معتمد
ACCREDITED
2020 - 2026

١٤٢٧
2006
جامعة تبوك
University of Tabuk

# SDG 6 Clean Water and Sanitation

6 CLEAN WATER AND SANITATION

U_Tabuk


The University of Tabuk is committed to the responsible and sustainable management of water resources as part of its environmental and operational strategy. The university adopts a comprehensive approach that includes cutting-edge research, efficient consumption tracking, wastewater treatment using Membrane Bio Reactor (MBR) technology, and campus-wide conservation initiatives. Efforts extend beyond the campus through community engagement, education, and partnerships to promote water awareness and security. Through its integrated practices and policies, the university aims to reduce consumption, prevent pollution, encourage reuse, and foster a culture of water stewardship both within the institution and across the broader community.

## 6.1 Research on water

The University of Tabuk plays an active role in advancing research related to water services and sanitation, as evidenced by a growing body of scientific publications in these critical areas. This reflects the university's ongoing commitment to addressing global water challenges through innovative and solution-oriented research. Recent examples include:

**Abumelha, H.M., Pashameah, R., Sari, A.A.A., Bin-Ibrahim, S.F., Alanazi, M.A., Shah, R. and El-Metwaly, N.M., 2024.** Remarkable photocatalytic activity of MWCs supported on PVF in recycling, solar and photodegradation processes for commercial dyes and real industrial wastewater. Optical Materials, 150, p.115319.

**Al-Hazmi, G. H., Albedair, L. A., Alatawi, R. A., Alnawmasi, J. S., Alsuhaibani, A. M., & El-Desouky, M. G. (2024).** Enhancing trimethoprim pollutant removal from wastewater using magnetic metal-organic framework encapsulated with poly (itaconic acid)-grafted crosslinked chitosan composite sponge: optimization through Box-Behnken design and thermodynamics of adsorption parameters. International Journal of Biological Macromolecules, 268, 131947.

## 6.2 Water consumption per person

### 6.2.1 Water consumption tracking

The University of Tabuk systematically measures the total volume of water consumed across its campus, including water sourced from mains supply, desalination, and natural water bodies such as aquifers. The university employs a comprehensive water monitoring system that regularly tracks consumption data to support sustainable water management practices and inform conservation efforts. For more information, please refer to the Operations and Maintenance Department report.

Engineering Affairs Water Consumption Report

## 6.3 Water usage and care

### 6.3.1 Wastewater treatment

The University of Tabuk employs a sophisticated wastewater treatment system based on advanced Membrane Bio-Reactor (MBR) technology, as outlined in the Water Treatment Plant Report (STP). This facility constitutes a critical component of the university's comprehensive water sanitation and sustainability framework, ensuring effective treatment and management of wastewater.

Treated effluent from the plant is reused for the irrigation of campus greenery and agricultural areas, thereby promoting water conservation and environmental

stewardship. The treatment process is governed by rigorous quality assurance protocols, with accredited certifications and laboratory analyses verifying compliance with applicable environmental and health standards. These measures collectively minimize ecological impact and uphold the university's commitment to sustainable resource management.

Water Treatment Plant Report STP

### 6.3.2 Preventing water system pollution

The University of Tabuk has implemented a robust and multi-layered system to prevent polluted water from entering its water infrastructure, including pollution caused by accidental spills and incidents on campus. This system is founded on advanced technology, rigorous risk management, and continuous monitoring, ensuring environmental protection and sustainable water use.

**Wastewater Treatment:** The university operates a cutting-edge Sewage Treatment Plant (STP) utilizing **Membrane Bio-Reactor (MBR)** technology. This innovative process combines biological treatment with membrane filtration to produce high-quality treated water that meets or exceeds environmental standards. The treated effluent is safely reused for non-potable purposes such as irrigation of campus landscapes, cleaning, and flushing, thus conserving potable water resources and minimizing environmental impact.

Water Treatment Plant Report STP

**Risk Assessment and Spill Prevention:** To mitigate the risk of pollution incidents, the university regularly conducts comprehensive risk assessments to identify potential contamination sources across campus operations. These assessments focus on accident prevention, handling hazardous materials, and maintenance activities that could impact water quality.

**Containment and Emergency Response:** The university has established strict containment protocols and a rapid spill response plan designed to immediately address any leaks, spills, or accidental discharges. These procedures include on-site spill containment equipment, trained response teams, and clear reporting mechanisms to minimize the chance of pollutants entering the water system.

**Water Quality Monitoring:** Continuous monitoring programs are in place, with water quality tested at multiple key points within the campus water

network. This includes monitoring of influent and effluent at the STP, as well as groundwater and surface water sampling where applicable. Monitoring ensures compliance with national and international water quality standards and enables early detection of any contamination events.

**Compliance and Environmental Stewardship:**

All activities are aligned with Saudi environmental regulations and the university's commitment to sustainability. The integration of advanced treatment technology, proactive risk management, and vigilant monitoring exemplifies the University of Tabuk's leadership in protecting water resources and fostering a safe, healthy environment for the campus community and surrounding areas.

Also, The university implements a comprehensive hazardous waste management program encompassing the meticulous segregation, secure storage, and environmentally responsible disposal of hazardous materials. This program is designed to prevent any improper release of hazardous substances, thereby safeguarding the environment and ensuring regulatory compliance.

