

SSU Research Performance in SDGs: Benchmarking for QS Sustainability Ranking

Comparison with peer universities



Context: Why SDGs & QS Sustainability Matter



What QS Sustainability Ranking Evaluates

- The QS Sustainability Ranking assesses how universities contribute to **environmental and social impact**.
- Key dimensions include:
 - **Environmental impact** (e.g., climate research, sustainability practices)
 - **Social impact** (e.g., equality, education, health)
 - **Governance** (ethics, transparency, partnerships)
- A major component is **research aligned with the UN Sustainable Development Goals (SDGs)**



Role of Research Outputs in SDGs

- Research publications are mapped to specific **SDGs (SDG 1–16)**
- Universities are evaluated based on:
 - **Volume** of SDG-related publications
 - **Diversity** across multiple SDGs
 - **Impact** (citations, FWCI, journal quality)



Why This Matters for SSU

- Improving SDG alignment will:
 - Enhance **QS Sustainability ranking position**
 - Increase **international visibility and partnerships**
 - Support **strategic funding and research development**

Benchmark Universities Overview

Rationale for selecting the benchmark universities:

- **Total number of students;**
 - **Similarity of faculties and academic disciplines;**
 - **Status (being public universities or established by a presidential decree).**
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Subject University: **Sumgait State University (SSU)**

Benchmark universities:

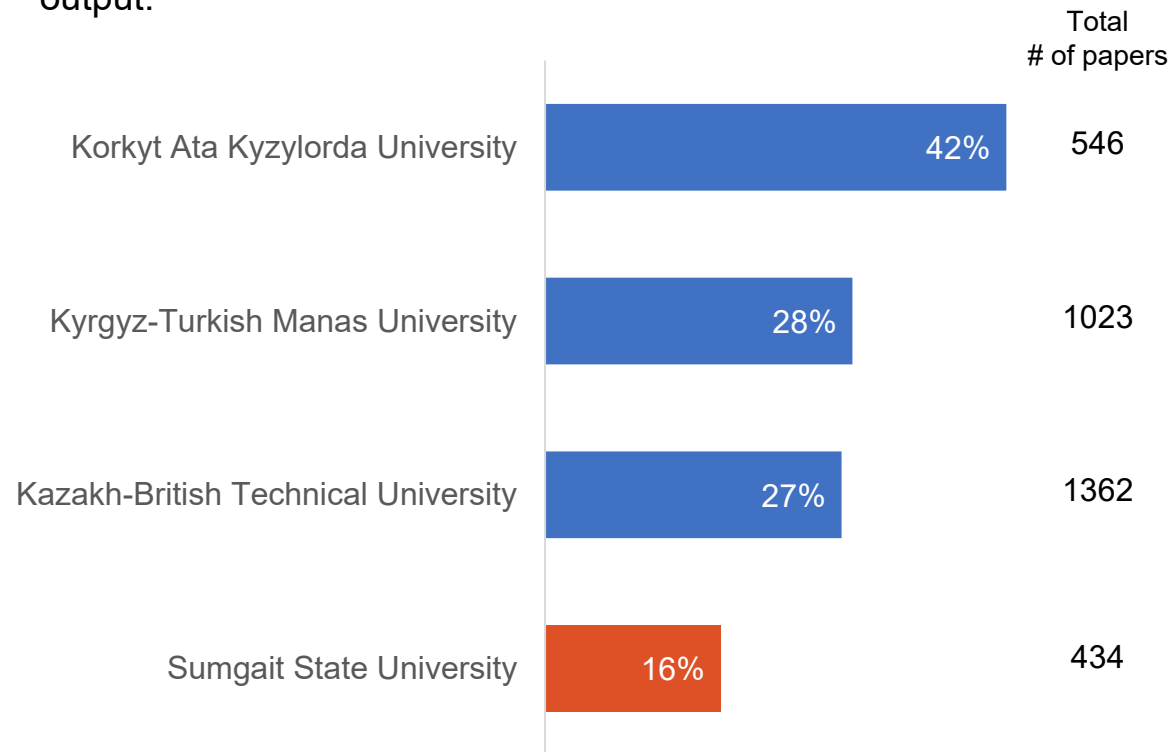
- Korkyt Ata Kyzylorda University (KSU)
- Kyrgyz-Turkish Manas University (KTMU)
- Kazakh-British Technical University (KBTU)



SDG Research Coverage (High-Level Comparison)

% of publications linked to SDGs

SSU demonstrates substantially lower SDG research integration (16%) compared to benchmark institutions (27%–42%). This indicates a significant performance gap and highlights the need for targeted strategies to enhance SDG-oriented research output.



