendas may not translate into symbolic capital within the primary circuits of global prestige.

This disconnect has been empirically examined in recent studies. Analyses such as Wilhelm et al. [24] and Alberti et al. [25] indicate that institutional sustainability performance rarely translates into improved positions in traditional rankings, reinforcing the diagnosis of decoupling between established academic 'excellence' and sustainability as an evaluative dimension. If rankings are indeed inducers, the implication is direct. That is, when sustainability remains outside the core of general rankings, systemic change is unlikely to be rewarded or accelerated at the pace required.

Despite this growing debate, systematic longitudinal evidence remains limited on (i) participation dynamics, elite stability, and leadership concentration within sustainability rankings and (ii) the extent to which sustainability elites converge with the elites defined by general rankings under comparable cuts. Sustainability-oriented evaluations and rankings have proliferated partly to address this measurement gap. Among the most widely used, the UI GreenMetric World University Rankings—created by Universitas Indonesia in 2010—has become the longest-running global ranking focused exclusively on university sustainability [20,26,27]. GreenMetric is based on an annual questionnaire organised into six dimensions with explicit weights: Setting and Infrastructure (SI), 15%; Energy and Climate Change (EC), 21%; Waste (WS), 18%; Water (WR), 10%; Transportation (TR), 18%; and Education and Research (ED), 18% [27]. Beyond measurement, the initiative frames itself as a change mechanism; its guideline states that it aims to leverage HEIs by evaluating and comparing efforts in education for sustainable development, research, campus greening, and social outreach [27].

Nonetheless, sustainability rankings are not neutral instruments. Recent literature identifies risks of self-selection bias (who participates and who does not) and the reputational use of 'green' signalling, with implications for comparability and the meaning of sustainable 'leadership'. A critical review of GreenMetric highlights self-selection tendencies and the possibility of institutional greenwashing—concepts also developed in the corporate sustainability and organisational reputation literature [25,28,29]. Complementarily, qualitative studies on sustainability assessments and rankings (SARs) suggest that participation may be shaped by reputational calculus - Buckner and Zhang [30] report that reputational loss is cited as a reason for non-participation, particularly among highly prestigious universities.

Two implications follow. First, even as sustainability rankings expand, it remains necessary to understand who enters, who leads, and whether convergence with traditional hierarchies occurs—i.e., whether sustainability is becoming a prestige axis comparable to conventional academic prestige. Second, if overlap between the 'sustainability elite' and the 'traditional academic elite' remains persistently low, systemic inducement is likely to be limited; that is, the circuits that structure global reputation may continue to reward academic excellence without internalising sustainability as a central dimension [15,17].

Against this background, this study proceeded on the premise that rankings shape organisational priorities and that the incorporation (or non-incorporation) of sustainability into general rankings constitutes a decisive factor in changing incentives in global higher education [16,18]. Given this scenario, the objective of this study, using longitudinal series, is to examine: (i) participation and leadership dynamics in UI GreenMetric (2010–2025), emphasising North–South asymmetries; and (ii) the degree of convergence between the sustainability elite (GreenMetric Top100) and elites defined by general rankings (QS WUR; THE WUR) and by sustainability-oriented rankings (THE Impact; QS Sustainability) in the years available for comparison.

The guiding research question was: as sustainability is measured through rankings, is this expansion (i) being institutionalised symmetrically between North and South within the UI GreenMetric top tier, and (ii) being incorporated into the central circuit of academic prestige as operationalised by general global rankings?

From this question, the following hypotheses were derived, consistent with the empirical design: H1: participation expansion in GreenMetric is more intense in the Global South, but top-tier leadership remains asymmetric; H2: conditional on participation, the probability of Top100 membership is higher in the Global North (relative advantage); H3: Top100 stability increases over time (institutionalisation), although national concentration cycles occur; H4: overlap between GreenMetric and general rankings remains low and shows no clear convergence trend in the comparable period; H5: overlap with explicitly sustainability-oriented rankings is higher than with general rankings, but still limited, reflecting differing operationalisations of ‘sustainability’.

2. Materials and Methods

2.1. Study Design, Temporal Scope, and Unit of Analysis

The study adopted a quantitative, descriptive, and longitudinal design, operationalised by constructing an unbalanced institution–year panel from the UI GreenMetric World University Rankings for 2010–2025. The analytical protocol was structured around three complementary axes: (i) characterisation of participation dynamics and sustainability performance; (ii) measurement of leadership structure and its concentration over time; and (iii) estimation of the degree of alignment between sustainability excellence and academic prestige, measured by general rankings, with additional triangulation using sustainability-oriented rankings. The primary unit of analysis was the institution–year pair in GreenMetric. For inter-ranking comparisons, the unit was restricted to institution–year pairs within Top100 (and, where applicable, Top10), a choice that increases comparability across systems with distinct scales and conventions by focusing on strictly ordinal elite positions.

2.2. Data Sources and Variables

The study adopted a quantitative, descriptive, and longitudinal design, operationalised by constructing an unbalanced institution–year panel from the UI GreenMetric World University Rankings for 2010–2025. The analytical protocol was structured around three complementary axes: (i) characterisation of participation dynamics and sustainability performance; (ii) measurement of leadership structure and its concentration over time; and (iii) estimation of the degree of alignment between sustainability excellence and academic prestige, measured by general rankings, with additional triangulation using sustainability-oriented rankings. The primary unit of analysis was the institution–year pair in GreenMetric. For inter-ranking comparisons, the unit was restricted to institution–year pairs within Top100 (and, where applicable, Top10), a choice that increases comparability across systems with distinct scales and conventions by focusing on strictly ordinal elite positions.

The primary dataset was the UI GreenMetric World University Rankings (2010–2025), which reports, for each participating institution and year, the global ordinal rank and the total aggregate score. In recent years, GreenMetric has also provided dimension-level scores across six categories: SI, EC, WS, WR, TR, and ED. To measure academic prestige for annual comparative analysis, the QS WUR [31] and the THE WUR [32] were used for 2019–2025, always in the Top100 cut (and Top10 when relevant). To triangulate sustainability operationalisations, the THE Impact Rankings [33] (2019–2025) and the QS Sustainability Rankings (2023–2025) [34] were also incorporated, again prioritising Top100/Top10. For transparency, official methodology descriptions were consulted for QS WUR [22], THE WUR [35], and THE Impact [36]. Due to licensing and redistribution restrictions, complete lists from commercial rankings were not reproduced. Reporting prioritised aggregated statistics, association measures, and intersection cardinalities (when small), preserving verifiability without redistributing proprietary content.

2.3. Data Preparation, Standardisation, and Identification Keys

Data preparation followed deterministic and replicable procedures to maximise longitudinal consistency and enable conservative inter-ranking matching. For GreenMetric years/files in which the country was not available as an explicit column, it was reconstructed from the original tabular structure (where the country was listed immediately adjacent to the institutional record), preserving line-by-line correspondence. Country names were then harmonised using standardisation rules to reduce orthographic variation, abbreviations, and exonyms, with particular attention to cases that could affect the North–South classification used in hypothesis testing. Institution names were normalised to reduce false negatives in cross-ranking merges, including lowercasing, diacritic removal, punctuation stripping, tokenisation, and removal of low-information generic terms. A practical matching key was defined as (normalised name + standardised country), complemented by token-based similarity checks (Section 2.9). Because some rankings report rank bands outside the top tier (e.g., '601–650'), inter-ranking comparative analyses were structured primarily around Top100/Top10, where ranks are strictly ordinal and thus less ambiguous.

