



THE SUSTAINABILITY REPORT



SDG 6 — CLEAN WATER & SANITATION

2025 / 2026



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1. Overview — SDG 6: Clean Water and Sanitation

Gulf University supports SDG 6 (Clean Water and Sanitation) through a combination of policy governance, applied research and patented innovation, physical infrastructure, and community awareness. During AY 2025–2026, this work was carried out primarily through the Sustainability and Development Makers Center (SDM-C) and the Facilities Department, operating under GU's institutional Water Reuse Policy (GU-PL80WR, effective July 2024), and reinforced by GUSW2025 programming and a patented AI-powered smart irrigation system.

This report consolidates SDG 6 evidence from the SDM-C & CECEC Annual Report 2025–2026

2. Key Highlights for Academic Year 2025–2026

- GUSW2025: SDG 6 addressed through 7 of 35 activities (20.0%); ICSDI 2025: SDG 6 represented in 2.6% of accepted conference papers.
- GUSW2025 Day 2 presentation: ‘Sustainable Water & Innovative Sanitation Solutions — Bahrain Context & GCC,’ including a case study on a green water desalination system (Bahrain Polytechnic collaboration).
- AI-Powered Smart Irrigation System: patented (“An Automated Irrigation System for Sustainable Farming,” Bahrain AGIP 205/2025, 13 July 2025) and copyrighted (Ministry of Information, Deposit No. 2025/1927/184/i, 8 January 2025), led by Dr. Walid El Fezzani — supports SDG 6, 9, and 12.
- Water Reuse Policy (GU-PL80WR, effective July 2024) governs campus water conservation, reuse, and efficiency practices.
- Campus water-efficient fixtures average 90.1% efficiency (up from 85.9% the previous year), across low-flush toilets, sensor taps, lab wash basins, and drinking water dispensers.
- Total campus water consumption: 24,967 m³ (Sept 2025–Jul 2026), a 6.4% year-over-year reduction from 26,680 m³ in AY 2024–2025.
- Water absorption infrastructure covers 3,369 m² — 10.34% of the University's 32,582 m² campus.
- Greywater Recycling Applications lecture delivered by Mr. Hassan Taher Al-Kuwaiti (Ministry of Works), organized by the Student Services Unit, 16 February 2026.

3. Water Reuse Policy & Campus Infrastructure

Gulf University's water conservation programme operates under the institutional Water Reuse Policy (GU-PL80WR, effective July 2024), which governs water storage and distribution, reuse and recycling systems, and community engagement for water sustainability. Key mechanisms include:

- Water Storage and Distribution Optimization: GU collects EWA-supplied water into internal storage tanks for controlled distribution and monitoring; the Facility Management System reports 81% completion of its annual maintenance schedule, reducing leakage and wastage.
- Campus Greening and Water Absorption Infrastructure: 4,169 m² (12.27% of the 33,982 m² campus) of permeable pavements, infiltration strips, soak pits, and porous parking areas designed to capture stormwater and recharge groundwater.
- Daily Afforestation Initiative (GUSW2025): CECEC, in partnership with the Ministry of Municipalities Affairs and Agriculture, the Southern Area Municipality, and stc Bahrain, distributed 900 seedlings during Sustainability Week 2025 to expand green cover and water absorption capacity.
- Facilities and Maintenance Policy: plumbing systems are maintained under GU's institutional maintenance framework, ensuring timely response to leaks in restrooms and laboratories, in line with the Water Reuse Policy.



Periodic inspection of water storage tanks and the underground sewage pipeline network is conducted to identify leaks or wear, with repairs carried out as needed to prevent contamination of the water supply.

4. AI-Powered Smart Irrigation System (Patent)

Developed collaboratively by the College of Engineering and SDM-C, led by Dr. Walid El Fezzani, the AI-Powered Smart Irrigation System uses IoT soil-moisture sensing and adaptive machine learning to automate irrigation and minimize water waste. The underlying technology has been formally registered as a patent — “An Automated Irrigation System for Sustainable Farming” (Registration No. 205/2025, Bahrain AGIP, 13 July 2025) — and was earlier copyrighted with the Ministry of Information (Deposit No. 2025/1927/184/i, 8 January 2025). The system is in active use for campus landscape irrigation and is reported to contribute to a ~15% reduction in landscape water use. It supports SDG 6 (Clean Water and Sanitation), SDG 9 (Industry, Innovation and Infrastructure), and SDG 12 (Responsible Consumption and Production).

Gulf University plans to extend the AI-based irrigation framework to all green areas and explore a small-scale greywater recycling unit as a pilot for treated-water reuse, building on the Water Reuse Policy (2026–2027 future plan).

5. Water Consumption & Efficiency Performance

Gulf University does not operate an on-campus water treatment facility; it receives potable water from the Electricity and Water Authority (EWA), Kingdom of Bahrain, and contracts a certified company for drinking water supply and coolers, which also provides comprehensive annual inspection of all water coolers.

Appliance Type	Total Installed	Water-Efficient Units	Efficiency (%)
Low-Flush Toilets	52	48	92.3%
Sensor / Low-Flow Taps	268	243	90.7%
Laboratory Wash Basins (Timed Flow)	12	10	83.3%
Drinking Water Dispensers	15	15	100%
Average Efficiency	—	—	90.1%

This represents a 4-percentage-point increase from the prior year's 85.9% average. Campus-wide water consumption totalled 24,967 m³ for Sept 2025–Jul 2026 ($\approx$ 39.8 litres/person/day), a decrease of approximately 6.4% year-over-year from 26,680 m³ in AY 2024–2025, tracked via Power BI dashboards maintained by the Facilities Department and SDM-C.