Key insights



Significant Performance Gap

- Sumgait State University (16%) is far behind all benchmark universities.
- The gap is especially large compared to:
 - Korkyt Ata Kyzylorda University (42%) → +26 percentage points
 - This indicates a substantial underperformance in SDG-linked research.



Benchmark Universities Show Moderate–High Engagement

- Benchmark range: 27% – 42%
- This suggests that SDG integration is already a norm among peer institutions.
- Even the lowest benchmark (Kazakh-British Technical University – 27%) is significantly ahead of the target university.

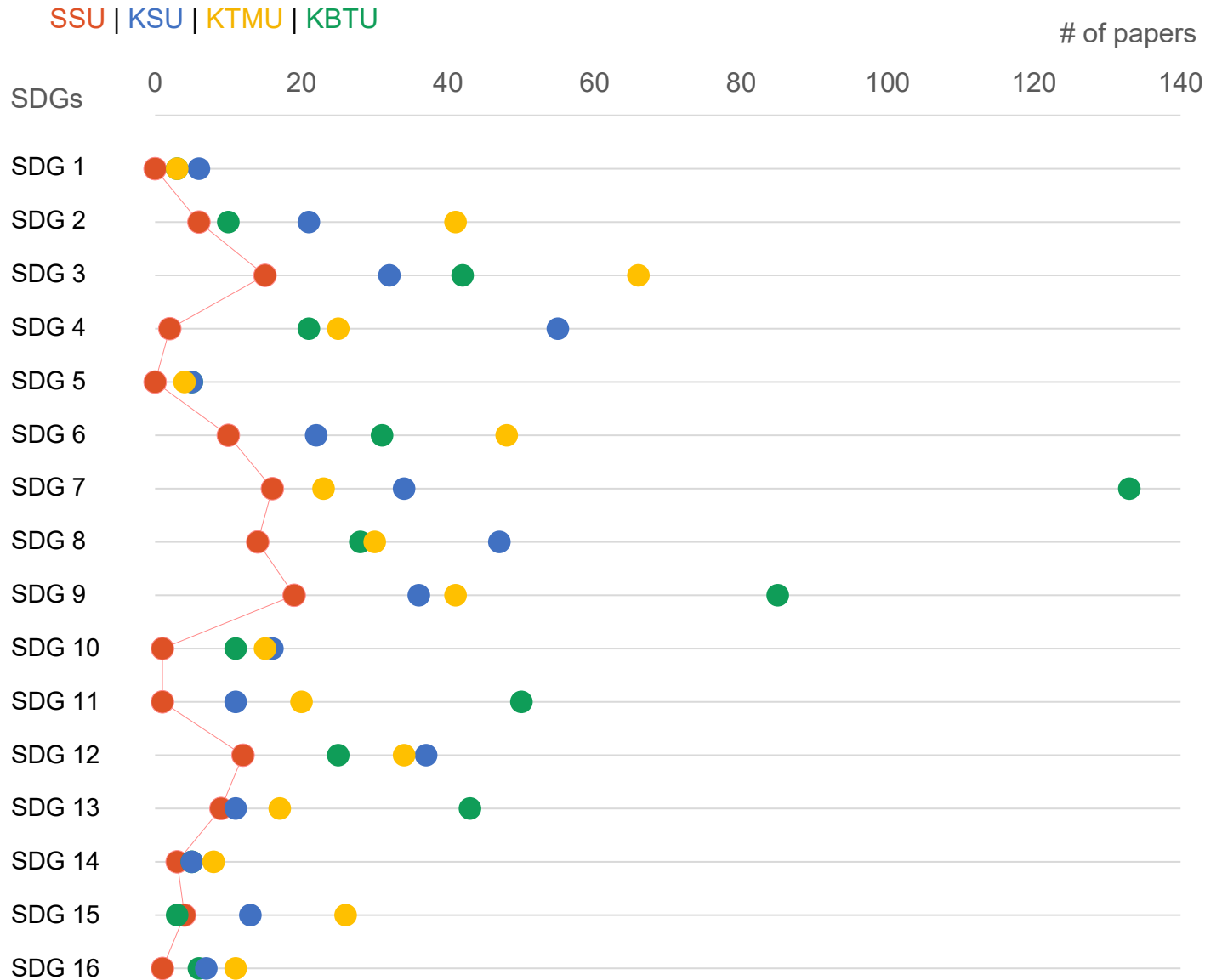


High Potential for Improvement

- The large gap also means:
 - There is clear room for rapid growth
 - Even reaching 27–30% would align the university with peers
- This can likely be improved through:
 - SDG-focused research incentives
 - Strategic publication targeting