2.4. Top100 Definition and National Leadership Metrics (Volume and Quality)

For each year t, Top100(t) was defined as the set of institutions with ordinal rank $\in [1, 100]$. National leadership was measured using two complementary metrics. Volume leadership was defined as the number of institutions from a country c present in Top100 in year t: $N(c, t) = |\{ i \in \text{Top100}(t): \text{country}(i) = c \}|$, where $|\cdot|$ denotes set cardinality. Quality leadership (position-weighted) was operationalised using Borda points for each institution i in Top100: $B(i, t) = 101 - \text{rank}(i, t)$, so rank = 1 receives 100 points and rank = 100 receives 1 point. Country-level quality was $B(c, t) = \Sigma_{i \in \text{Top100}(t): \text{country}(i)=c} B(i, t)$, and the country's share of 'top quality' was $S_B(c, t) = B(c, t) / \Sigma_c B(c, t)$. This decomposition distinguishes countries with high numeric presence in Top100 (volume) from those with systematically higher positional performance (quality-weighted).

2.5. Leadership Concentration (HHI)

Leadership concentration was estimated annually using the Herfindahl–Hirschman Index (HHI), calculated from the quality shares $S_B(c, t)$: $HHI(t) = \Sigma_c [S_B(c, t)]^2$, with $S_B(c, t) \in [0, 1]$. Higher values indicate a greater concentration of top-quality in a small number of countries, while lower values indicate greater dispersion.

2.6. Top100 Stability and Turnover (Retention and Jaccard)

Top100 stability was measured using two annual indicators. Retention captured the absolute number of recurrent institutions that remained in Top100 from t to t+1: $Ret(t, t+1) = |\text{Top100}(t) \cap \text{Top100}(t+1)|$. Jaccard similarity between consecutive years was defined as $J(t, t+1) = |A \cap B| / |A \cup$

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B|, where A = Top100(t) and B = Top100(t+1). Values close to 1 indicate high stability; values close to 0 indicate higher turnover.

2.7. Global North–Global South Operationalisation and Asymmetry Metrics

The Global North vs. Global South split was operationalised using the IMF World Economic Outlook (WEO) country classification available at the time of data collection, distinguishing advanced economies (North) from emerging-market and developing-economy countries (South). For each year t, descriptive metrics were computed for total participation, Top100 participation, and the share of top-quality (sum of Borda points) by group. Asymmetry in access to Top100 was summarised by the conditional probability of Top100 membership given participation in year t: P(Top100 | participation, g, t) = Top100(g, t) / Participants(g, t), where g ∈ {North, South}. Relative inequality was summarised by a risk ratio (RR): RR(t) = P_North(t) / P_South(t).

2.8. Dimensional Profile of Sustainability Performance (Top100, 2025)

For 2025, Top100 performance was decomposed across the six GreenMetric dimensions. For each institution i, the relative contribution of dimension d to the total was defined as share_d(i) = score_d(i) / score_total(i), with d ∈ {SI, EC, WS, WR, TR, ED}. Mean share_d(i) values were compared descriptively between North and South within the 2025 Top100 to characterise differences in the composition of sustainability performance, without inferential or causal claims.

2.9. Sustainability Versus Academic Prestige: Matching and Inter-Ranking Metrics

Comparisons between GreenMetric and external rankings were conducted at two analytical levels: (i) top-tier overlap and (ii) triangulation across sustainability-oriented rankings. For each external ranking R and year t, overlap was measured as the cardinality of the intersection of Top100 (and, where applicable, Top10) sets: |Top100_GM(t) ∩ Top100_R(t)| and |Top10_GM(t) ∩ Top10_R(t)|. When multiple general rankings were considered in the same year, the union cardinality was also computed (GreenMetric Top100 institutions appearing in at least one external Top100), providing a minimal synthesis of overlap across references. Institutional matching used the operational key (normalised name + country) and, when required, token-based similarity checks using the Dice coefficient: Dice(A, B) = 2|A ∩ B| / (|A| + |B|), in [0, 1]. A conservative threshold (Dice ≥ 0.80) was adopted for automatic matching, and the cases forming reported intersections were manually audited to reduce the risk of false positives.

2.10. Robustness and Sensitivity Checks

The analytical protocol included descriptive robustness checks that do not rely on strong causal assumptions, including: (i) variation of the elite cut (Top50 and Top100) to assess dependence on threshold choice; (ii) sensitivity of matching by varying the Dice threshold (e.g., 0.75–0.85) and inspecting borderline cases; (iii) descriptive stratifications by macro-region and/or high-participation countries to check whether a small number of national systems drives aggregate patterns; and (iv) reassessment of trends using both volume and quality leadership measures to ensure that interpretations are not dependent on a single metric.

2.11. Reproducibility and Analytical Integrity

Standardisation rules (for institution names and countries), the Top100 definition, and all metrics (Borda, HHI, retention, Jaccard, conditional probabilities, RR, dimensional shares, and inter-ranking overlaps) were specified deterministically, documented, and applied consistently across the panel. Reporting prioritised aggregated statistics and intersection measures, preserving transparency and verifiability without redistributing proprietary ranking lists. To strengthen computational reproducibility, scripts and processed non-proprietary outputs are intended to be made available by the corresponding author, subject to ranking providers' licensing constraints.

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3. Results

This section reports empirical results derived from the consolidated UI GreenMetric panel (2010–2025) and systematic comparisons with general rankings (QS WUR and THE WUR) and sustainability rankings (QS Sustainability and THE Impact Rankings), consistent with the analytical design described above. Findings are organised into five blocks: (i) GreenMetric expansion and North–South composition; (ii) relative performance and inequality of access to Top100; (iii) national leadership and concentration; (iv) Top100 stability over time; and (v) convergence (or divergence) between sustainability leadership and general rankings.

3.1. GreenMetric Expansion and North–South Reconfiguration (2010–2025)

GreenMetric participation expanded substantially, increasing from 95 universities in 2010 to 1,745 in 2025—approximately an 18-fold increase relative to the first year of the series. This expansion was accompanied by a consistent shift in geographic composition, with increasing predominance of the Global South.

In 2025, the full sample of 1,745 universities was distributed as follows:

- Global North: 175 universities (10.0%);
- Global South: 1,570 universities (90.0%).

This inversion reflects a trajectory observable from the mid-series: in 2016, the South already surpassed the North in participation (275 vs. 240 institutions), and this trend continued through 2025. Figure 1 (North–South participation in GreenMetric) illustrates this inflection, suggesting that GreenMetric achieved greater capillarity in emerging and developing systems over the period analysed.