For details:

Laboratory and Workshop Safety Guide

Guide to Safety Rules

### 6.3.3 Free drinking water provided

The University of Tabuk currently provides free bottled drinking water across its campus for students, staff, and visitors. Bottled water is refilled daily in various university facilities, including academic and administrative buildings, libraries, and public areas, to ensure convenient access to safe and clean drinking water. This initiative promotes hydration, health, and well-being for all members of the university community.

Provision of Bottled Drinking Water on Campus

Provision of Bottled Drinking Water on Campus2

### 6.3.4 Water-conscious building standards

The University of Tabuk applies building standards aimed at minimizing water use. These standards include the installation of low-flow plumbing fixtures, automated faucet systems, and water-efficient irrigation systems for landscaping. Additionally, new construction projects are encouraged to align with LEED principles where feasible, with an emphasis on reducing both indoor and outdoor water consumption.

The university's Maintenance Department ensures that all contractors and design teams comply with these standards through project design reviews and on-site inspections. These efforts reflect the University of Tabuk's commitment to sustainable water management and environmental responsibility.

Preventive Maintenance Plan (page 29-33)

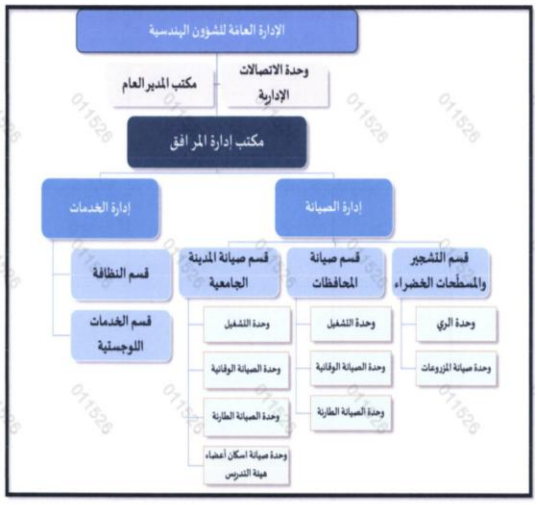
In addition to its role in water efficiency, the Maintenance Department oversees the daily operation of critical utility systems, including air conditioning, cooling, lighting, electric generators, pumping stations, and other essential infrastructure. The department is also responsible for implementing preventive maintenance plans, preparing

emergency maintenance strategies, and overseeing corrective maintenance when required.

The Irrigation Unit, operating under the Maintenance Department, is specifically responsible for the preventive maintenance of irrigation systems. This includes regular inspection and servicing of sprinklers, valves, and control panels to ensure optimal functionality and efficient water use.

These comprehensive measures demonstrate the university's commitment to sustainability and responsible water resource management, in alignment with Sustainable Development Goal 6 (Clean Water and Sanitation) and relevant national building codes and international green building standards.

Organizational Structure of the General Directorate of Engineering Affairs




3. المشاركة في متابعة النفقات وادارة المدفوعات للتوافق مع جدول التدفقات النقدية للمشاريع
4. تقديم التقارير الدورية حول تكاليف المشاريع وتوقعات التكاليف حتى مرحلة الاغلاق والتسليم

### 4.3 المهام والمسؤوليات لمكتب ادارة المرافق

#### 4.3.1 مكتب ادارة المرافق

1. تحديد الاهداف واعداد الخطط التشغيلية لادارات الصيانة وادارة الخدمات.
2. ضمان الاداء الفعال واستمرارية توفير كافة الخدمات في المدينة الجامعية والمحافظات وبما يضمن توفير بيئة عمل آمنة وصحية.
3. متابعة التحديث والتطوير على خطط الصيانة الوقائية لكافة الانظمة في المدينة الجامعية والمحافظات لضمان استمرارية عمل الانظمة وكفاءة التشغيل.
4. المساهمة في عمليات التخطيط، والتنفيذ، والصيانة المستمرة للمساحات الخضراء، وضمان استخدام أفضل الممارسات البيئية لتحقيق الاستدامة والجمال الطبيعي في الحرم الجامعي
5. الاشراف على اعمال المقاولين ومتابعة تنفيذ الخطط والمشاريع وضمان تحقيقها في الوقت المحدد والمواصفات المطلوبة
6. المشاركة في اعداد سجل المخاطر الخاص بالمكتب وتنفيذ الاستراتيجيات المعتمدة في ادارة المخاطر

#### 4.3.1 ادارة الصيانة

1. الاشراف ومتابعة اداء مقاولي التشغيل والصيانة وضمان التزامهم بتطبيق نطاق العمل ومخرجات عقود مشاريع التشغيل والصيانة.
2. الاشراف وبشكل مستمر على عملية التحديث على الحالة التشغيلية الخاصة بالانظمة الميكانيكية والكهربائية في المدينة الجامعية والمحافظات
3. الاطلاع على تقارير الصيانة الوقائية والطارئة في المدينة الجامعية والمحافظات
4. الاشراف على عمليات تحديد احتياجات الجامعة من قطع الغيار اللازمة لعقود التشغيل والصيانة
5. تدقيق كافة المستخلصات الشهرية الخاصة باعمال المقاولين ضمن الادارة
6. الاشراف على عملية اعداد وتطوير خطط الصيانة الوقائية لكافة الانظمة الميكانيكية والكهربائية في المدينة الجامعية والمحافظات
7. المشاركة في تطوير المنهجيات للمساعدة في تحديد الكادر الفني المطلوب ضمن عقود التشغيل والصيانة .
8. المشاركة في عملية اعداد وحصر الاصول الخاصة بالانظمة الميكانيكية والكهربائية والاعمال المدنية والمعمارية وفقا لمنهجية الدليل الوطني لادارة الاصول والمرافق.
9. المشاركة في عمليات الاستلام والتسليم المبدئي للمشاريع الانشائية.
10. الاشراف على عمليات الحفظ والارشفة لكافة الوثائق الخاصة بالمشاريع والتاكد من استلامها بشكل كامل من مكتب ادارة المشاريع الانشائية في مرحلة التسليم النهائي للمشاريع.