Total Research Output by SDG

Number of papers per SDG per university



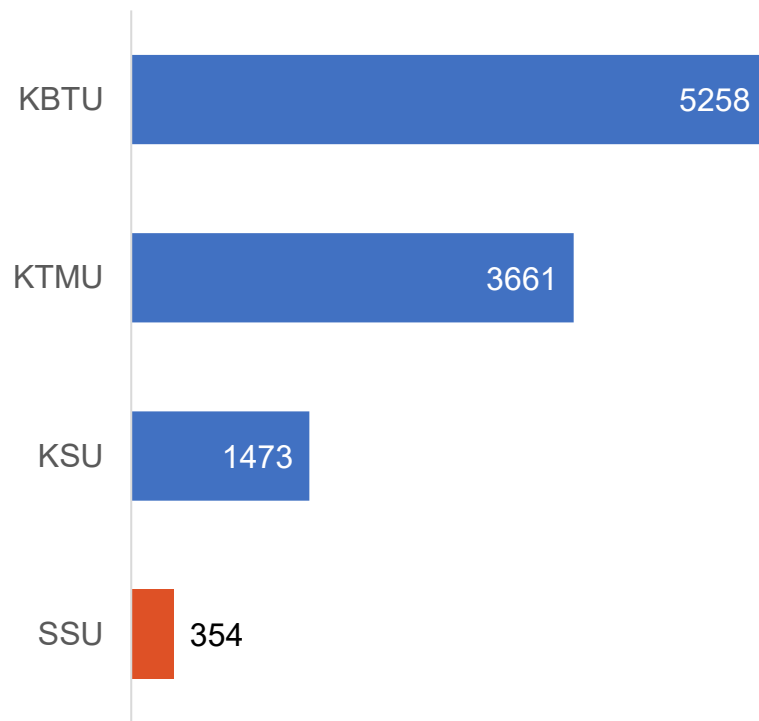
Key insights

- SSU demonstrates consistently low research output across all SDGs, with no clear areas of specialization. In contrast, benchmark institutions exhibit either strong thematic focus (e.g., KBTU in SDG 7 and 9) or balanced engagement across multiple SDGs (KSU, KTMU). This indicates both a quantitative and strategic gap in SDG-oriented research at the target university.
- **Benchmark universities are not just stronger — they are also strategically focused.**
- Gaps are both quantitative and strategic:
- The issue is not only fewer papers:
 - **SSU also lacks clear thematic focus**
 - **Whereas benchmark universities either specialize deeply (KBTU) or maintain consistent coverage (KSU, KTMU).**

Research Impact (Citations Analysis)

Total # of citations per university

SSU exhibits **significantly lower research impact, with total citation counts (354) substantially below benchmark institutions (1473–5258)**. This highlights not only a quantitative deficit in research output but also a qualitative gap **in terms of visibility, relevance, and academic influence**.



Key insights



Extremely Large Impact Gap

- SSU (354 citations) is far behind all benchmark universities
- Compared to:
 - **KBTU** (5 258) → **~15x higher**
 - **KTMU** (3 661) → **~10x higher**
 - **KSU** (1 473) → **~4x higher**



SSU's Challenge is Both Quantity and Quality

- Low citations imply:
 - Fewer publications and/or
 - Publications in low-impact journals
- This indicates a dual problem: **Output gap** and **Impact gap**