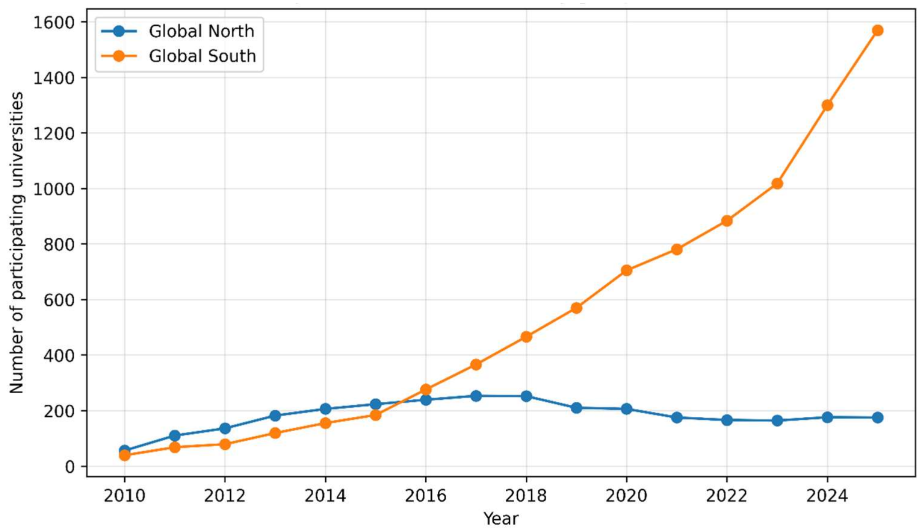

Figure 1. Participation in the UI GreenMetric World University Rankings by Global North and Global South, 2010–2025.

Descriptively, the data indicate that sustainability—operationalised through GreenMetric—has been associated with higher institutional adhesion in the Global South than in the Global North across the analysed period.

3.2. Relative Performance in Top100 and North–South Asymmetry

Despite the South accounting for the vast majority of participating universities, the distribution of elite positions (Top100) remained asymmetric.

In 2025:

- GreenMetric Top100 (2025): 63 South vs. 37 North;
- GreenMetric Top50 (2025): 26 South vs. 24 North;
- GreenMetric Top10 (2025): 1 South vs. 9 North.

This pattern indicates that, although the South expanded in volume and Top100 presence, the very top tier remained strongly dominated by the North.

3.2.1. Three Structural Milestones (Participation, Top100 Volume, and Top100 'Quality')

Three temporally distinct transitions were identified in the series:

1. Participation shift (2016): the South surpassed the North in the number of ranked institutions;
2. Top100 volume shift (2022): the South occupied more than half of Top100 positions (52 vs. 48);
3. Top100 'quality' shift (2025): the South reached a majority share of Borda points in Top100 for the first time.

The third milestone is particularly relevant descriptively. While the South became numerically dominant in the Top100 in 2022, this presence did not translate into a larger share of aggregated position-weighted performance until 2025.

In 2025, Top100 Borda points were distributed as:

- South: 54.6%;
- North: 45.4%.

Figure 2 illustrates this crossover, indicating that the South not only occupied more Top100 positions but also accounted for a larger share of aggregated top-tier quality.

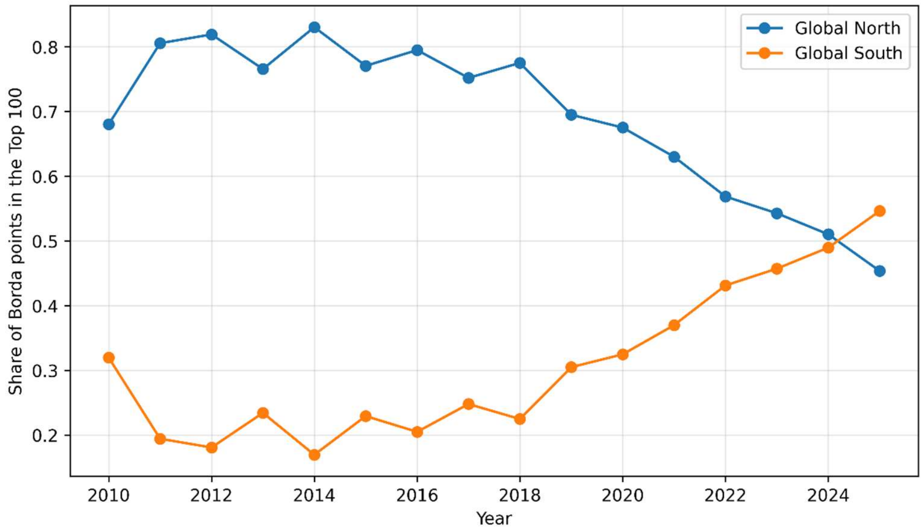

Figure 2. Share of Top100 quality (Borda points) by Global North and Global South, 2010–2025.

3.2.2. Conditional Probability and Risk Ratio (RR): Persistence of Relative Inequality

Even with the South dominating total participation and increasing Top100 representation, conditional probability analysis indicates that, proportionally, North-based universities retained a substantially higher chance of appearing in Top100.

In 2025:

- Probability that a North-based university was in Top100: 21.1%;
- Probability that a South-based university was in Top100: 4.0%;
- Estimated risk ratio (RR): 5.27.

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In other words, in 2025, a North-based university had approximately five times the probability of appearing in Top100 compared with a South-based HEI, conditional on participation. Figure 3 summarises the trajectory of this relative inequality: after 2016, RR remained predominantly in the 3–5 range, with oscillations and no consistent downward trend.

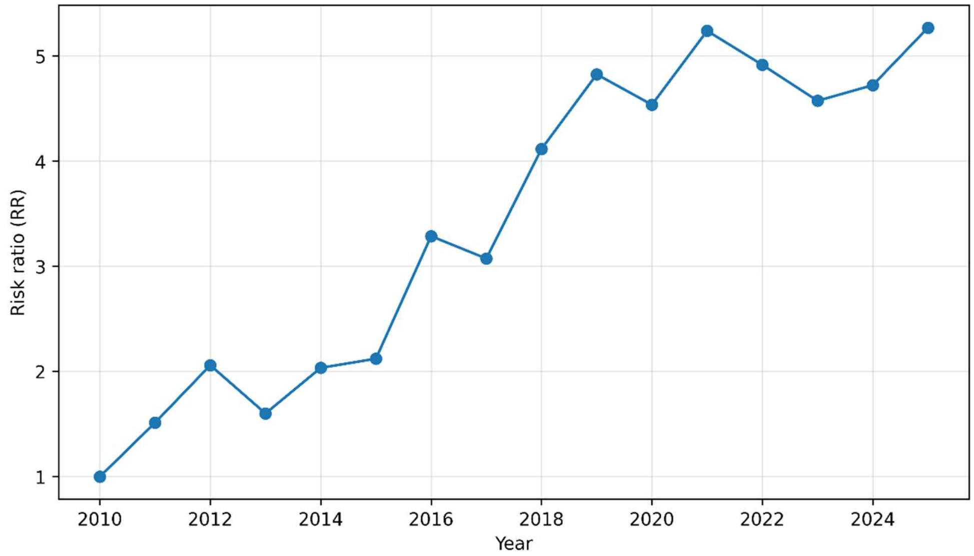

Figure 3. Risk Ratio (RR): P(Top100 | participation) for Global North relative to Global South, 2010–2025.

3.2.3. Performance Differences Within Top100 (2025)

Within the 2025 Top100, additional performance differences were observed:

- North mean rank in Top100: 39.1;
- South mean rank in Top100: 57.2;
- North mean total score: 9,079;
- South mean total score: 8,852.

These results indicate that, although the South expanded its Top100 presence, its average positioning within the elite set remained lower than that of the North, reinforcing the persistence of relative asymmetries at the top.

3.3. National Leadership and Concentration in Top100

Table 1 reports the countries with the highest recurrence in GreenMetric Top100 (2010–2025), combining frequency of appearances with an aggregated quality measure (cumulative Borda points).

