



CASE STUDY WOP MONGOLIA 2022–2025

Strengthening Water Services
in Ulaanbaatar through Partnership

How peer-to-peer learning is helping Mongolia's
largest water utility become future-ready



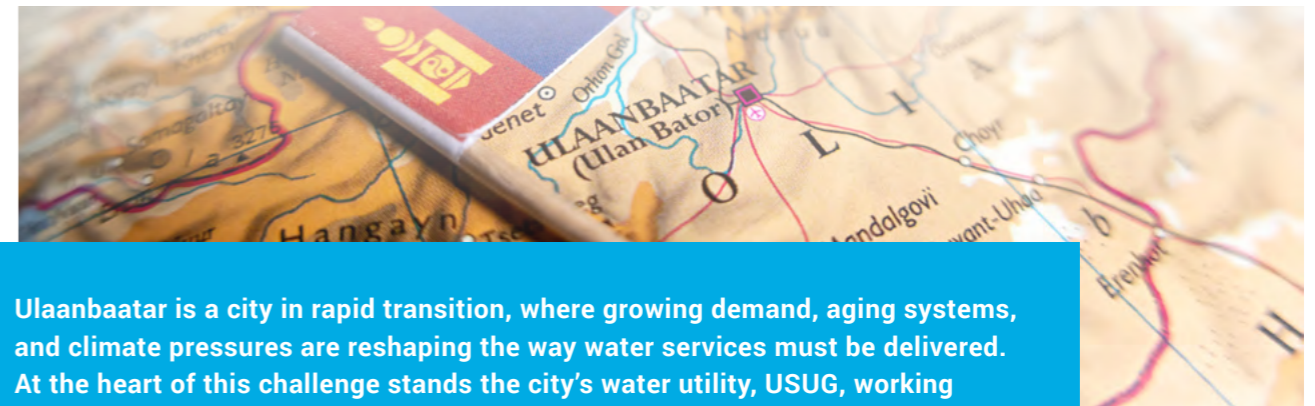


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BACKGROUND



Ulaanbaatar is a city in rapid transition, where growing demand, aging systems, and climate pressures are reshaping the way water services must be delivered. At the heart of this challenge stands the city's water utility, USUG, working to secure reliable drinking water and wastewater services for a fast-growing urban population. Recognizing that strong infrastructure must be matched by strong institutional capacity, an in-depth assessment was carried out to better understand where USUG stands today and how it can continue to grow into the future.

Water Supply and Sewerage Authority of Ulaanbaatar (USUG), Ulaanbaatar's biggest water utility, is responsible for delivering drinking water and wastewater services to a fast-growing urban population. As one of the coldest capital cities in the world, Ulaanbaatar faces unique challenges in maintaining reliable water and wastewater services. Through a Water Operators' Partnership (WOP), the country's largest utility is transforming itself into a future-ready institution capable of mentoring nationwide.

Like many rapidly growing capital cities, the utility faces increasing pressure on its water infrastructure due to urban expansion, climate variability, and rising service expectations in Mongolia.

Under the second Millennium Challenge Compact (2021-2026), the Government of Mongolia and the Millennium Challenge Corporation invested in constructing two new water wellfields, along with an advanced water purification plant and a wastewater recycling plant, to be operated and maintained by USUG. To ensure the sustainable operation of these new assets, a capacity development program was planned along with the investment program. To better understand USUG's

strengths and weaknesses, the Millennium Challenge Account-Mongolia (MCA-Mongolia) and USUG conducted an independent assessment using the internationally recognized International Water Association (IWA) AquaRating tool. AquaRating assesses water utilities on service quality, efficiency, governance, and sustainability. Improving a rating means better service, greater efficiency, and stronger financial and operational resilience. It also enables international benchmarking, helping utilities learn from global best practices. The AquaRating was proposed by MCA-Mongolia to identify areas where USUG could improve and to use these results as the basis for designing the WOP programme.

The results showed that while many systems were already in place, further improvements were needed in the areas: Financial sustainability, Asset management, Non-Revenue Water, Sewerage & wastewater, Automation & telemetry, Emergency response planning, Environmental management, Investment & procurement, Human resources, and Customer services. This assessment formed the starting point for targeted capacity development.