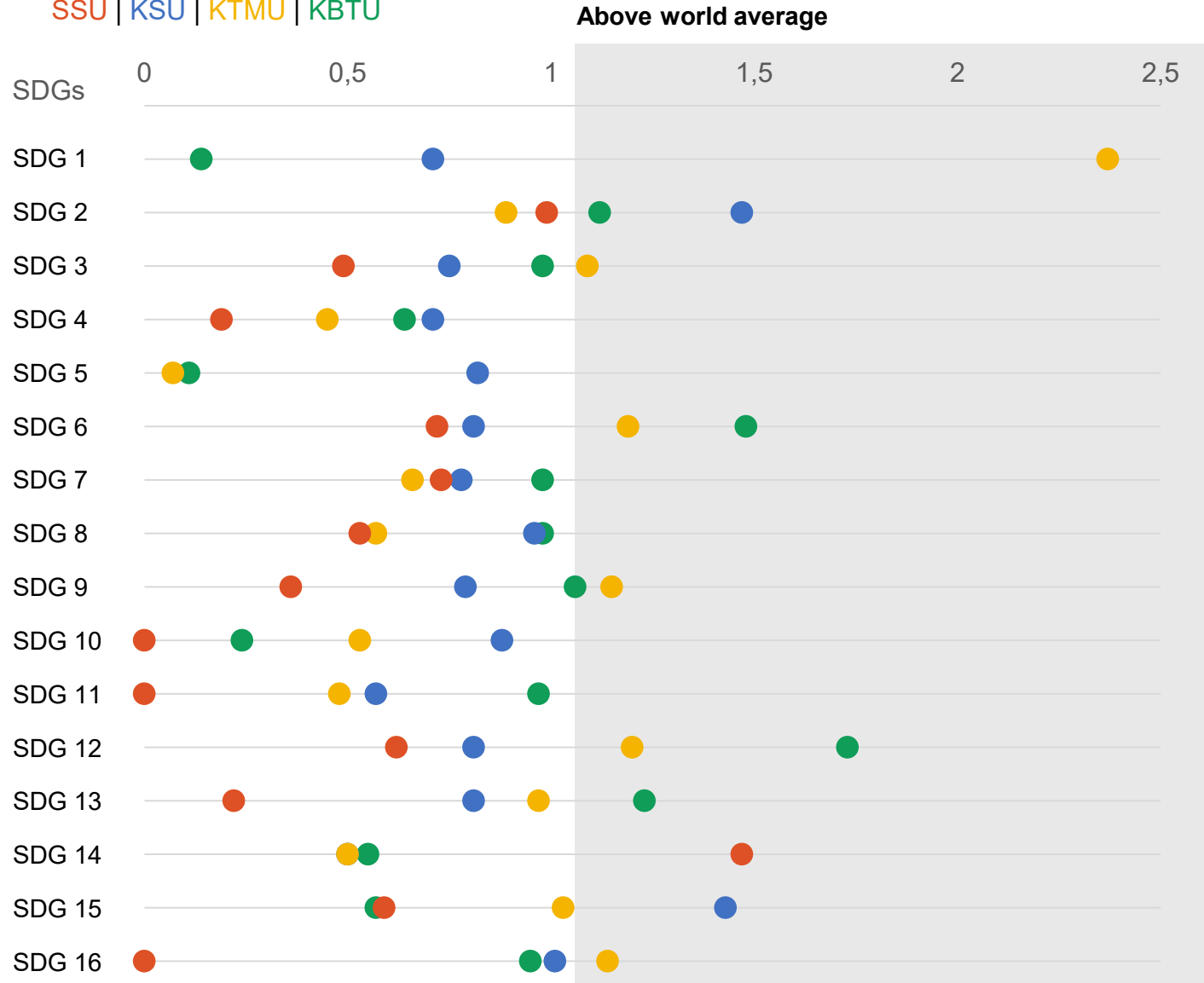
High Potential for Improvement

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 - **SDG-focused research incentives**
 - **Strategic publication targeting**

Research Quality (Field Weighted Citation Impact Analysis)

FWCI per SDG per university

SSU | KSU | KTMU | KBTU



Key insights



FWCI = 1 represents the world average

- SSU is below 1 in almost all SDGs
- This means:
 - Papers are less cited than global average
 - Low research quality and visibility



Quality Gap is Structural, Not Occasional

- SSU's low FWCI is:
 - Consistent across SDGs
 - Not limited to specific fields
- This suggests lack of:
 - High-impact journals
 - International collaboration
 - Strong research ecosystems