Table 1. Leading countries in GreenMetric Top100 (2010–2025): frequency and aggregated performance.

Country	Top100 appearances (2010–2025)	Cumulative Borda points	Mean rank in Top100
United States	177	11,364	36.8
Indonesia	145	6,192	58.3
Taiwan	135	5,603	59.5
United Kingdom	132	9,293	30.6
Spain	83	3,477	59.1
Thailand	80	2,853	65.3
Colombia	77	2,717	65.7
Malaysia	65	2,972	55.3

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Canada	64	3,700	43.2
Italy	64	3,238	50.4

Source: Elaborated by the authors (2026), based on GreenMetric.

Three patterns emerged:

1. Frequency–quality duality: some countries appear frequently (e.g., Indonesia) but with lower mean ranks, while others show fewer appearances but higher positional performance (e.g., United Kingdom, United States);
2. Growth of South presence in Top100: Indonesia, Taiwan, Thailand, Colombia, and Malaysia illustrate increased South participation in Top100, albeit with lower mean positions;
3. National leadership is heterogeneous: volume leadership and quality leadership do not necessarily coincide.

3.3.1. Leadership Concentration in Top100 (HHI)

The HHI, calculated on the distribution of Borda points by country, indicates a long-run reduction in concentration followed by an increase in more recent years (Figure 4).

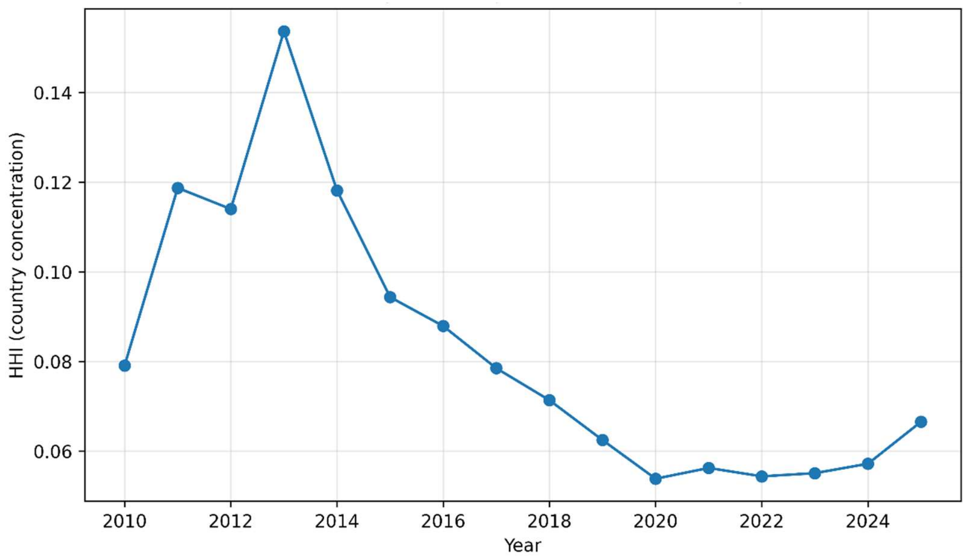

Figure 4. Concentration of leadership in Top100 (HHI over Borda points), 2010–2025.

Key reference points include:

- Highest concentration: 2013 (HHI = 0.154, with United States predominance);
- Lowest concentration: 2020 (HHI = 0.054, indicating higher national diversity);
- 2025: HHI = 0.067, with Indonesia holding the largest share of aggregated Borda points (≈15.8% of Top100 Borda points).

This pattern suggests that, while the ranking diversified nationally over the long run, certain countries—particularly in the South—emerged as concentrated leaders in the most recent cycle.

3.4. Top100 Stability: Sustainability as an Institutionalised Performance Regime

Top100 stability, measured by Jaccard similarity between consecutive years, increased over time, indicating reduced turnover and a more persistent elite set (Figure 5).

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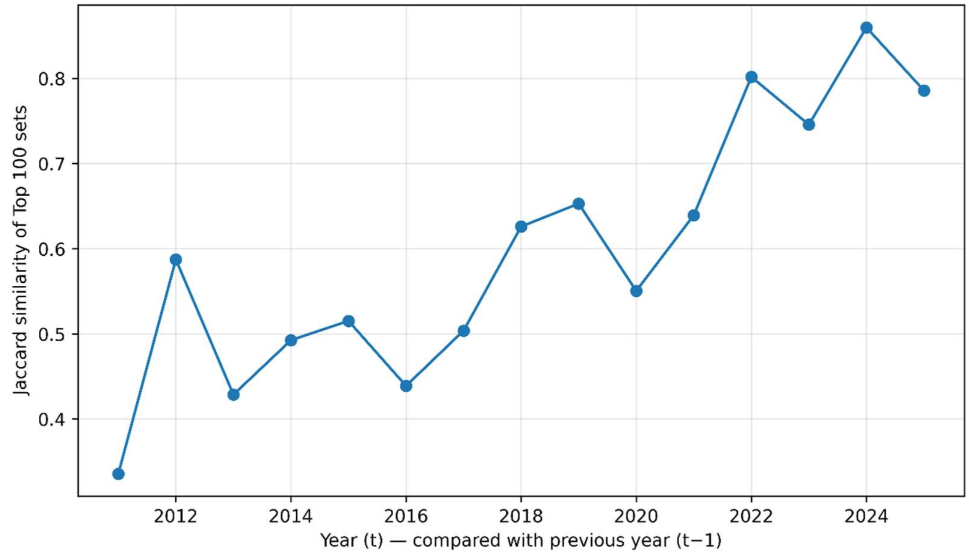

Figure 5. Stability of Top100: Jaccard similarity between consecutive years, 2010–2025.

Key reference points include:

- Lowest stability: 2010–2011 (Jaccard = 0.33; retention ≈48 institutions);
- Highest stability: 2023–2024 (Jaccard = 0.86; retention ≈92 institutions);
- 2024–2025: Jaccard = 0.79; retention ≈88 institutions.

Overall, the trajectory indicates increasing persistence of a relatively stable group of top-performing institutions, consistent with institutionalisation dynamics in GreenMetric's elite tier.

3.5. Sustainability Versus General Rankings: Minimal Overlap and Limited Convergence

3.5.1. Minimal Overlap with General Rankings (QS WUR and THE WUR)

Comparison with general rankings indicates very low overlap between the sustainability elite (GreenMetric Top100) and the traditional academic prestige elite (QS/THE Top100).

In 2025:

- GreenMetric Top100 ∩ QS WUR Top100: 3 institutions (Jaccard ≈ 0.015);
- GreenMetric Top100 ∩ THE WUR Top100: 3 institutions (Jaccard ≈ 0.015).

In practical terms, approximately 6% of GreenMetric Top100 (2025) appeared in at least one general Top100, indicating limited coincidence between sustainability elite lists and mainstream prestige lists (Table 2).

Table 2. Institutions in GreenMetric Top100 (2025) that also appear in Top100 general rankings (2025).

Institution (country)	GreenMetric rank	QS WUR rank	THE WUR rank
Wageningen University & Research (Netherlands)	1	–	67
University of Groningen (Netherlands)	6	–	80
University of California, Davis (USA)	7	–	62
University of São Paulo (Brazil)	5	92	–
Universiti Malaya (Malaysia)	34	60	–
UNAM – Universidad Nacional Autónoma de México (Mexico)	86	94	–

Source: Elaborated by the authors (2026), based on GreenMetric, QS WUR rank, and THE WUR rank.