THE WOP BETWEEN USUG, VEI AND MCA-MONGOLIA



THE WOP PARTNERS



To address these challenges, USUG entered into a long-term WOP with VEI, funded by the MCA-Mongolia, aimed at strengthening USUG's capacity so that the organization would be ready to sustainably and over the long term manage the large new installations.

WOPs are peer-support partnerships between water and sanitation service providers that are implemented on a not-for-profit basis. They focus on strengthening the capacity of resident utility staff rather than "doing the work for them". This approach ensures that improvements are sustainable, and that knowledge remains embedded within the organization.

Unlike traditional short-term consultancy, the WOP model emphasizes long-term coaching, practical knowledge exchange and organizational learning.



MONGOLIA WATER COMPACT
ULAANBAATAR BULK WATER
SUPPLY PROJECT



Within this WOP, USUG was the recipient partner, VEI acted as the contracted facilitator mentor, and MCA-Mongolia as the funding partner. Each partner played a distinct role: USUG led local implementation and identified its priority needs based on the AquaRating assessment; VEI is a WOP coordinating entity on behalf of 7 Dutch mentor water utilities. Through VEI, these utilities share operational and

strategic expertise from daily practices. VEI facilitated and coordinated the partnership, ensuring quality and continuity; and MCA-Mongolia provided strategic oversight and funding. Together, the three partners formed a strong international alliance focused on sustainable capacity building.

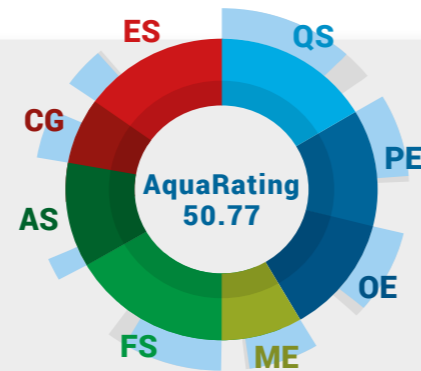
OBJECTIVES OF THE WOP (2022–2025)

The main objective of the WOP was to strengthen USUG’s technical, financial, and management capacity so that it can deliver high-quality, sustainable water and wastewater services to the people of Ulaanbaatar and would be prepared to operate and maintain the new installations developed under the MCA programme.

Through peer-to-peer learning and long-term coaching, the partnership improved operational efficiency, strengthened strategic decision-making, embedded international best practices, and created a culture of continuous learning

in USUG. In addition, the WOP aimed to prepare USUG to become a mentor utility, capable of supporting other water operators in the region.

EVALUATION AND RATING AREAS GLOBAL ASSESSMENT RESULTS OF THE EVALUATION



ABOUT USUG

USUG has been serving the city of Ulaanbaatar since 1959, supplying water to OSNAAG (per apartment building) and to households in the Ger areas. Some of its key performance indicators at the start of the partnership were:

- Annual water production: 57.4 million m³
- Service connections: 8,810*
- Staff: 1,888 employees
- Non-revenue water: 18%
- AquaRating score (2021): 50.77

* Note that the number of connections is relatively low because USUG delivers most its water to OSNAAG, the water and energy service provider of Ulaanbaatar’s apartment buildings, and to water kiosks in the Ger areas.

PARTNERSHIP APPROACH

The WOP followed three structured phases:

1 PREPARATION PHASE – A diagnostic visit by the VEI team took place in March/April 2023. USUG selected domains of support for the WOP based on AquaRating results and consultations with USUG management and MCA-Mongolia. VEI designed the WOP program in both form and content. The nine technical areas identified from the AquaRating analysis were expanded to include Human Resources Management, and Finance and Non-Revenue Water were each split into two separate topics, resulting in a total of eleven focus areas. For each focus area, a Project Group (PG) was established, led by an USUG Team Leader and supported by up to six or seven USUG staff members, with a mentor expert from the Dutch utilities guiding the group. Terms of Reference were developed for each PG, specifying the expertise required from participants. USUG staff applied through an open procedure and were interviewed by USUG HR and the mentor experts. Selection was based on motivation, added value, and a balanced team composition, with final input from USUG and MCA-Mongolia. During the WOP, VEI collaborated with several Dutch water companies, which is a unique strength of VEI, as it can draw on a broad and diverse network of specialized expertise