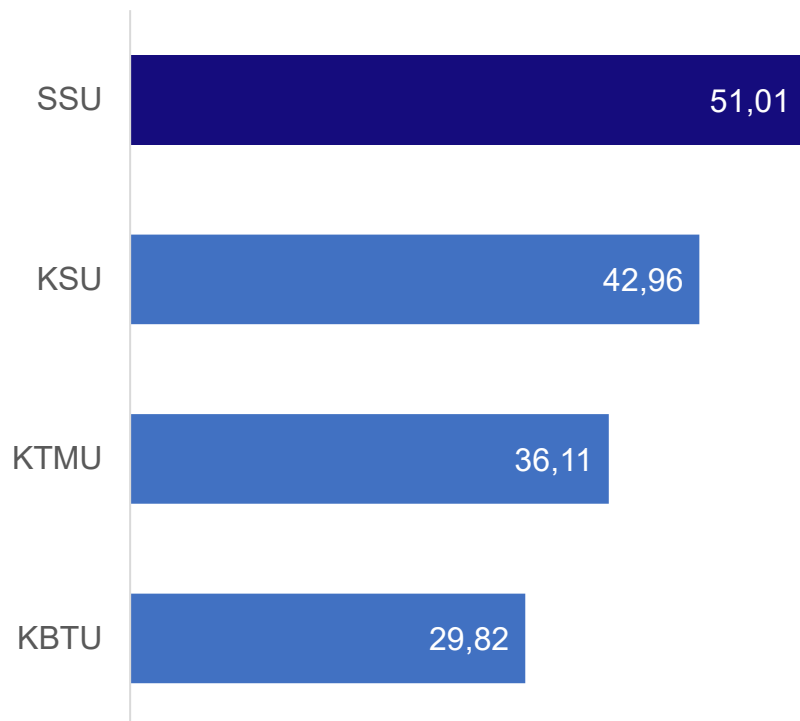
Strategic Implication

- To improve FWCI (quality), SSU should:
 - Focus on quality over quantity
 - Focus on hot topics.
 - Increase international co-authorship
 - Encourage citation-aware research practices

Journal Quality (CiteScore Analysis)

Mean CiteScore of published journals

Despite demonstrating the highest mean CiteScore among peer institutions, SSU shows comparatively low citation impact and FWCI performance. This indicates that **while publications appear in higher-quality journals, their academic influence remains limited.**



Key insights

Strong Contrast: High Journal Quality vs Low Impact

- From previous analyses:
 - SSU had low citations and low FWCI
 - Whereas SSU has highest journal quality.
- Key insight:
 - **High-quality journals ≠ high research impact (yet)**

Possible Reasons for This Paradox

- Low publication volume
- Limited visibility or dissemination
- Weak international collaboration
- Or recent publications (not enough time to accumulate citations)

Strategic Implication

- **Convert journal quality → research impact**
- SSU should now focus on:
 - Increasing publication volume
 - Improving citation performance
 - Strengthening research dissemination
 - Building international research networks

Strengths vs Weaknesses

Strengths

1. High Journal Quality (CiteScore Leadership)

- SSU demonstrates the highest mean CiteScore among benchmark universities.
- Indicates capacity to publish in relatively strong journals.

2. Presence Across Multiple SDGs

- Although output is low, SSU is not completely absent from SDG research.
- Foundation exists for strategic expansion.

3. Growth Potential

- Large performance gap implies strong potential for rapid improvement with targeted strategy.

Weaknesses

1. Very Low SDG Research Coverage (16%)

- Substantially below benchmark range (27–42%).
- Indicates limited integration of sustainability into research agenda.

2. Extremely Low Citation Impact

- Substantially below benchmark range (27–42%).
- Indicates limited integration of sustainability into research agenda.