16

11. متابعة خطط استمرارية الاعمال والتحديثات اللازمة عليها لضمان استمرارية العمليات الحيوية في حالة حدوث اي طارئ وفقا للتسلسل الاداري المعتمد.

#### 4.3.1.1 قسم صيانة المدينة الجامعية

1. الإشراف على التشغيل اليومي لأنظمة المرافق الحيوية مثل التكييف، التبريد، الإضاءة، المولدات الكهربائية، ومحطات الضخ.
2. متابعة الأداء الفعلي لنظام إدارة المباني (BMS) وتسجيل وتحليل بيانات التشغيل.
3. تنفيذ خطط الصيانة الوقائية بالتنسيق مع المقاولين ورفع التوصيات المتعلقة بعمليات التحسين اللازمة على آليات التنفيذ للخطط.
4. متابعة حالة المعدات والأنظمة لتفادي الأعطال وضمان الأداء المستدام.
5. الاستجابة السريعة للأعطال الطارئة بالتنسيق مع فرق الصيانة.
6. إعداد خطط صيانة فورية لاستعادة التشغيل الطبيعي للمرافق.
7. تنفيذ الصيانة الوقائية والطارئة لإسكان أعضاء هيئة التدريس.
8. تحديد احتياجات الصيانة من قطع غيار ومستهلكات ووضع خطط لتلبيتها بالتنسيق مع فرق العمل وبما يضمن عدم تعطل الانظمة
9. تقديم التوجيه الفني والدعم لفرق الصيانة لضمان الالتزام بمعايير الجودة.
10. مراقبة استهلاك الطاقة وتطبيق استراتيجيات التشغيل الفعالة لتحسين الكفاءة التشغيلية.
11. تصنيف وحفظ الوثائق والمعلومات المتعلقة بالصيانة من خلال أنظمة إلكترونية معتمدة.
12. المشاركة في استلام وتسليم المشاريع الجديدة بالتنسيق مع الإدارات المختصة.

- وحدة التشغيل
  1. الإشراف على تشغيل كافة المرافق في المدينة الجامعية بشكل يومي
  2. متابعة ومراقبة أنظمة التكييف والتبريد الإضاءة، والمولدات الكهربائية، ومحطات الضخ، وغيرها من الأنظمة الحيوية
  3. مراقبة الأداء الفعلي لنظام (BMS - Building Management Systems).
  4. تسجيل وتحليل بيانات التشغيل لمراقبة الأداء بهدف التحسين على اداء التشغيل للانظمة
  5. اعداد ومتابعة تنفيذ خطط الصيانة التصحيحية لكافة الانظمة في المدينة الجامعية
  6. متابعة استهلاك الطاقة وتطبيق استراتيجيات تشغيل لضمان الكفاءة والاداء الفعال
  7. التنسيق مع فرق الطوارئ والصيانة عند حدوث أي خلل
  8. البحث المستمر عن طرق لتحسين كفاءة التشغيل وتبسيط العمليات
  9. تطبيق تقنيات التشغيل الآلي والوسائل التكنولوجية.

- وحدة الصيانة الوقائية
  1. المشاركة في تطوير خطط الصيانة الوقائية
  2. متابعة تنفيذ خطط الصيانة الوقائية مع المقاولين
  3. متابعة حالة المعدات والانظمة

17

4. تقديم التوجيه والدعم الفني لفرق الصيانة
5. تصنيف وحفظ الوثائق والمعلومات من خلال النظام الالكتروني المعتمد.

- وحدة الصيانة الطارئة
1. إدارة طلبات الصيانة الطارئة مع المقاولين وترتيبها حسب الأولويات
2. متابعة حالة المعدات والأنظمة بعد اجراء الصيانة الطارئة
3. تقديم التوجيه والدعم الفني لفرق الصيانة
4. تصنيف وحفظ الوثائق والمعلومات من خلال النظام الاليكتروني المعتمد

- وحدة صيانة اسكان اعضاء هيئة التدريس
1. ادارة اعمال الصيانة الوقائية والطارئة
2. تحديد احتياجات الصيانة وتطوير الخطط اللازمة لتلبيتها
3. متابعة حالة المعدات والانظمة بعد اجراء الصيانة الطارئه
4. تصنيف وحفظ الوثائق والمعلومات من خلال النظام الالكتروني المعتمد

4.3.1.2 قسم صيانة المحافظات

1. الإشراف على التشغيل اليومي لأنظمة المرافق الحيوية مثل الكهرباء، التبريد، الإضاءة، المولدات الكهربائية، ومحطات الضخ.
2. متابعة الأداء الفعلي لنظام إدارة المباني (BMS) وتسجيل وتحليل بيانات التشغيل.
3. تنفيذ خطط الصيانة الوقائية والتنسيق مع المقاولين ورفع التوصيات المتعلقة بعمليات التحسين اللازمة على آليات التنفيذ للخطط.
4. متابعة حالة المعدات والأنظمة لتفادي الأعطال وضمان الأداء المستدام.
5. الاستجابة السريعة للأعطال الطارئة بالتنسيق مع فرق الصيانة.
6. إعداد خطط صيانة فورية لاستعادة التشغيل الطبيعي للمرافق.
7. تحديد احتياجات الصيانة من قطع غيار ومستهلكات ووضع خطط لتلبيتها بالتنسيق مع فرق العمل وبما يضمن عدم تعطل الأنظمة.
8. تقديم التوجيه الفني والدعم لفرق الصيانة لضمان الالتزام بمعايير الجودة.
9. مراقبة استهلاك الطاقة وتطبيق استراتيجيات التشغيل الفعالة لتحسين الكفاءة التشغيلية.
10. تصنيف وحفظ الوثائق والمعلومات المتعلقة بالصيانة من خلال أنظمة إلكترونية معتمدة.
11. المشاركة في استلام وتسليم المشاريع الجديدة بالتنسيق مع الإدارات المختصة.