2 IMPLEMENTATION PHASE – Supported by their Dutch counterpart, the USUG PGs worked on the assignments outlined in the Terms of Reference. Over time a number of activities were added. The PGs not only worked on their assignments but also on building internal capacity, team cohesion, and organizational culture. The WOP therefore worked beyond its initial agreements as laid out in the project plan. Teams were supervised by mentor experts and supported by

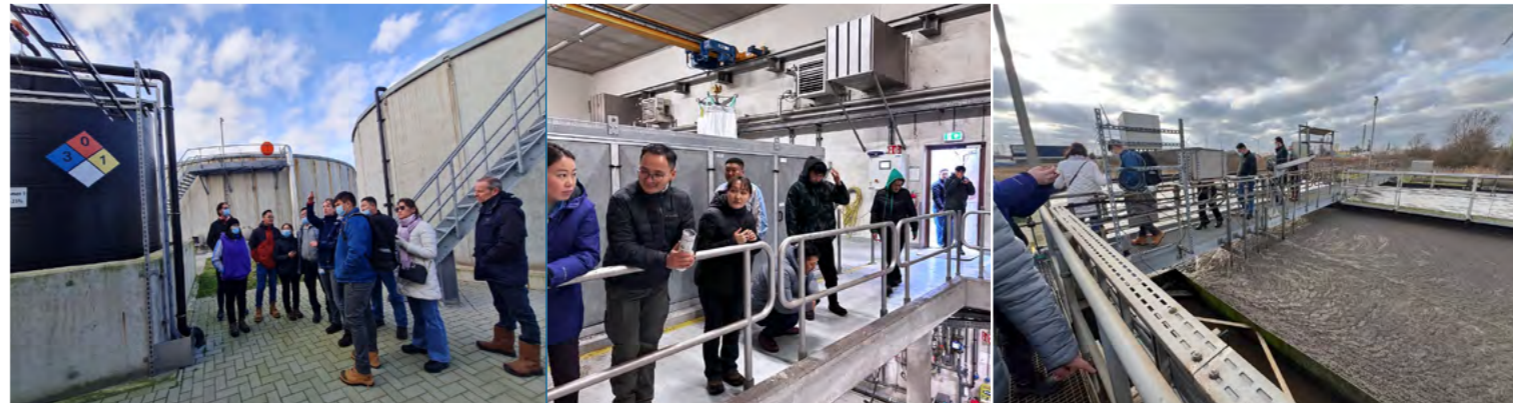


tailored study visits to the Netherlands and mentor visits to USUG. The PGs provided regular updates to the WOP Steering Group and delivered final products that contributed to increasing USUG’s AquaRating based on a self-assessment done by USUG and the mentors. A final independent AquaRating assessment will be done in March/April 2026.

3 EVALUATION PHASE – This included a final report, an assessment conducted by the VEI team at the end of the project in November 2025 to determine the final AquaRating results, and an external AquaRating assessment to be carried out by an MCA Mongolia consultant at USUG in March/April 2026.



TIMELINE OF THE PARTNERSHIP



PREPARATION

2022
Kick-off Ulaanbaatar

The partnership started with a **PREPARATION AND ASSESSMENT PHASE** during the first three months. A kick-off meeting was organized in Ulaanbaatar, bringing together USUG, VEI and MCA-Mongolia. During this phase, the AquaRating results were analyzed in detail to identify priority areas for improvement. VEI worked with USUG and MCA-Mongolia to select suitable Dutch mentor experts that matched the capacity development ambitions. VEI and USUG jointly searched within VEI's network of water utilities to find the right expertise. During the WOP, VEI collaborated with several Dutch water companies, which is a unique strength of VEI, as it can draw on a broad and diverse network of specialized expertise. For example, Evides contributed expertise in wastewater treatment and industrial water, while Vitens provided expertise in groundwater management. AquaLab Zuid and Water Lab Noord provided expertise on drinking water and waste water testing, and Brabant Water provided expertise on Emergency Response



DESIGN

2022

During the **DESIGN PHASE** (months 4-6), Dutch experts travelled to Mongolia for a diagnostic visit. Together with USUG management and technical staff, they translated assessment findings into concrete objectives and a structured work plan. Key performance indicators were agreed, roles and responsibilities defined, a formal partnership agreement was signed, and a governance structure was established. This phase laid the foundation for a transparent and well-governed collaboration.