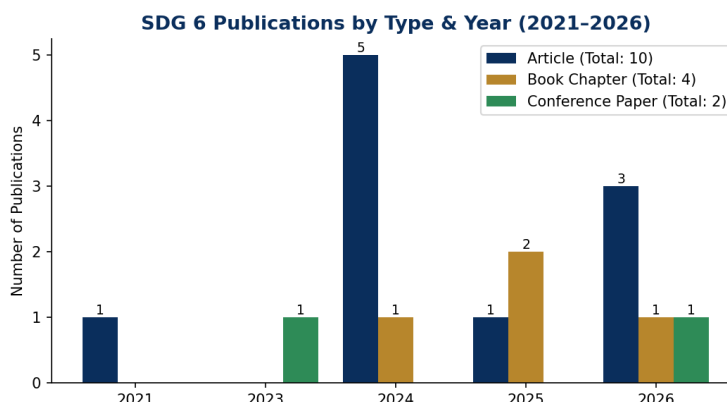
6. Community Engagement and Awareness Initiatives

Initiative	Description	Date	Outcome
Water Conservation Awareness Campaign	Organized as part of GU Sustainability Week; promoted responsible water use and reducing wastage	Nov 2025	104+ participants gained awareness of daily water-saving practices
‘Sustainable Water & Innovative Sanitation Solutions — Bahrain Context & GCC’ (GUSW2025 Day 2)	Case study on a green water desalination system, with Bahrain Polytechnic	16 Nov 2025	SDG 6 addressed in 7 of 35 GUSW2025 activities (20.0%)



Initiative	Description	Date	Outcome
Greywater Recycling Applications in Bahrain (lecture)	Delivered by Mr. Hassan Taher Al-Kuwaiti, Head of Mechanical Design Group, Ministry of Works; organized by the Student Services Unit	16 Feb 2026	Raised awareness of greywater reuse among students and staff
Awareness Signage	Informative posters in university restrooms promoting responsible water consumption, sensor-tap use, and leak reporting	Ongoing	Behavioural reinforcement of efficient water use

7. GU Research & Publications Related to SDG 6



Publication Type	2021	2023	2024	2025	2026	Total
Article	1	0	5	1	3	10
Book Chapter	0	0	1	2	1	4
Conference Paper	0	1	0	0	1	2

Gulf University's SDG 6-linked research base totals 16 publications from 2021–2026 (10 articles, 4 book chapters, 2 conference papers). ICSDI 2025 additionally represented SDG 6 in 2.6% of accepted conference papers.

8. Summary of Impact and Key Performance Indicators (KPIs)

KPI	Indicator Description	2025–2026 Result	Status
KPI 1	Number of clean water/sanitation-linked publications	16 publications (10 articles, 4 book chapters, 2 conference papers), 2021–2026	Achieved
KPI 2	Number of water/sanitation-focused sessions held	2 — GUSW2025 Day 2 water panel; Greywater Recycling Applications lecture (16 Feb 2026)	Achieved
KPI 3	Activities addressing SDG 6 within GUSW2025	7 of 35 activities (20.0%)	Achieved
KPI 4	Campus water consumption and efficiency	24,967 m ³ total ($\approx$ 6.4% YoY reduction); 90.1% average fixture efficiency	Achieved
KPI 5	Cross-institutional research partnerships on water/sanitation	1 — Bahrain Polytechnic collaboration (green water desalination); AI-Powered Smart Irrigation patent (College of Engineering / SDM-C)	Achieved



9. Conclusion and Future Directions

Gulf University's SDG 6 contribution for AY 2025–2026 is substantially more developed than event programming alone: it rests on a named institutional policy (Water Reuse Policy, GU-PL80WR), a patented and copyrighted AI-powered irrigation innovation, quantified fixture-efficiency data (90.1% average), a measurable year-over-year reduction in water consumption ($\approx 6.4\%$), and community awareness programming through GUSW2025 and the Ministry of Works partnership.

Future directions:

- Extend the AI-based smart irrigation framework to all green areas, and pilot a small-scale greywater recycling unit for treated-water reuse, per SDM-C's 2026–2027 plan.
- Deepen the Bahrain Polytechnic research partnership on water desalination into a recurring joint research track.
- Continue tracking fixture efficiency and consumption per capita as a standing annual KPI within the Green Campus framework.
- Explore whether CECEC or DTC could contribute an additional water/sanitation-linked community or digital initiative to broaden institutional coverage beyond SDM-C and Facilities.
- Set a minimum annual target (e.g., ≥ 2 dedicated SDG 6 activities per year) to build on the current base.

Compiled from:

Innovation & Entrepreneurship Center (IEC) -Annual Report for the year 2025-26

<https://www.gulfuniversity.edu.bh/images/centers/innovation-entrepreneurship-center/annual-report/IEC-Annual-Report-2025-2026.pdf>

Sustainability Development Makers- Center -Annual Report for the year 2025-26

<https://www.gulfuniversity.edu.bh/images/centers/sustainability-and-development-makers-center/SDM-C-Annual-Report-2025-2026.pdf>

Community Engagement & Continuing Education Center (CECEC) -Annual Report for the year 2025-26

<https://www.gulfuniversity.edu.bh/images/centers/community-engagement-and-continuing-education-center/annual-reports/CECEC-Annual-Report-2025-2026.pdf>

Digital Transformation Center (DTC) -Annual Report for the year 2025-26

<https://www.gulfuniversity.edu.bh/images/centers/digital-transformation-center/annual-report/DTC-Annual-Report-2025-2026.pdf>

Water Re-use Policy

<https://www.gulfuniversity.edu.bh/images/sdg/policies/Water-Reuse-Policy.pdf>

Edited by:

Dr. Tanvir Hussein — Head of Accreditation and Ranking Unit

Designed by:

Ms. Shereen Murad — Head of Planning & Development Unit