These results indicate that, within the analysed elite cut, sustainability leadership rarely coincides with top-tier standing in mainstream academic prestige rankings, and vice versa.

3.5.2. Temporal Pattern of Overlap with QS WUR and THE WUR (2019–2025)

The 2019–2025 series indicates that convergence between GreenMetric and general rankings did not increase; if anything, overlap tended to decline:

- GreenMetric–QS overlap (Top100): 2019: 0 | 2020: 0 | 2021: 5 | 2022: 3 | 2023: 2 | 2024: 0 | 2025: 3;
- GreenMetric–THE overlap (Top100): 2019: 6 | 2020: 5 | 2021: 6 | 2022: 6 | 2023: 4 | 2024: 4 | 2025: 3.

Figure 6 summarises these trajectories, indicating persistent low overlap and no consistent upward trend.

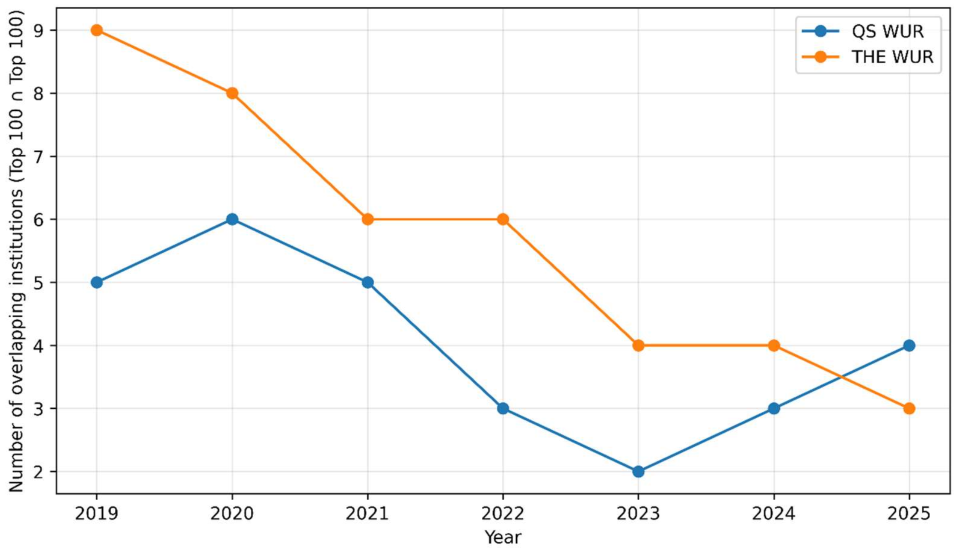

Figure 6. Overlap between GreenMetric Top100 and general rankings (QS WUR and THE WUR), 2019–2025.

3.6. Overlap Between GreenMetric and Sustainability Rankings

When GreenMetric was compared with explicitly sustainability-oriented rankings, overlap was numerically higher than with general rankings, but remained low in absolute terms.

In 2025:

- GreenMetric Top100 ∩ QS Sustainability Top100: 2 institutions (Jaccard ≈ 0.010);
- GreenMetric Top100 ∩ THE Impact Top100: 7 institutions (Jaccard ≈ 0.036).

The seven universities simultaneously appearing in GreenMetric Top100 and THE Impact Top100 in 2025 (with respective ranks) were: Nottingham Trent University (3 | 98); University of Limerick (14 | 76); Universitas Gadjah Mada (26 | 82); Mahidol University (35 | 64); Aalborg University (36 | 9); Universitas Airlangga (44 | 9); and Walailak University (84 | 93).

Across 2019–2025, GreenMetric–THE Impact overlap remained relatively stable (approximately 6–15 institutions per year), suggesting some consistency between sustainability frameworks, albeit with differing emphases. Figure 7 summarises this comparison.

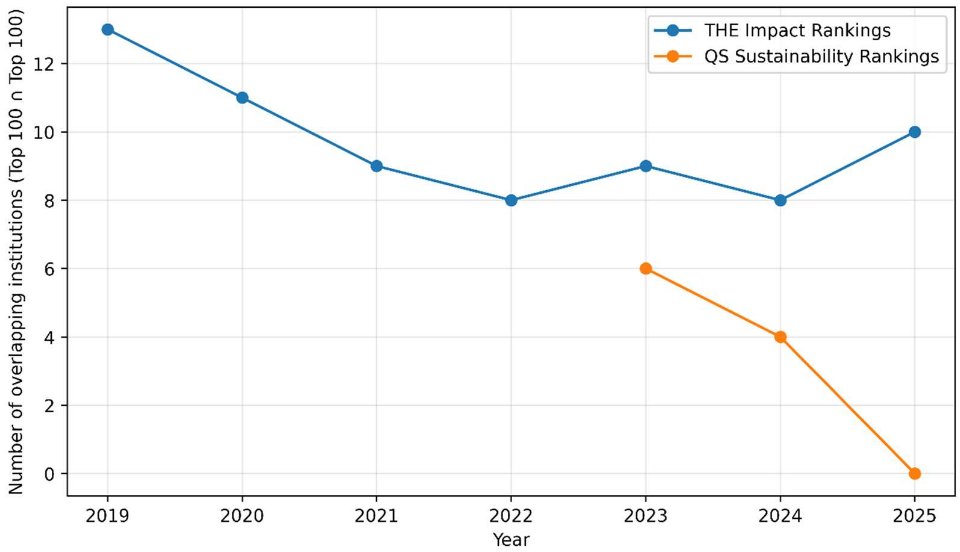

Figure 7. Overlap between GreenMetric Top100 and sustainability rankings (THE Impact and QS Sustainability), 2019–2025.

3.7. Dimensional Profile of Top100 (2025): North–South Comparison

Decomposition of total Top100 scores (2025) by dimension indicates that the observed structure closely mirrors GreenMetric's theoretical weights. On average across Top100 (2025), the dimensional shares were approximately: EC 20.2%; WS 18.5%; ED 18.8%; TR 17.9%; SI 14.0%; and WR 10.5%.

North–South differences within Top100 in 2025 were minor (generally below one percentage point per dimension), indicating high similarity in the composition of scores once institutions reach the elite cut. Figure 8 reports the dimension shares by group.

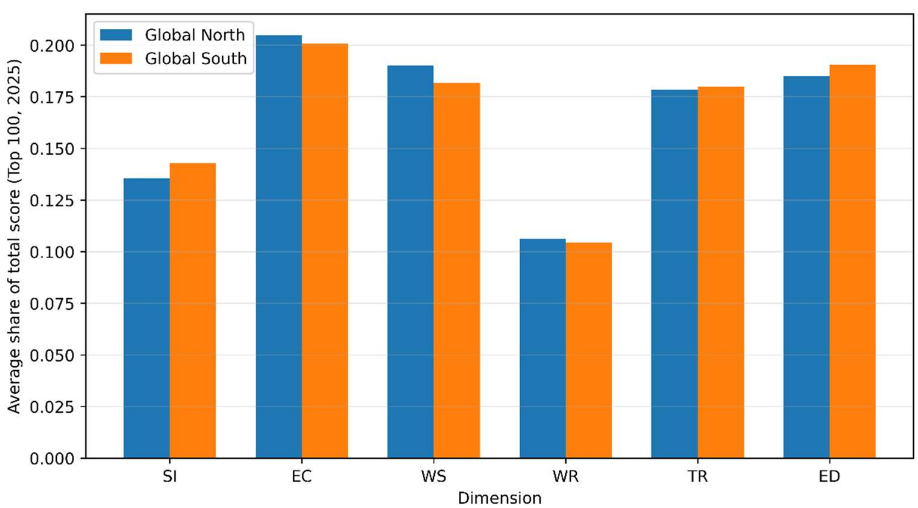

Figure 8. Dimension shares in Top100 (2025): Global North vs. Global South.