IMPLEMENTATION

2022–2025

The core of the Water Operator Partnership took place in the **IMPLEMENTATION PHASE** (months seven to thirty-four). USUG staff participated in study visits to the Netherlands, working side by side with their Dutch counterparts in daily operations. At the same time, Dutch experts made regular return visits to Ulaanbaatar to provide on-the-job coaching and support implementation. Online sessions ensured continuity between missions and the progress on the Project Group assignments.



[Click here](#) to see all the videos of the Mongolian visits to the Netherlands.



EVALUATION

October 2025
GWOPA Congress

The partnership concluded with a **FINAL EVALUATION PHASE** in month thirty-five, including a joint workshop to review achievements, document lessons learned and explore future cooperation. Results were shared nationally and internationally. USUG, VEI and MCA-Mongolia presented the results of the WOP at the Global Water Operators' Partnership Association (GWOPA) Congress in October 2025.



GOVERNANCE

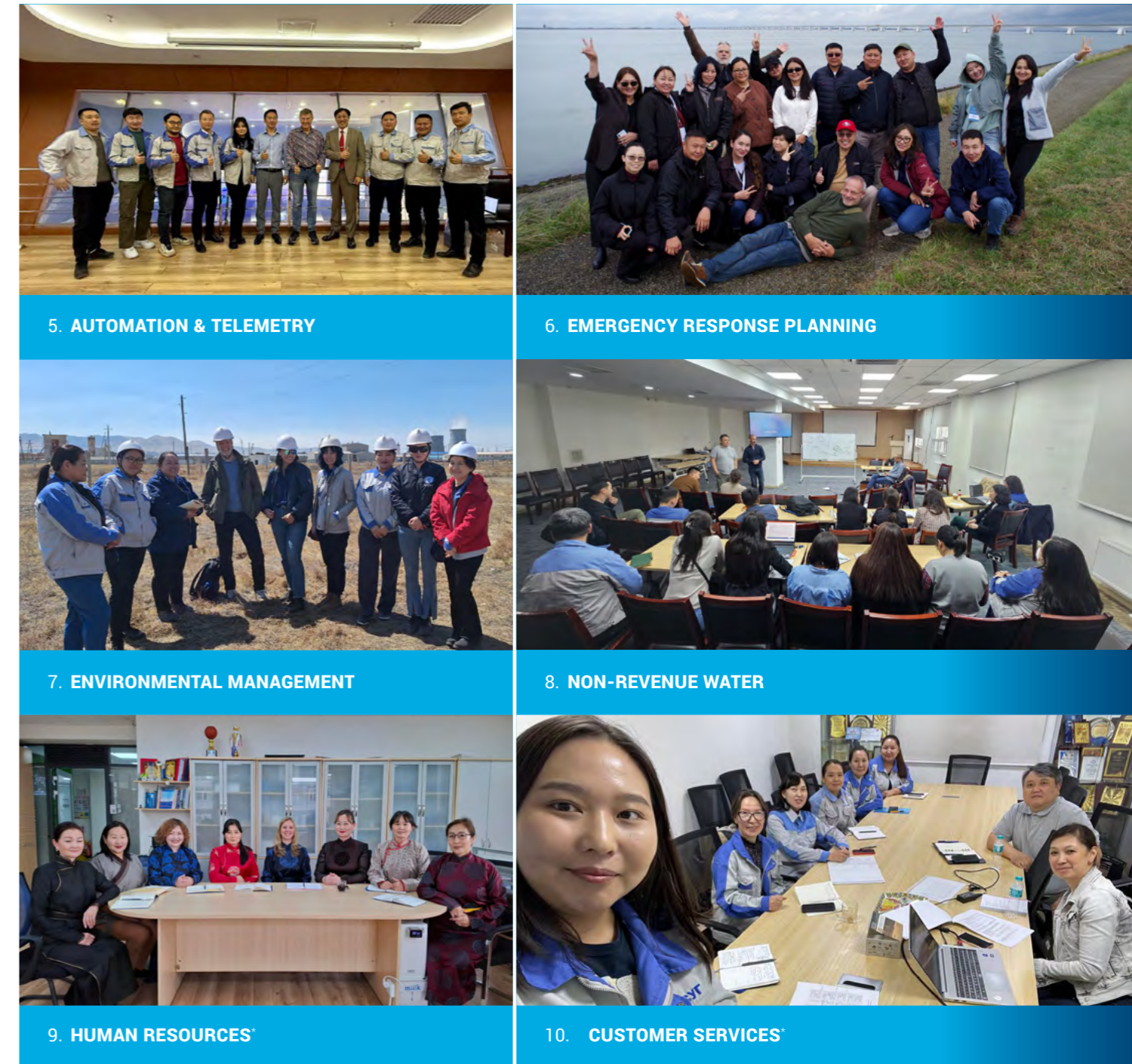
STEERING COMMITTEE FOR STRATEGIC ALIGNMENT AND OVERSIGHT

To align and ensure ownership of results, the WOP partners established a Steering Committee (SC) with high-level representatives of MCA-Mongolia, USUG and VEI. USUG was represented by most of its management team members. The VEI project team and the USUG team leaders reported on WOP planning and progress to the SC on a regular basis.

PROJECT GROUPS & FOCUS AREAS



Eleven USUG project groups were established, each group supervised by a Dutch mentor utility expert from VEI. The PGs were deliberately composed of staff from different departments to strengthen internal collaboration.



* Not included in the aquarating recommendations

HIGHLIGHTS OF THE PROJECT GROUPS



1. FINANCIAL SUSTAINABILITY

The Financial Sustainability group **updated USUG's 15-year financial projection model**, providing a stronger basis for long-term planning. They also supported tariff calculations linked to the operation and maintenance of new water and wastewater facilities and established a comprehensive financial risk analysis framework to strengthen the utility's financial resilience.