3. Structural Quality Gap (FWCI Below 1)

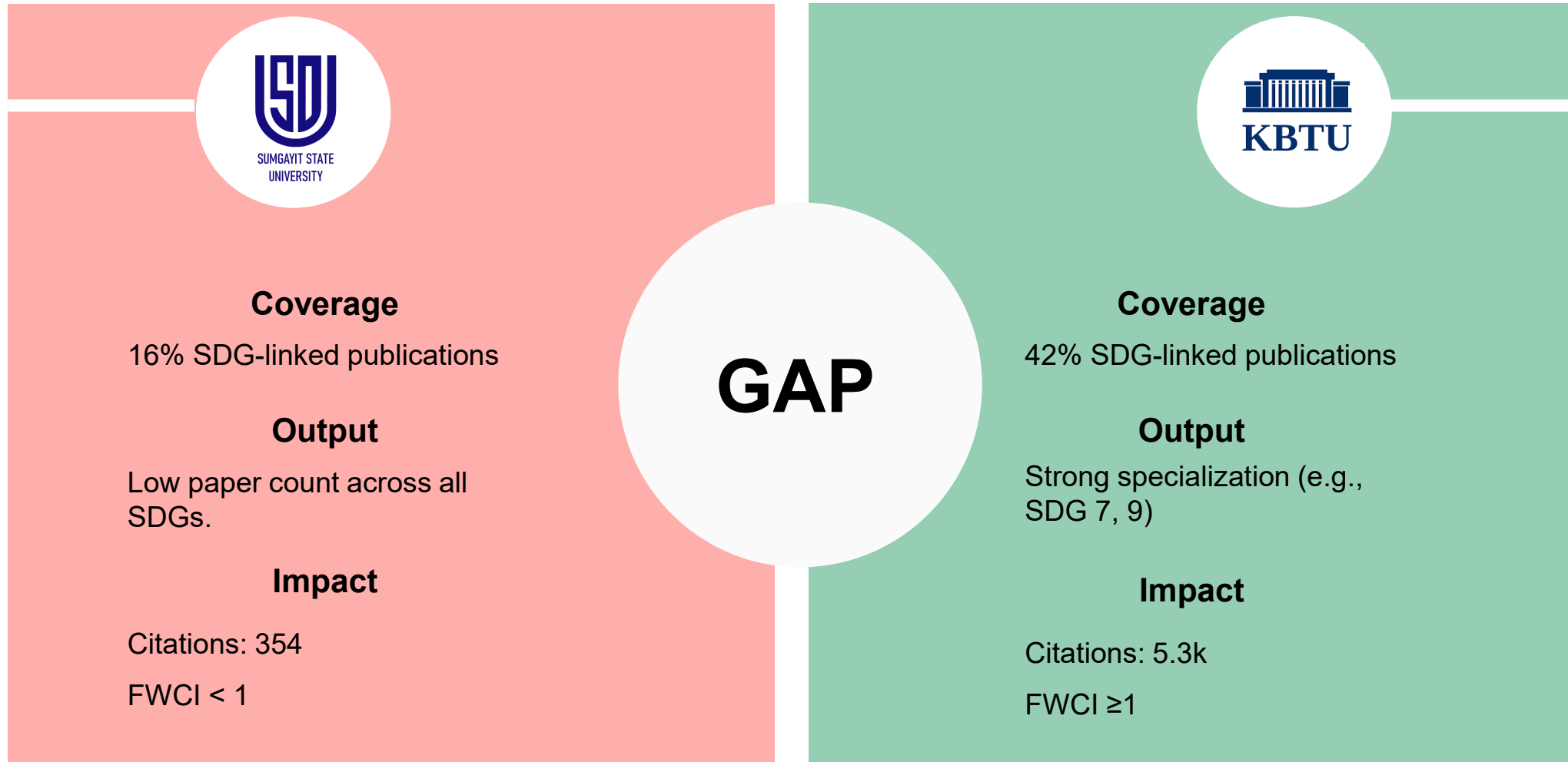
- Consistently below world average across SDGs.
- Suggests systemic research ecosystem limitations.

4. Lack of Thematic Focus

- No clear SDG specialization.
- Research appears fragmented rather than strategically concentrated.

Gap Analysis: SSU vs Leading Benchmark University

The **gap** between SSU and the leading benchmark institution, KBTU is **structural, spanning coverage, output, and impact dimensions**. KBTU demonstrates strategic SDG integration, thematic specialization, and above-average research impact, whereas SSU exhibits low integration, limited output, and below-average citation performance. Addressing this multidimensional gap requires **coordinated strategic intervention**.



Strategic Priority SDGs for SSU

Strategic Objective

Within 3 years:

- Increase SDG coverage to at least 30%
- Achieve FWCI ≥ 1 in at least 2 priority SDGs
- Establish visible thematic research clusters



Option A – Focused Specialization Strategy

- Select 3–4 priority SDGs aligned with:
 - Existing faculty strengths
 - Regional relevance
 - National development priorities
- Example candidates (based on existing activity):
 - SDG 7 – Affordable & Clean Energy
 - SDG 9 – Industry, Innovation & Infrastructure
 - SDG 4 – Quality Education
 - SDG 12 – Responsible Consumption



Option B – Hybrid Strategy

- Deep specialization in 2–3 SDGs
- Maintain moderate engagement in 3–4 additional SDGs

Action Plan

GOAL: To raise SDG-linked publications to 30%+, improve FWCI to ≥ 1 in priority areas, and strengthen international research impact by 2029.

Short-Term (0–12 Months)

Introduce SDG tagging policy for all publications.

Provide internal incentives for SDG-aligned research.

Organize workshops on high-impact publishing.

Identify 3–4 strategic SDGs for concentration.

Medium-Term (1–3 Years)

Develop SDG-focused research groups.

Increase international co-authorship.

Target higher-impact journals strategically.

Create internal seed grants for priority SDGs.

Long-Term (3–5 Years)

Establish SDG Research Centers.

Integrate sustainability into institutional research strategy.

Build international partnerships aligned with priority SDGs.

Develop QS Sustainability ranking monitoring mechanism.