- وحدة التشغيل
1. الإشراف على تشغيل كافة المرافق في المدينة الجامعية بشكل يومي
2. متابعة ومراقبة أنظمة التكييف والتبريد والإضاءة، والمولدات الكهربائية، ومحطات الضخ، وغيرها من الأنظمة الحيوية
3. مراقبة الأداء الفعلي لنظام (BMS - Building Management Systems).

18

4. تسجيل وتحليل بيانات التشغيل لمراقبة الأداء بهدف التحسين على أداء التشغيل للانظمة.
5. اعداد ومتابعة تنفيذ خطط الصيانة التصحيحية لكافة الانظمة في المدينة الجامعية
6. متابعة استهلاك الطاقة وتطبيق استراتيجيات تشغيل لضمان الكفاءة والاداء الفعال
7. التنسيق مع فرق الطوارئ والصيانة عند حدوث أي خلل
8. البحث المستمر عن طرق لتحسين كفاءة التشغيل وتبسيط العمليات
9. تطبيق تقنيات التشغيل الآلي والوسائل التكنولوجية.

- وحدة الصيانة الوقائية
6. المشاركة في تطوير خطط الصيانة الوقائية
7. متابعة تنفيذ خطط الصيانة الوقائية مع المقاولين
8. متابعة حالة المعدات والانظمة
9. تقديم التوجيه والدعم الفني لفرق الصيانة
10. تصنيف وحفظ الوثائق والمعلومات من خلال النظام الالكتروني المعتمد

- وحدة الصيانة الطارئة
5. إدارة طلبات الصيانة الطارئة مع المقاولين وترتيبها حسب الأولويات
6. متابعة حالة المعدات والأنظمة بعد اجراء الصيانة الطارئة
7. تقديم التوجيه والدعم الفني لفرق الصيانة
8. تصنيف وحفظ الوثائق والمعلومات من خلال النظام الالكتروني المعتمد

4.3.1.3 قسم التشجير والمسطحات الخضراء

1. الإشراف على صيانة أنظمة الري (المرشات، الأنابيب، المحابس، ولوحات التحكم).
2. متابعة خطط الري وضبط كميات المياه بالتنسيق مع المقاول.
3. مراقبة أداء شبكات الري وتنفيذ الصيانة اللازمة.
4. متابعة أعمال المقاول المتعلقة بالعناية بالأشجار والنباتات.
5. المشاركة في اختيار أنواع النباتات والأشجار المناسبة.
6. متابعة تنفيذ عمليات مكافحة الآفات وضمان فعاليتها.
7. متابعة تقارير الأداء الخاصة بالمقاول.
8. متابعة عملية اعداد المستخلص الشهري وبما يتوافق مع العقد

19

- وحدة الري
1. متابعة المقاول للتأكد من تنفيذ اعمال الصيانة الوقائية لكافة انظمة الري (المرشات، الانابيب، المحابس، لوحات التحكم)
2. متابعة تنفيذ الصيانة الطارئة لانظمة الري فور التبليغ عنها والتأكد من انها تعمل بكفاءة وفعالية.
3. التأكد من قيام المقاول بضبط الجداول الزمنية لعمليات الري وضبط كميات المياه المستخدمة.
4. متابعة أداء الشبكات واجراء الصيانة اللازمة وفقا للخطط المعتمدة

- وحدة صيانة المزروعات
1. الاشراف على المقاول المسؤول عن تنفيذ عمليات العناية الخاصة بالأشجار والنباتات
2. المشاركة في عملية اختيار النباتات والاشجار
3. متابعة المقاول في عمليات مكافحة الآفات

8.3.2 ادارة الخدمات

1. اعتماد خطط النظافة والجودة وتوزيع العمالة على كافة المرافق والموقع العام الخاصة باعمال النظافة في المدينة الجامعية والمحافظات
2. متابعة اداء مقاول النظافة ورفع تقارير الاداء بشكل شهري
3. اعتماد المستخلص الشهري الخاص بمقاول النظافة وعقود الخدمات
4. تطوير الخطط التنفيذية المتعلقة بالخدمات اللوجستية
5. ضمان جاهزية المناطق الخاصة بالفعاليات والتأكد من توافر كافة الاحتياجات اللوجستية الخاصة بالفعاليات على مستوى الجامعة.
6. المشاركة في عملية اعداد وحصر الاصول الخاصة بالانظمة الميكانيكية والكهربائية والاعمال المدنية والمعمارية وفقا لمنهجية الدليل الوطني لإدارة الاصول والمرافق.
7. التنسيق مع المقاولين والموردين لضمان توفير المستلزمات اللوجستية اللازمة للفعاليات.
8. متابعة خطط استمرارية الاعمال والتحديثات اللازمة عليها لضمان استمرارية العمليات الحيوية في حالة حدوث اي طارئ وفقا للتسلسل الاداري المعتمد.