2. ASSET MANAGEMENT

The Asset Management group introduced a **risk-based approach for infrastructure management**, helping USUG to prioritize maintenance and investments in relation to its strategic objectives. In addition, the group supported the development of a new asset management policy and long-term strategy.

3. INVESTMENT & PROCUREMENT

The Investment & Procurement group strengthened understanding of modern procurement practices, including EU standards. The group introduced an **investment management information system**, improving monitoring and decision-making for ongoing and future projects.

4. SEWERAGE & WASTEWATER

The Sewerage & Wastewater group developed **guidelines for sewer operation and maintenance** and provided specialized training on advanced bioreactor processes and water reuse. The group also introduced a method for classification of industrial discharges by risk level, forming the basis for more targeted inspection, monitoring and pretreatment.

5. AUTOMATION & TELEMETRY

The Automation & Telemetry group received **practical trainings** on SCADA standards and on maintenance of telemetric equipment for new water, wastewater and recycling plants. Telemetry training was given to collect all the data from the three new treatment plants. In addition, USUG's cybersecurity was improved by improved understanding of digital risks and implementation of preventive measures.

6. EMERGENCY RESPONSE PLANNING

The Emergency Response group developed **methodologies for incident and crisis preparedness** and organized tabletop exercises focused on flood scenarios in Ulaanbaatar, which strengthened operational readiness.

7. ENVIRONMENTAL MANAGEMENT

The Environmental Management group provided training on environmental management systems and developed a **roadmap towards ISO 14001 certification**, supporting USUG's commitment to sustainable operations.