KPI for Monitoring Progress



Research Output Indicators

- % of publications linked to SDGs (Target: 30%+)
- Number of publications per priority SDG



Research Impact Indicators

- Total citations per SDG
- FWCI (Target: ≥ 1 in priority areas)
- Citations per paper



Strategic Indicators

- Number of international co-authored SDG papers
- Number of funded SDG research projects
- Journal quality (mean CiteScore)

Governance Recommendation

Create a quarterly SDG performance dashboard for rectorate review.

Conclusion



Key Findings

- SSU demonstrates substantial performance gaps in SDG integration and research impact.
- The gap is structural, not isolated.
- Benchmark universities have already institutionalized SDG research strategies.



Strategic Opportunity

- SSU possesses publication quality potential (high CiteScore).
- With targeted strategy, rapid improvement is achievable.
- Even reaching benchmark minimum levels (27–30%) would significantly enhance competitiveness.



Recommendations

To improve QS Sustainability positioning, SSU must:

- Move from fragmented research to strategic SDG focus.
- Improve research impact alongside output.
- Benchmark universities have already institutionalized SDG research strategies.

APPENDICES

Methodology



Data Source

Database: Scopus (Elsevier)

Time Period: 2020–2025

SDG Mapping: Based on Scopus SDG classification framework



Indicators Used for Analysis

SDG Coverage

- Percentage of publications linked to at least one SDG
- Distribution across SDG 1–16

Research Output and Research Impact

- Total number of SDG-related publications
- Thematic concentration vs diversification
- Total citations
- Field-Weighted Citation Impact (FWCI)
 - $FWCI = 1$ represents world average

Journal Quality

- Mean CiteScore of journals
- Comparison of journal quality vs citation impact



Universities Included

Subject University: **Sumgait State University (SSU)**

Benchmark universities:

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Analytical Approach

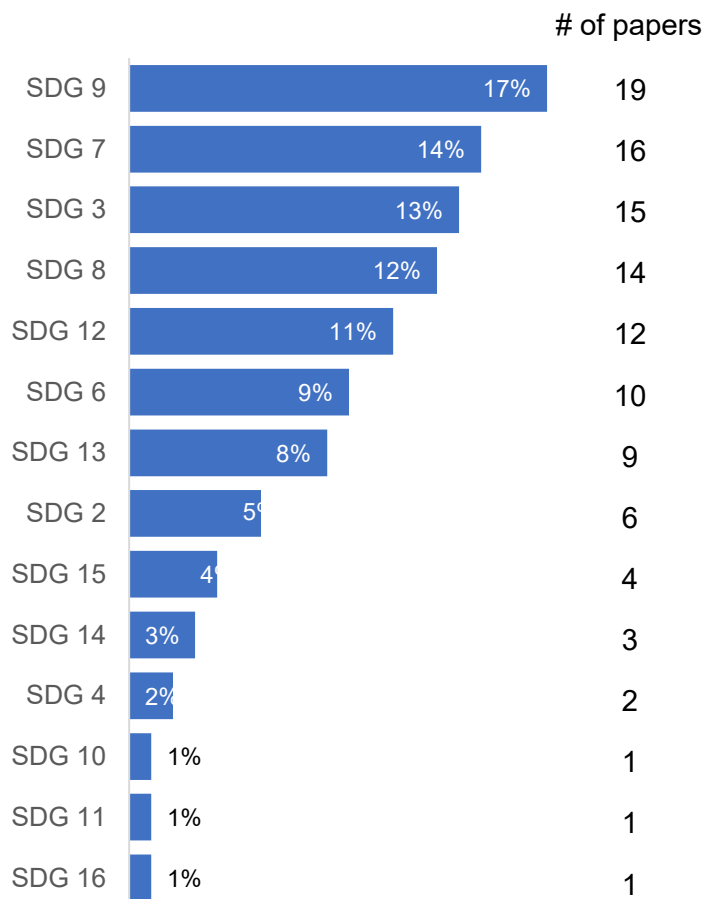
- Descriptive comparative analysis
- Benchmark gap analysis (SSU vs peers)
- Structural performance assessment (quantity + quality)
- Identification of strategic SDG priority areas

Contextual layer: SDG research footprint analysis

16% SDG focused papers

From 2021 to 2025, SSU has produced 434 scholarly outputs overall, **16% of which addressed at least one SDG.**

Distribution of SDGs in SDG-related publications



SSU's SDG-related research shows a **concentrated footprint** rather than broad coverage across all SDGs. Research activity is most strongly focused on **SDG 9**, followed by **SDG 7** and **SDG 3**, indicating clear institutional strengths in innovation, energy, and health-related fields.

Overall, the distribution highlights where SSU's SDG engagement is **most concentrated and impactful**, while also pointing to potential areas for future strategic expansion.