4.3.2.1 قسم النظافة

1. الإشراف على عقود المقاولين المتعاقدين
2. الاشراف على عمليات التنظيف والتعقيم
3. الاشراف على عملية إدارة جدول العمل للمعالة المكلفة
4. التأكد من توفير المواد اللازمة لعمليات التنظيف.
5. مراقبة جودة الخدمات المقدمة
6. متابعة وحل كافة الشكاوى الواردة

20

In addition, the University of Tabuk, through the University Vice Presidency and its specialized units, is committed to promoting water conservation by establishing agreements and initiatives that ensure the implementation of building standards designed to reduce water consumption.

**For details:**

Organizational Structure of the General Administration of Engineering Affairs

Partnership Agreements (page 5 & 11)

**Water research community day**

https://x.com/u_tabuk/status/1777090825052196874?s=48

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

**World Water Day**

https://x.com/dsa_ut/status/1787544846401442012?s=48

### 6.3.5 Water-conscious planting

The University of Tabuk implements water-efficient landscaping practices across its campus to minimize water consumption. The university actively utilizes drought-tolerant and native plant species in landscape design, particularly in green areas, walkways, and public outdoor spaces. This approach significantly reduces the need for irrigation and supports sustainable water management in arid and semi-arid environments.

A Permanent Committee for Landscaping and Afforestation Planning has been established to oversee the development of a long-term strategy, which includes the planting of 500,000 trees across the main campus and branch colleges. The committee is responsible for:

- Selecting plant species that are environmentally suitable for the local climate,
- Supervising the university nursery and the cultivation of appropriate tree seedlings,
- Choosing seasonal flowers (winter and summer) and ornamental plants for campus beautification.

For details:

Permanent Committee for Afforestation and Landscaping Strategy

Plant Selection Criteria on Campus

In addition, the university has a dedicated Landscaping and Green Spaces Department, which ensures the selection of suitable vegetation, while the Irrigation Unit, under the Maintenance Department, is responsible for planning and maintaining irrigation systems. This includes regular inspections and audits to ensure water use efficiency and system sustainability.

These comprehensive efforts reflect the University of Tabuk's commitment to preserving natural resources and align with Sustainable Development Goals 6 (Clean Water and Sanitation) and 15 (Life on Land).

**For details:**

Organizational Structure of the General Administration of Engineering Affairs

4.3.1.3 قسم الشجر والمسطحات الخضراء

1. الاشراف على صيانة أنظمة الري (المرشات، الأنابيب، المحابس، ولوحات التحكم)
2. متابعة خطط الري وضبط كميات المياه بالتنسيق مع المقاول.
3. مراقبة أداء شبكات الري وتنفيذ الصيانة اللازمة.
4. متابعة أعمال المقاول المتعلقة بالعناية بالأشجار والنباتات.
5. المشاركة في اختيار أنواع النباتات والأشجار المناسبة.
6. متابعة تنفيذ عمليات مكافحة الآفات وضمان فعاليتها.
7. متابعة تقارير الاداء الخاصة بالمقاول
8. متابعة عملية اعداد المستخلص الشهري وبما يتوافق مع العقد

19

وحدة الري

1. متابعة المقاول للتأكد من تنفيذ اعمال الصيانة الوقائية لكافة أنظمة الري (المرشات، الانابيب، المحابس، لوحات التحكم)
2. متابعة تنفيذ الصيانة الطارئة لانظمة الري فور التبليغ عنها والتأكد من انها تعمل بكفاءة وفعالية.
3. التأكد من قيام المقاول بضبط الجداول الزمنية لعمليات الري وضبط كميات المياه المستخدمة.
4. متابعة أداء الشبكات وإجراء الصيانة اللازمة وفقا للخطط المعتمدة.

وحدة صيانة المزروعات

1. الاشراف على المقاول المسؤول عن تنفيذ عمليات العناية الخاصة بالأشجار والنباتات
2. المشاركة في عملية اختيار النباتات والاشجار
3. متابعة المقاول في عمليات مكافحة الآفات

8.3.2 ادارة الخدمات

1. اعتماد خطط النظافة والجودة وتوزيع العمالة على كافة المرافق والموقع العام الخاصة بأعمال النظافة في المدينة الجامعية والمحافظات.
2. متابعة اداء مقاول النظافة ورفع تقارير الاداء بشكل شهري
3. اعتماد المستخلص الشهري الخاص بمقاول النظافة وعقود الخدمات
4. تطوير الخطط التنفيذية المتعلقة بالخدمات اللوجستية

## 6.4 Water reuse

### 6.4.1 Water reuse policy

The water reuse policy at the University of Tabuk aims to enhance the efficient use of water resources and reduce dependence on freshwater by implementing systems and standards that enable the use of treated water for non-potable applications, such as landscape irrigation, cooling systems, and facility cleaning.

The policy includes regulations to ensure the quality of treated water, along with monitoring and control procedures in line with national regulations and environmental health and safety standards. It also outlines the responsibilities of relevant departments to ensure the effective and sustainable implementation of this initiative.