4. Discussion

The study examined, from a longitudinal perspective (2010–2025), the institutionalisation of sustainability leadership in UI GreenMetric and its relationship with mainstream academic prestige as represented by general rankings. Three patterns stand out: participation expanded sharply and became overwhelmingly South-dominated; conditional access to elite positions remained unequal, and the very top tier remained North-dominated; and overlap between the sustainability elite and general-ranking elites remained minimal in the comparable years. These patterns are consistent with the view that rankings operate as infrastructures of comparison that can shape organisational attention while also reproducing stratification dynamics across higher education systems [14,15].

4.1. Expansion and a Participation Shift Toward the South: Sustainability as Institutional Diffusion

GreenMetric participation increased nearly eighteenfold (from 95 institutions in 2010 to 1,745 in 2025), with the Global South accounting for 90.0% of participants in 2025. This shift in participation is consistent with GreenMetric functioning as an accessible benchmarking and reporting framework—particularly in systems where sustainability governance and reporting routines may be more recent or unevenly institutionalised. As a questionnaire-based assessment that makes operational practices visible and comparable, the ranking can support diffusion by organising priorities, standardising reporting categories, and providing a shared reference point [4,10,26].

Participation growth, however, does not imply equalisation at the top. In 2025, the South held a majority of Top100 positions (63 vs. 37), yet conditional access remained markedly unequal (21.1% North vs. 4.0% South; RR = 5.27), and the Top10 remained North-dominated (9 vs. 1). This pattern suggests that expansion can coexist with persistent hierarchy, in which the sustainability agenda may diffuse widely while elite performance remains shaped by cumulative advantages and geopolitical stratification in higher education [15,17,19].

4.2. Top-Tier Asymmetries: Volume Does Not Automatically Translate into High-Quality Leadership

Conditional-probability results indicate that North-based institutions convert participation into Top100 membership at substantially higher rates. The asymmetry also appears within the elite cut, as mean rank and mean score were higher among North-based Top100 institutions in 2025. Such gaps are consistent with differences in institutional capacity and governance—data infrastructures, cross-unit coordination, and investments in campus operations—that are often required to implement and document sustainability performance at scale [12,13,19].

4.3. Top-Tier' Quality': Concentration, National Clusters, and Institutionalisation

The HHI trajectory indicates a long-run move toward greater national dispersion in Top100' quality' (Borda-weighted shares), followed by renewed concentration in the most recent cycle. Such cycles suggest that diversification of participants and elite membership does not preclude the emergence of national clusters of leadership, especially as ranking participation and reporting become routinised and strategically managed [15,16].

Rising year-to-year stability (high Jaccard similarity and retention) further indicates that Top100 membership became increasingly path-dependent. This stability is consistent with the institutionalisation of ranking engagement, in which repeated reporting and organisational learning can stabilise elite membership over time [16,18]. When combined with concentration cycles, the pattern suggests that institutionalisation may occur alongside shifting national centres of sustainability leadership rather than leading to uniform convergence.

4.4. Performance Composition: Dimensional Stability and Minimal North–South Differentiation

Dimensional decomposition of Top100 (2025) scores mirrored GreenMetric's theoretical weights and showed only minor North–South differences in dimensional shares. Two interpretations are compatible with this result. First, the GreenMetric scoring system may reward a relatively balanced performance profile at the top, encouraging institutions to address multiple operational domains simultaneously. Second, apparent similarity in dimensional composition may partly reflect the instrument's design and reporting practices; critical assessments of sustainability rankings have highlighted comparability constraints and potential biases in self-reported indicators [20,25,27].

 doi:10.20944/preprints202602.1357.v1

4.5. Rankings as Inducers: Evidence of Decoupling Between Sustainability and Academic Prestige

Overlap between the sustainability elite (GreenMetric Top100) and the academic-prestige elite in general rankings (QS WUR and THE WUR Top100) remained in single digits across 2019–2025 and showed no consistent upward trend. The sustained low intersection supports the interpretation of weak coupling between sustainability leadership (as operationalised by GreenMetric) and mainstream prestige signals [24,25]. Participation choices may also contribute to this pattern, because engagement in sustainability assessment schemes can reflect reputational calculus and self-selection [30].

If general rankings remain the primary global mechanisms for reputation, talent attraction, and quality signalling, weak overlap implies limited prestige returns for sustainability leadership unless sustainability is explicitly incorporated and given meaningful weight in those rankings. From an incentive perspective, the findings are consistent with the broader argument that organisations respond to what is publicly measured and rewarded; when sustainability does not materially affect positions in the rankings most linked to resources and reputation, it is likely to compete with other priorities under budgetary and governance constraints [14,15,17].

Overlap with explicitly sustainability-oriented rankings (THE Impact and QS Sustainability) was higher than with general rankings but remained limited in absolute terms. This partial convergence is compatible with differing operationalisations of 'university sustainability': GreenMetric places strong emphasis on campus operations and management practices, whereas THE Impact is anchored in SDGs and broader institutional evidence. The combination of weak coupling to general rankings and only partial convergence across sustainability rankings suggests ongoing methodological pluralisation, with limited evidence of consolidation toward a single dominant metric that could reorganise global prestige hierarchies [5,25,27].

Practically, persistent decoupling implies weak incentive alignment: sustainability leadership is less likely to be reinforced by reputational and resource rewards in the dominant prestige economy, limiting the capacity of rankings to accelerate system-wide sustainability transitions [14,15].

4.6. Implications for Institutional Policy and Ranking Design

At the institutional level, rapid diffusion in the Global South suggests that sustainability rankings can help mobilise organisational attention and internal coordination, particularly where sustainability governance and reporting routines are still being consolidated. However, persistent top-tier asymmetries indicate that sustainability policies may require accompanying structural investments (infrastructure, data systems, cross-unit governance, energy efficiency, and technical capacity) to avoid a dynamic of expanding participation without proportional convergence at the top [4,12].

At the system level, if rankings operate as inducers, the absence of sustainability as a substantive, comparable component in general rankings is likely to reduce the likelihood of structural change. Integrating sustainability metrics into general rankings does not necessarily dilute academic excellence; it can be interpreted as recognising that, under climate-transition pressures, excellence may include measurable institutional responsibility. Operationally, this requires (i) auditable metrics, (ii) methodological transparency, and (iii) weights sufficient to generate incentive effects, avoiding merely symbolic adoption [14,15,20].

4.7. Limitations and Research Agenda

Limitations. Three limitations should be noted:

- Ranking systems differ in scope, methods, and data openness. The conservative Top100 focus improves comparability but may understate relationships outside the elite cut, and participation may be shaped by self-selection and reputational considerations [20,25,30];
- The North–South operationalisation (IMF-based) is an analytical simplification that can mask within-group heterogeneity and borderline cases;

 doi:10.20944/preprints202602.1357.v1

- Inter-ranking matching relies on name and country harmonisation; despite conservative thresholds and manual auditing of reported intersections, residual correspondence error cannot be entirely excluded.