Purpose

Establish scale and concentration of SSU's SDG engagement.

Interpretation focus

Where does SSU's research activity meaningfully concentrate across the SDG agenda?

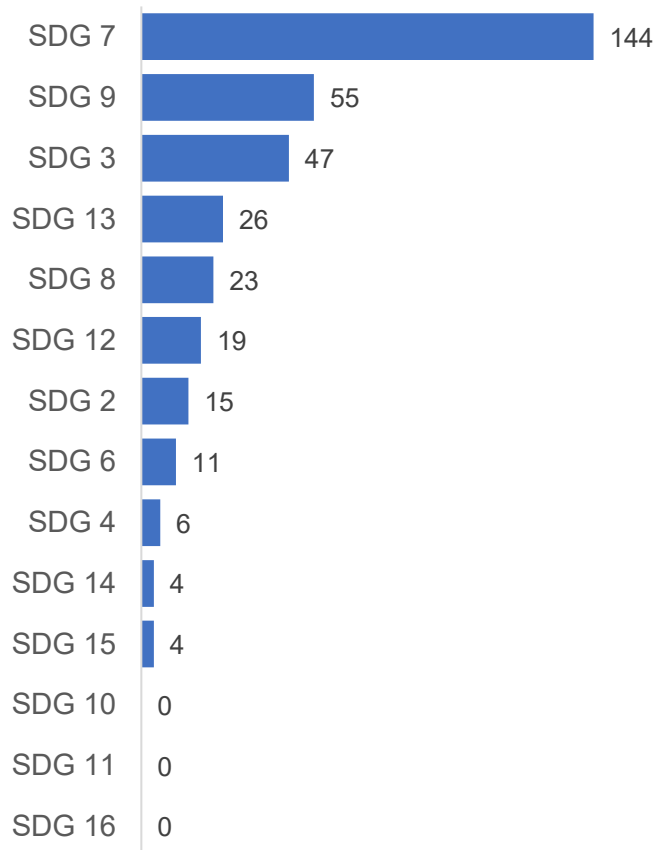
For each SDG:

- Total number of papers
- Share of SSU's overall research output

Core analytical layer: SDG-specific impact indicators

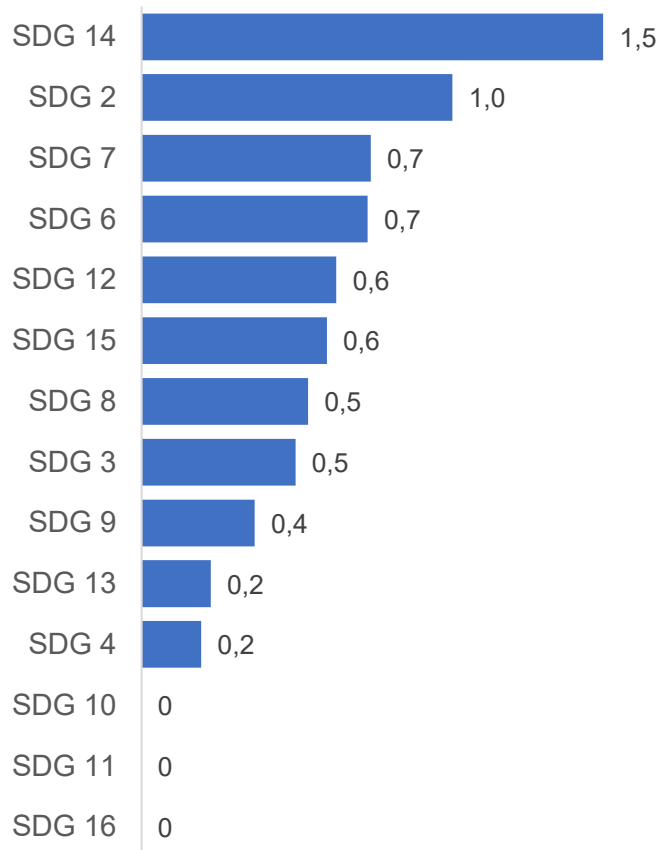
Total citations by SDGs

SSU's citation impact is highly concentrated, with SDG 7 (Affordable and Clean Energy) receiving by far the most citations, indicating strong research influence in this area.



FWCI by SDGs

SSU performs above the world average in only SDG 14 (Life below Water). Most other SDGs are around or below the global benchmark, suggesting more modest relative impact.



Average CiteScore of Journals

SSU's SDG-related publications are generally published in mid-impact journals, with the highest average CiteScore observed for SDG 9 and SDG 4.