For details see page 10-11

Water Reuse Policy

### 6.4.2 Water reuse measurement

The UT monitors and measures the reuse of water across its campuses. This includes tracking the volume of treated water used for non-potable applications such as irrigation of green areas, cleaning operations, and cooling systems.
Water reuse is overseen by the Maintenance Department which is responsible for recording the quantities of reused water drawn from treated sources or condensate recovery systems
Report on Treated and Utilized Water Quantities

## 6.5 Water in the community

### 6.5.1 Water management educational opportunity

The University of Tabuk provides diverse educational opportunities for local communities to learn about good water management. These efforts are carried out through public outreach programs, scientific workshops, awareness campaigns, and strategic collaborations with government and environmental bodies. All initiatives are aligned with the university's dedication to achieving Sustainable Development Goal 6 (Clean Water and Sanitation) and promoting responsible water use in arid environments.

The university's activities focus on enhancing public awareness of water conservation, efficient irrigation systems, reuse of greywater, and the adoption of smart water technologies for domestic, institutional, and agricultural applications.

**Workshops and Awareness Events**

The University of Tabuk hosted the third edition of the "#Water_Research Community," a national event organized by the Saline Water Conversion Corporation (@swcc_ksa). This platform facilitated knowledge-sharing on cutting-edge research and best practices in water management among researchers, professionals, and local stakeholders.

https://x.com/u_tabuk/status/1786045919495881116?s=48

https://x.com/u_tabuk/status/1786026933135802735?s=48


**Partnership Programs**

The university has strengthened its partnerships with key national water institutions to advance water education and research. Notably, the President of the University of Tabuk met with the Governor of the Saline Water Conversion Corporation (SWCC) to explore collaborative efforts in research, knowledge exchange, and innovation in desalination and water reuse.

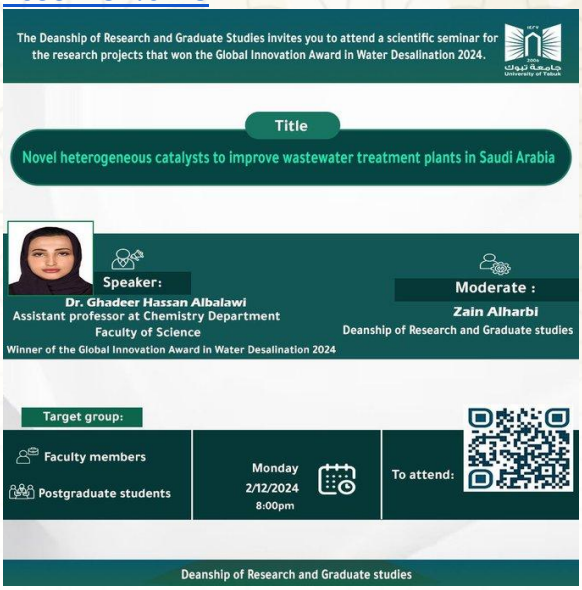
https://x.com/u_tabuk/status/1786027556052906382?s=48

Additionally, the university engaged with the Director General of the Institute for Desalination Technologies at King Abdulaziz City for Science and Technology (KACST) to discuss joint research projects aimed at enhancing desalination efficiency and promoting sustainable water practices.
https://x.com/u_tabuk/status/1891197259297042516?s=48

**Research Outreach**

The university actively transforms advanced research into public knowledge. A seminar was held to showcase a research project that won the 2024 Global Innovation Award in Desalination. The session was open to both academic and local participants, helping bridge scientific innovation and community understanding of sustainable water solutions.

https://x.com/ut_dgs/status/1863231927240532182?s=48




**Online Learning Materials and Awareness Campaigns**

To increase public awareness, especially among youth and families, the Deanship of Student Affairs launched a water conservation awareness campaign titled “Rationalization for Quality of Life,” in cooperation with the National Center for Water Efficiency and Rationalization (Maee) and the Energy and Water Academy. This program was timed with World Water Day 2024 and focused on practical ways to reduce water consumption.
https://x.com/dsa_ut/status/1787544846401442012?s=48
The university also distributed brochures and awareness materials highlighting the importance of responsible water management and intergenerational sustainability.
https://x.com/dsa_ut/status/1903546965687710122?s=48

**Involvement in National and International Water Initiatives**

The University of Tabuk actively participates in national water initiatives and themed observances such as World Water Day through lectures, community programs, and collaborations with national bodies.

Additionally, the university participated in the 4th Water Research Community Forum held in Abu Dhabi, reflecting its international engagement in promoting water sustainability. During the event, the university shared innovative research projects and exchanged expertise with leading regional and international experts. This participation highlights the university's commitment to not only supporting local community learning but also contributing to the global dialogue on sustainable water management.

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

### 6.5.3 Off-campus water conservation support

The University of Tabuk actively supports water conservation efforts beyond its campus through a comprehensive approach that includes strategic collaborations, applied research, public engagement, and international participation. These initiatives reflect the university's commitment to sustainable resource management and align with Sustainable Development Goal 6: Clean Water and Sanitation.

**Strategic Partnerships and Government Collaboration**

The University of Tabuk engages in meaningful partnerships with national institutions that play a vital role in water policy and infrastructure. Notable collaborations include:

A formal meeting between the President of the University of Tabuk and the Governor of the Saline Water Conversion Corporation (SWCC) to explore joint research, knowledge exchange, and water innovation projects that extend their impact to local communities.

https://x.com/u_tabuk/status/1786027556052906382?s=48

Cooperation with the Institute for Desalination Technologies at King Abdulaziz City for Science and Technology (KACST), focusing on developing and deploying high-efficiency desalination technologies for use at the national level.