8. NON-REVENUE WATER

The Non-Revenue Water (NRW) groups focused on **reducing water losses using internationally recognized IWA methods and tools**. Their work involved measuring NRW components with tools such as EasyCalc.xls, Real Loss Component Analysis.xls, and MNF Analysis.xls. The Q3 supply zone was hydraulically isolated (creating a District Metered Area, or DMA), to identify where water is lost and to reduce these losses through a standard procedure for Active Leak Detection, digitizing leak records, and conducting spatial and root-cause analyses. The group also worked to improve meter accuracy and revenue collection, ensuring that all supplied water is properly measured and billed. VEI supported the NRW team by helping prepare and secure funding for SMART meters for large consumers in DMA Q3, the first of five hydraulically isolated supply zones (see shaded area on the map below).

9. HUMAN RESOURCES

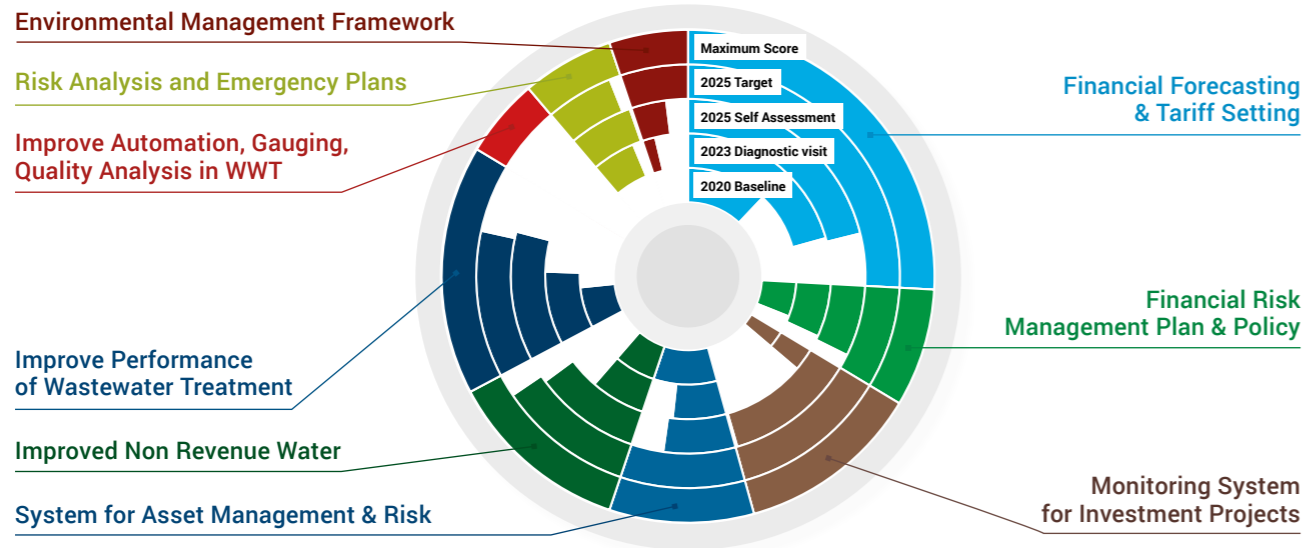
The Human Resources group focused on **strategic workforce planning**. Group members developed new job profiles, started conducting exit interviews, supported knowledge transfer between colleagues via a newly developed succession plan, and introduced a new HR system that is currently being tested within the organization.

10. CUSTOMER SERVICES

Finally, the Customer Services group introduced **customer journey mapping** to better understand and improve customer experience. USUG strengthened its complaint-handling processes and introduced new digital tools, including CRM systems, a single contact number, and a customer registration app. As a result, customer satisfaction increased by 30% during the WOP.

WOP RESULTS

AQUARATING SELF-ASSESSMENT



The upward trend in AquaRating score, from 48.3 to 88.9, evidences stronger systems, documented processes, and improved internal coordination. Across all eight AquaRating areas, and HR and customer service, USUG shifted from fragmented routines to structured, documented, interrelated and evidence based systems. These improvements reduce operational risk and enhance readiness for commissioning new facilities.

Many improvements, asset management routines, investment monitoring dashboards, emergency planning cycles, NRW methods, HR tools, are now being integrated into daily operations. The WOP program has positioned USUG to operate new water and wastewater infrastructure more reliably, reduce operational risks, and continue its evolution into a modern, high performing utility.