Future research could:

- extend analyses to broader cuts (Top200/Top500) when licensing and data availability permit, to assess whether relationships differ outside elite thresholds;
- examine temporal ordering, testing whether changes in sustainability performance precede shifts in mainstream prestige indicators (rather than focusing only on cross-sectional overlap);
- test sensitivity to alternative geopolitical groupings and investigate how national policies, funding instruments, and institutional arrangements relate to cycles of sustainability leadership concentration in specific countries.

4.8. Sustainability Incorporation in General Rankings: Systemic Implications

Sustainability became increasingly institutionalised within a significant sustainability ranking, yet the central axis of mainstream academic prestige remained essentially unchanged in the comparable years. When general rankings do not incorporate sustainability substantively and comparably, reputational incentives are likely to stay centred on traditional metrics, potentially constraining the speed and depth of sustainability-related change across higher education. Under the view of rankings as inductive infrastructures, integrating sustainability metrics into general rankings could serve as a mechanism for incentive alignment, provided that methodological transparency and meaningful weighting are ensured [15,16].

5. Conclusions

The study examined, longitudinally (2010–2025), the expansion, stratification, and institutionalisation of sustainability performance in UI GreenMetric, as well as its (minimal) convergence with general rankings (QS WUR; THE WUR) and its only partial convergence with sustainability-oriented rankings (THE Impact; QS Sustainability) in comparable years. Results are consistent with the article’s central claim: although sustainability diffused and became institutionalised as a measurable axis—with increasing Global South protagonism—it remained weakly coupled to the central circuit of mainstream academic prestige, which may limit the ranking ecosystem’s inductive capacity to accelerate sustainability transitions in higher education.

Overall, the hypothesis set was broadly supported: participation growth was more intense in the South while the very top tier remained asymmetric (H1); conditional Top100 access remained substantially higher in the North (H2); Top100 stability increased over time, coexisting with concentration cycles (H3); overlap with general rankings remained very low with no convergence trend in 2019–2025 (H4); and overlap with sustainability rankings was higher than with general rankings but still limited, reflecting different sustainability operationalisations (H5).

The substantive implication is that universities may be expanding sustainability-related performance without materially changing the axis that distributes global reputation, resources, and attention. Low intersection between the sustainability elite (GreenMetric Top100) and the general-ranking elites suggests that sustainability continues to operate as a parallel merit circuit—relevant and expanding, but without evidence of reorganising mainstream prestige. If rankings function as infrastructures that assess ‘quality’ and induce behaviours, the observed misalignment suggests that sustainability transitions may depend more on policy, regulation, funding, and internal governance than on dominant reputational incentives, potentially slowing change and making it more unequal.

A normative implication follows: substantive incorporation of sustainability metrics into general rankings—with auditable criteria, methodological transparency, and sufficient weight to produce measurable reputational effects—could help align incentives in higher education. In the absence of significant prestige effects associated with sustainability performance in the rankings that structure

 doi:10.20944/preprints202602.1357.v1

decisions about talent, partnerships, and investments, sustainability will likely continue to compete with traditional metrics under institutional constraints.

Author Contributions: Conceptualization, E.M.S.W. and L.A.P.; methodology, E.M.S.W. and J.R.H.C.; software, J.R.H.C.; validation, C.L.F. and J.R.H.C.; formal analysis, E.M.S.W. and J.R.H.C.; investigation, E.M.S.W. and C.L.F.; data curation, J.R.H.C.; writing—original draft preparation, E.M.S.W.; writing—review and editing, C.L.F., J.R.H.C. and L.A.P.; visualization, J.R.H.C.; supervision, L.A.P.; project administration, E.M.S.W. All authors have read and agreed to the published version of the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data used in this study are derived from publicly available ranking sources (UI GreenMetric World University Rankings; QS World University Rankings; Times Higher Education World University Rankings; THE Impact Rankings; QS Sustainability Rankings). Due to licensing and redistribution restrictions imposed by some ranking providers, complete datasets cannot be publicly shared. Aggregated data and analytical procedures are available from the corresponding author upon reasonable request.

Acknowledgments: During the preparation of this manuscript/study, the author(s) used ChatGPT by OpenAI and Grammarly to support language editing and text refinement. The authors have reviewed and edited the output and take full responsibility for the content of this publication. All scientific decisions, data preparation, analyses, interpretation, and conclusions remain the authors' responsibility.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

AI	Artificial intelligence
ARWU	Academic Ranking of World Universities
EC	Energy and Climate Change (UI GreenMetric dimension)
ED	Education and Research (UI GreenMetric dimension)
HEI(s)	Higher education institution(s)
HHI	Herfindahl-Hirschman Index
IMF	International Monetary Fund
QS	Quacquarelli Symonds
QS Sustainability	QS Sustainability Rankings
QS WUR	QS World University Rankings
RR	Risk ratio
SAR(s)	Sustainability assessment ranking(s)
SDG(s)	Sustainable Development Goal(s)
SI	Setting and Infrastructure (UI GreenMetric dimension)
THE	Times Higher Education
THE Impact	Times Higher Education Impact Rankings
THE WUR	Times Higher Education World University Rankings
Top10	Top 10 institutions in a ranking (elite cut)
Top100	Top 100 institutions in a ranking (elite cut)
TR	Transportation (UI GreenMetric dimension)

 doi:10.20944/preprints202602.1357.v1

UI	Universitas Indonesia
UI GreenMetric	UI GreenMetric World University Rankings
UNAM	Universidad Nacional Autónoma de México
USA	United States of America
WEO	World Economic Outlook
WR	Water (UI GreenMetric dimension)
WS	Waste (UI GreenMetric dimension)
WUR	World University Rankings