These partnerships contribute to advancing water conservation technologies and solutions that benefit communities beyond the university campus.

https://x.com/u_tabuk/status/1891197259297042516?s=48

**Public Awareness and Community Engagement**

The university extends its role in water sustainability to the broader community through awareness campaigns and educational outreach. These include:

"Rationalization for Quality of Life" — a public awareness program launched by the Deanship of Student Affairs in partnership with the National Center for Water Efficiency and Rationalization (Maee) and the Energy and Water Academy, timed with World Water Day 2024. The campaign targeted the general public with practical guidance on

reducing water consumption. https://x.com/dsa_ut/status/1787544846401442012?s=48
Distribution of informative brochures highlighting the importance of sustainable water use for future generations, aimed at residents, schools, and community centers in the Tabuk region. https://x.com/dsa_ut/status/1903546965687710122?s=48

**Participation in National and International Forums**

The University of Tabuk plays an active role in regional and international platforms that promote water conservation on a broader scale. A key example is:

Participation in the 4th Water Research Community Forum held in Abu Dhabi, where the university presented its research and shared practical innovations with policymakers, researchers, and environmental organizations. This event highlighted the university's role as a contributor to cross-border water solutions and knowledge exchange.

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

**Applied Research with External Impact**

University faculty and research centers are engaged in producing research that addresses real-world water management challenges. Noteworthy initiatives include:

A seminar on an award-winning research project that received the 2024 Global Innovation Award in Desalination, offering scalable solutions for sustainable water supply and treatment. The findings are relevant not only for academic audiences but also for municipalities and water sector practitioners.

https://x.com/ut_dgs/status/1863231927240532182?s=48

**Institutional Research Group for Sustainable Water Solutions**

The university is home to the Water Resources, Treatment, and Environment research group—an interdisciplinary body that contributes directly to sustainable development and circular economy goals. This group focuses on:

- Research and consultation in water resources and environmental systems
- Development of wastewater treatment technologies such as membrane filtration, membrane bioreactors, and microbial fuel cells
- Desalination research and modeling for water reuse
- Waste-to-energy innovations such as biogas production
- Eco-friendly material development
The group's research supports not only the university's academic goals but also delivers tangible benefits to agriculture, energy, and municipal sectors throughout the region.

https://www.ut.edu.sa/research/research-groups-areas

https://www.ut.edu.sa/research/research-partnerships

Through its partnerships, public initiatives, research excellence, and international collaborations, the University of Tabuk demonstrates a clear and active role in supporting water conservation off campus. These efforts contribute meaningfully to regional water security, environmental sustainability, and the broader national vision for resource efficiency.

### 6.5.4 Sustainable water extraction on campus

The University of Tabuk is deeply committed to the sustainable extraction and management of water resources across its campus, fully aligning with national regulations and international environmental standards. To minimize environmental impact and ensure long-term water availability, the university employs sustainable water extraction technologies, including regulated groundwater withdrawal that is continuously monitored through real-time data systems. These measures ensure water is extracted responsibly within permitted limits, preventing over-extraction and preserving local aquifers.

Sustainable Water Management and Extraction Report

In parallel, the university has invested in advanced infrastructure to reduce dependence on freshwater sources. This includes operating an on-campus greywater treatment facility that recycles treated wastewater for non-potable uses such as landscape irrigation and cooling systems. Complementing these efforts, the university utilizes **smart irrigation systems** equipped with environmental sensors and automated controls that optimize water use based on soil moisture and weather conditions, effectively preventing water waste.

Evidence :

Water Treatment Plant Report STP

Smart Irrigation Systems

Together, these integrated technologies and policies demonstrate the University of Tabuk's holistic approach to water sustainability. These efforts contribute significantly to Sustainable Development Goal 6: Clean Water and Sanitation by promoting efficient use, conservation, and responsible management of water resources on campus.

### 6.5.5 Cooperation on water security

the University of Tabuk actively collaborates with local, national, and international government entities to support water security through formal agreements, joint research, and strategic initiatives.

At the national level, the university has signed a Memorandum of Understanding (MoU) with the Saline Water Conversion Corporation (SWCC) and the Ministry of Environment, Water and Agriculture, aiming to foster cooperation in areas such as water desalination, wastewater treatment, and efficient water resource management. These partnerships enable the exchange of expertise and support the development of innovative solutions to address water scarcity and ensure sustainable water supply systems.
https://x.com/u_tabuk/status/1786027556052906382?s=48

https://www.ut.edu.sa/research/research-partnerships

Partnership Agreements (page 3)

In addition, the university works closely with other national agencies—including King Abdulaziz City for Science and Technology (KACST)—on research projects that contribute to national water security goals.
https://x.com/u_tabuk/status/1891197259297042516?s=48

At the regional and international levels, the university participates in global platforms such as the Water Research Community Forum in Abu Dhabi, promoting cross-border dialogue and scientific collaboration on water sustainability challenges.
report

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

These efforts reflect the university's commitment to supporting governmental efforts to strengthen water security, in line with Saudi Arabia's Vision 2030 and Sustainable Development Goal 6: Clean Water and Sanitation.

### 6.5.6 Promoting conscious water usage on campus

The University of Tabuk actively promotes conscious water usage on campus through a combination of policy, infrastructure, education, and awareness campaigns. These efforts aim to instill a culture of water conservation among students, faculty, and staff, while ensuring that water resources are used efficiently and sustainably across all facilities.

**Water Reuse Policy**

The university has adopted an official Water Reuse Policy that encourages the recycling of treated wastewater for non-potable uses such as landscape irrigation and cooling systems. This policy reduces reliance on freshwater sources and promotes responsible consumption within the campus infrastructure.