	AquaRating points for selected domains	Improvement compared to baseline
Baseline (2021)	48.3*	0%
Diagnostic mission (May 2023)	65.2	35%
November 2025 (self assessment)	88.9	84%
Target	101	109%

* Accumulative AquaRating points for selected domains

ADDITIONAL ELEMENTS

In addition to the core program, the WOP included several complementary activities to strengthen its impact. Leadership trainings based on Appreciative Inquiry supported team development, while a WOP symposium in August 2024 created space for shared learning.

The scope was expanded to cover topics such as customer relationship management, commercial NRW, human resources, wastewater and sludge treatment, and water recycling. Participants also attended lectures on water quality, cybersecurity and automation; visited the

warehouse of the Evides water utility in the Netherlands; and joined online demonstrations. The partnership also delivered recommendations for commissioning new infrastructure and contributed to tariff reforms and customer communication.



APPRECIATIVE INQUIRY

BUILDING ON STRENGTHS TO CREATE LASTING IMPACT

All Project Groups and the USUG management participated in Appreciative Inquiry training to strengthen collaboration and build a shared sense of purpose. Through interactive sessions, group members reflected on their strengths, successes and ambitions, which helped them develop common values and clear team charters.

The training also supported Project Groups in creating long-term visions and concrete action plans that extend beyond the WOP period. By focusing on what works well within the organization, Appreciative Inquiry encouraged positive

thinking, ownership and sustainable change, ensuring that improvements will continue long after the partnership has ended.

IMPACT

The partnership led to visible improvements in internal processes, decision-making and staff confidence, strengthening USUG's ability to plan, operate, and manage its expanding infrastructure. Project Groups became more data-driven, cross-departmental cooperation improved, and managers gained stronger strategic insight. Staff reported higher motivation and professional recognition.

These improvements also sparked a deeper institutional culture shift: teams increasingly work with shared ownership, transparency, and a stronger habit of using evidence to solve operational challenges. The tools, procedures, and coaching methods embedded during the partnership now help safeguard knowledge within USUG, ensuring that progress is sustained even as staff or leadership change.

Together, these shifts position USUG not only to maintain its gains, but to confidently mentor and transfer its experience to other water utilities in Mongolia and beyond.

“This partnership helped us turn knowledge into action. We are now better prepared to meet the challenges of today and support other utilities in the future.”

– USUG Staff Member



RESULTS

CAPACITY DEVELOPMENT

- 11 Project Groups
- 184 Participants
- 11 study visits to the Netherlands and Germany
- 6 mentor missions to Mongolia
- 150+ Training Sessions
- 40+ Site Visits
- 15 Dutch Mentor Experts
- 17 mentor experts involved



LESSONS LEARNED

- WOP combined with AquaRating is a powerful innovation tool.
- Structured, project-based teamwork proved highly effective in accelerating learning, strengthening ownership, and delivering practical operational results.
- Management support is crucial.
- Professional technical translation is essential.



LOOKING AHEAD

Future sustainability will be ensured by integrating WOP results into USUG Strategic Plan 2040. Mentor inputs will gradually decrease, with online follow-up continuing in 2026. USUG plans to join GWOPA and is preparing to take on a future mentoring role.



EMPLOYEES OF USUG SHARE THEIR STORIES AND EXPERIENCES



ATARJARGAL RAGCHAA
HYDRAULIC ENGINEER

The collaboration is progressing positively, with the consulting firm’s methodologies and technical guidance contributing meaningfully to the project. Beyond technical development, the teams are also strengthening organizational culture, management practices, and data-driven approaches—essential foundations for long-term sustainability.

The project is on track toward its main goals: reducing non-revenue water and establishing a data-driven management system. Key groundwork has been completed, including methodology selection, system analysis, capacity building, technology testing, and data quality improvements. These steps are crucial for achieving lasting, measurable impact, which will be confirmed after full monitoring and validation. The focus remains on long-term, sustainable improvements rather than short-term indicators.

Looking ahead, USUG has strong potential to evolve into a mentoring organization for other utilities—provided the current efforts continue. Continued investment, ongoing human resource development, and strengthening organizational culture will be essential to turning this potential into reality.