References

1. Trencher, G.P.; Yarime, M.; Kharrazi, A. Co-creating sustainability: cross-sector university collaborations for driving sustainable urban transformations. *Journal of Cleaner Production* **2013**, *50*, 40–55, doi:https://doi.org/10.1016/j.jclepro.2012.11.047.
2. Lozano, R.; Lukman, R.; Lozano, F.J.; Huisingh, D.; Lambrechts, W. Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production* **2013**, *48*, 10–19, doi:10.1016/j.jclepro.2011.10.006.
3. Leal Filho, W.; Shiel, C.; Paço, A.; Mifsud, M.; Ávila, L.V.; Brandli, L.L.; Molthan-Hill, P.; Pace, P.; Azeiteiro, U.M.; Vargas, V.R.; et al. Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production* **2019**, *232*, 285–294, doi:https://doi.org/10.1016/j.jclepro.2019.05.309.
4. Findler, F.; Schönherr, N.; Lozano, R.; Reider, D.; Martinuzzi, A. The impacts of higher education institutions on sustainable development: A review and conceptualization. *International Journal of Sustainability in Higher Education* **2019**, *20*, 23–38, doi:10.1108/ijshe-07-2017-0114.
5. United Nations. *Transforming our world: the 2030 Agenda for Sustainable Development - A/RES/70/1*; General Assembly: New York, 2015.
6. Deneckere, K.; Henssen, B.; Crois, E. Driving the Systemic Transformation of Higher Education Institutions Towards Sustainability: The Case of Education for Sustainability Hub. In *Sustainability in Higher Education: Strategies, Performance and Future Challenges*, Rotondo, F., Giovanelli, L., Lozano, R., Eds.; Springer Nature Switzerland: Cham, 2024; pp. 73–93.
7. Barnett-Itzhaki, Z.; Tifferet, S.; Berkowic, D.; Arviv, T.; Daya, A.; Carasso Romano, G.H.; Levi, A. Strategies and challenges for green campuses. *Frontiers in Sustainable Cities* **2025**, *Volume 7 - 2025*, doi:10.3389/frsc.2025.1469274.
8. Viera Trevisan, L.; Leal Filho, W.; Ávila Pedrozo, E. Transformative organisational learning for sustainability in higher education: A literature review and an international multi-case study. *Journal of Cleaner Production* **2024**, *447*, 141634, doi:https://doi.org/10.1016/j.jclepro.2024.141634.
9. Munaro, M.R.; John, V.M. Towards more sustainable universities: A critical review and reflections on sustainable practices at universities worldwide. *Sustainable Production and Consumption* **2025**, *56*, 284–310, doi:https://doi.org/10.1016/j.spc.2025.03.022.
10. Lozano, R.; Ceulemans, K.; Alonso-Almeida, M.; Huisingh, D.; Lozano, F.J.; Waas, T.; Lambrechts, W.; Lukman, R.; Hugé, J. A review of commitment and implementation of sustainable development in higher education: results from a worldwide survey. *Journal of Cleaner Production* **2015**, *108*, 1–18, doi:https://doi.org/10.1016/j.jclepro.2014.09.048.
11. Quevedo, T.C.; Geraldi, M.S.; Melo, A.P.; Lamberts, R. Benchmarking energy consumption in universities: A review. *Journal of Building Engineering* **2024**, *82*, 108185, doi:https://doi.org/10.1016/j.jobe.2023.108185.
12. Bauer, M.; Rieckmann, M.; Niedlich, S.; Bormann, I. Sustainability Governance at Higher Education Institutions: Equipped to Transform? *Frontiers in Sustainability* **2021**, *Volume 2 - 2021*, doi:10.3389/frsus.2021.640458.
13. Christou, O.; Manou, D.B.; Armenia, S.; Franco, E.; Blouchoutzi, A.; Papathanasiou, J. Fostering a Whole-Institution Approach to Sustainability through Systems Thinking: An Analysis of the State-of-the-Art in Sustainability Integration in Higher Education Institutions. *Sustainability* **2024**, *16*, 2508.

 doi:10.20944/preprints202602.1357.v1

14. Espeland, Wendy N.; Sauder, M. Rankings and Reactivity: How Public Measures Recreate Social Worlds. *American Journal of Sociology* **2007**, *113*, 1–40, doi:10.1086/517897.
15. Hazelkorn, E. *Rankings and the Reshaping of Higher Education*; Palgrave Macmillan: London, 2011.
16. Brankovic, J.; Hamann, J.; Ringel, L. The institutionalization of rankings in higher education: continuities, interdependencies, engagement. *Higher Education* **2023**, *86*, 719–731, doi:10.1007/s10734-023-01018-8.
17. Brankovic, J.; Ringel, L.; Werron, T. How Rankings Produce Competition: The Case of Global University Rankings. *Zeitschrift für Soziologie* **2018**, *47*, 270–288, doi:doi:10.1515/zfsoz-2018-0118.
18. Hamann, J.; Ringel, L. The discursive resilience of university rankings. *Higher Education* **2023**, *86*, 845–863, doi:10.1007/s10734-022-00990-x.
19. Marginson, S. The new geo-politics of higher education. *Centro para o Ensino Superior Global, Universidade de Oxford* **2018**, doi:10.5287/ora-x5ekvv8pv.
20. Boiocchi, R.; Ragazzi, M.; Torretta, V.; Rada, E.C. Critical Analysis of the GreenMetric World University Ranking System: The Issue of Comparability. *Sustainability* **2023**, *15*, 1343.
21. Abo-Khalil, A.G. Integrating sustainability into higher education challenges and opportunities for universities worldwide. *Heliyon* **2024**, *10*, doi:10.1016/j.heliyon.2024.e29946.
22. QS World University Rankings. QS World University Rankings 2024: Methodology. Available online: https://www.topuniversities.com (accessed on 28 January 2026).
23. ShanghaiRanking Consultancy. Academic Ranking of World Universities (ARWU): Methodology 2025. Available online: https://www.shanghairanking.com (accessed on 28 January 2026).
24. Wilhelm, E.M.S.; dos Santos, C.B.; Pilatti, L.A. Are the best higher education institutions also more sustainable? *International Journal of Sustainability in Higher Education* **2024**, *26*, 518–539, doi:10.1108/ijshe-09-2023-0450.
25. Alberti, C.; Civera, A.; Lehmann, E.E.; Meoli, M.; Otto, J.; Paleari, S. University sustainability rankings: a critical literature review on the UI GreenMetric ranking system. *The Journal of Technology Transfer* **2025**, *50*, 2752–2801, doi:10.1007/s10961-025-10223-9.
26. Galleli, B.; Teles, N.E.B.; Santos, J.A.R.d.; Freitas-Martins, M.S.; Hourneaux Junior, F. Sustainability university rankings: a comparative analysis of UI green metric and the times higher education world university rankings. *International Journal of Sustainability in Higher Education* **2021**, *23*, 404–425, doi:10.1108/ijshe-12-2020-0475.
27. UI GreenMetric World University Rankings. 2025 UI GreenMetric Guideline: Doing Sustainable Development Goals in Higher Education—The Story of Our Institution and Society. Available online: https://greenmetric.ui.ac.id (accessed on 28 January 2026).
28. Delmas, M.A.; Burbano, V.C. The Drivers of Greenwashing. *California Management Review* **2011**, *54*, 64–87, doi:10.1525/cmr.2011.54.1.64.
29. Álvarez-García, O.; Sureda-Negre, J. Greenwashing and education: An evidence-based approach. *The Journal of Environmental Education* **2023**, *54*, 265–277, doi:10.1080/00958964.2023.2238190.
30. Buckner, E.; Zhang, Y. Sustainability rankings in higher education: 'The right thing to do' or the pursuit of global recognition? *Higher Education* **2025**, doi:10.1007/s10734-025-01495-z.
31. QS World University Rankings. QS World University Rankings 2025. Available online: https://www.topuniversities.com/world-university-rankings/2025 (accessed on 28 January 2026).
32. Times Higher Education. World University Rankings 2025. Available online: https://www.timeshighereducation.com/world-university-rankings/2025/world-ranking (accessed on 28 January 2026).
33. Times Higher Education. University Impact Rankings 2025. Available online: https://www.timeshighereducation.com/impactrankings (accessed on 28 January 2026).
34. QS World University Rankings. QS World University Rankings: Sustainability 2025. Available online: https://www.topuniversities.com/sustainability-rankings/2025 (accessed on 28 January 2026).
35. Times Higher Education. World University Rankings 2025: Methodology. Available online: https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2025-methodology (accessed on 28 January 2026).

 doi:10.20944/preprints202602.1357.v1

36. Times Higher Education. Impact Rankings 2025: Methodology explained. Available online: https://www.timeshighereducation.com/world-university-rankings/impact-rankings-2025-methodology (accessed on 28 January 2026).