For details see page 10-11

Water Reuse Policy

**Greywater Treatment Facility**

A greywater treatment station operates on campus to treat and reuse wastewater for irrigation purposes, significantly lowering overall water demand. This infrastructure reflects a systemic commitment to water-conscious operations.

Water Treatment Plant Report STP

**Smart Irrigation Systems**

The university has installed smart irrigation systems equipped with moisture sensors and automated controllers that regulate watering based on real-time environmental conditions. This minimizes overwatering and reduces unnecessary water use, particularly in green spaces.

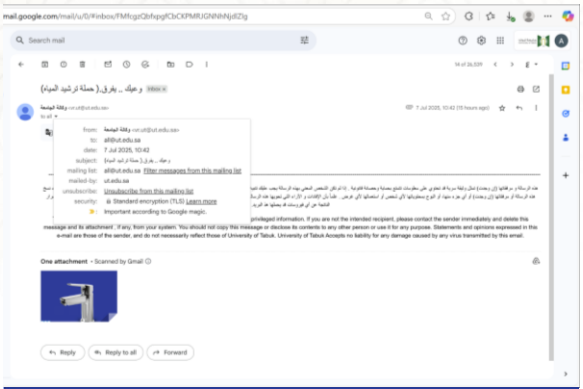
Smart Irrigation Systems

**Awareness Campaigns and Student Engagement**

The "Rationalization for Quality of Life" campaign, launched in collaboration with the National Center for Water Efficiency and Rationalization (Maee) and the Energy and Water Academy, raised awareness about the importance of water conservation among students and staff.
https://x.com/dsa_ut/status/1787544846401442012?s=48

The Deanship of Student Affairs distributed informative brochures and posters across campus emphasizing wise water use and the

importance of protecting resources for future generations.
https://x.com/dsa_ut/status/1903546965687710122?s=48
Also, the UT distributed printed brochures and posters highlighting water conservation practices, and conducted email campaigns targeting all university members (students, faculty, and staff) to raise awareness about rational water use and environmental responsibility.




**Educational Events**

Participation in national and international water research forums (e.g., Water Research Community Forum) reinforces the university's leadership role in spreading awareness and fostering dialogue about sustainable water practices.

https://x.com/u_tabuk/status/1786045919495881116?s=48

https://x.com/u_tabuk/status/1786026933135802735?s=48

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

### 6.5.7 Promoting conscious water usage in the wider community

The University of Tabuk actively promotes conscious water usage in the wider community through awareness campaigns, government partnerships, educational outreach, and applied research that advances sustainable water practices. These initiatives aim to foster a water-conscious culture across the region and support long-term environmental sustainability.

**Awareness Campaigns and Public Education**

The university launched the "Rationalization for Quality of Life" campaign in partnership with the National Center for Water Efficiency and Rationalization (Maee) and the Energy and Water Academy, promoting water-saving behaviors across the community.
https://x.com/dsa_ut/status/1787544846401442012?s=48
Informational brochures on the importance of water conservation were distributed not

only on campus, but also shared widely via public events and community centers.
https://x.com/dsa_ut/status/1903546965687710122?s=48

**Participation in National and Regional Water Forums**

The University of Tabuk hosted the 3rd Water Research Community Forum, organized by the Saline Water Conversion Corporation (SWCC), and also participated in the 4th forum held in Abu Dhabi, contributing research and expertise to broader water security discussions.

https://x.com/u_tabuk/status/1786045919495881116?s=48

https://x.com/u_tabuk/status/1786026933135802735?s=48

Report on the Participation of the University of Tabuk in the 4th Water Research Community in Abu Dhabi 2024

**Research Contribution to Water Awareness and Innovation**

**The university supports a specialized, interdisciplinary research group titled: "Water Resources, Treatment, and Environmental Technologies."**

This group contributes to community water awareness and sustainability by conducting applied research and offering expert consultation on:

- Water resource management
- Wastewater treatment technologies (membranes, membrane bioreactors, microbial fuel cells)
- Desalination methods
- Modeling wastewater reuse systems
- Waste-to-energy technologies (e.g., biogas production)
- Development of eco-friendly materials

Through this research, the university empowers stakeholders and community partners with innovative, science-based solutions for responsible water usage and environmental protection.

https://www.ut.edu.sa/research/research-groups-areas

Research groups

**Strategic Partnerships with Governmental Agencies**

The university has signed memoranda of understanding with national bodies such as:

The Ministry of Environment, Water and Agriculture

The Saline Water Conversion Corporation (SWCC)

These collaborations focus on public engagement, joint research, and policy development in support of water security and conservation across the Kingdom.
https://x.com/u_tabuk/status/1891197259297042516?s=48

https://www.ut.edu.sa/research/research-partnerships

https://x.com/u_tabuk/status/1786027556052906382?s=48

Research groups

**Media and Digital Outreach**

Water-saving tips and conservation messages are regularly shared via the university's social media platforms, public

events, and community email bulletins—ensuring that the message of sustainability reaches diverse audiences beyond the campus.


https://x.com/dsa_ut/status/1787544846401442012?s=48
https://x.com/dsa_ut/status/1656575632359186433?s=48

Through public education, scientific research, government collaboration, and digital outreach, the University of Tabuk actively promotes conscious water usage in the wider community. These efforts support both Saudi Arabia's Vision 2030 and Sustainable Development Goal 6: Clean Water and Sanitation, reinforcing the university's role as a driver of environmental responsibility across the region.