“We believe that sustainable progress is only possible when technical solutions go hand in hand with strong teams, a learning culture, and shared commitment.”



MUNGUNTSOOJ GONGOR
PROJECT ENGINEER OF THE PROJECT
IMPLEMENTATION UNIT



MUNKHTSETSEG DONDOV
HEAD OF ADMINISTRATION AND
MANAGEMENT DEPARTMENT

Since the launch of the Water Operators' Partnership program, a noticeable shift has taken place within the organization within a public utility. Colleagues who once worked mainly within their own silos are now actively reaching across teams, sharing ideas, and openly discussing challenges. This new way of collaborating has allowed people to look at issues from different angles and to discover solutions together—often faster and more creatively than before.

The results of this strengthened collaboration are already visible. As team members gained more knowledge, hands-on experience, and confidence, project groups began working together more fluidly and effectively. This collective progress has bolstered the organization's performance in several areas, ultimately supporting the shared ambition of improving the AquaRating score established by the International Water Association (IWA). Every team has contributed to this achievement, showing what is possible when skills and teamwork grow hand in hand.

Looking to the future, there is a growing sense that USUG is now ready to guide others. The expertise developed through this partnership could be of great value to similar utilities in rural areas. By sharing insights, offering guidance, and continuing to learn from others, USUG can help strengthen the broader water sector as well."

"This partnership has changed the way we work. We've learned so much -together- and now we're ready to pass that knowledge on. Helping others grow will help us grow too."

This collaboration marked a new approach for us—one built on voluntary participation, teamwork, and shared learning. Over two years, 184 staff members from 11 project groups worked closely together and alongside expert mentors, tackling challenges, exchanging knowledge, and strengthening their skills.

The primary goal of the project was to improve AquaRating scores across each technical area and achieve our targets. The results speak for themselves: engineers and technical staff became more motivated and eager to learn, problem-solving skills were enhanced, and knowledge was actively shared across teams. Participants were exposed to new ideas, technologies, and methods through hands-on, on-site learning, creating lasting benefits for the organization.

The success of this project goes beyond the immediate results. It aligns with our strategic plan and has already strengthened USUG's capacity. Local public utilities have begun relying on us for guidance, training, and experience sharing, and we see clear opportunities to support similar utilities across Mongolia. This project has laid a strong foundation for USUG to serve as a mentor organization—one that is ready and capable of guiding others to success.

"Working on this project gave me the chance to learn from my colleagues and mentors in ways I never imagined. It not only improved my skills but also inspired me to share what I've learned with others."



MUNKHZUL DORJ
HEAD OF OPERATION &
UTILITY MANAGEMENT

The WOP was a resounding success, demonstrating the power of collaboration, commitment, and hands-on learning. Throughout the project, all 11 project groups showed exceptional dedication, diligently completing their tasks while working together in a constructive and supportive manner. Participants were actively engaged from start to finish, contributing ideas, sharing knowledge, and tackling challenges collectively.

Beyond improving AquaRating scores, the project provided engineers and technicians with invaluable practical knowledge, innovative ideas, and lessons learned from real-world applications. As one participant noted: Through this experience, participants strengthened not only their own skills but also the capabilities of their colleagues. Knowledge gained was actively shared across teams, fostering a culture of collaboration, confidence, and continuous improvement.

The benefits of the WOP extend far beyond individual learning. The experience and expertise gained have positioned USUG to serve as a mentor utility for public water utilities across all 21 provinces in Mongolia. Teams are now equipped to guide others, share best practices, and provide training and support to utilities seeking to strengthen their technical and operational capacity.

Moreover, during the 6th GWOPA International Congress in October 2025, it became clear that USUG's potential reaches even further. By sharing solutions to challenges already successfully addressed, USUG is well-placed to support utilities in other countries, contributing to international knowledge exchange and capacity building.

Overall, the WOP has strengthened USUG's teams and operations and highlighted the organization's growing leadership role in water utility management—locally, nationally, and beyond. It is a powerful example of how dedication, collaboration, and knowledge sharing can create lasting impact.

“This project allowed me to learn practical solutions and share them with my team.”





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