



Water Reuse

University : Al Balqa Applied University
Country : Jordan
Web Address : bau.edu.jo

SDG 6.4.2

[6.4.2-A] Water re-use measurement



[BAU's International Centre for Water, Environment, and Energy](#)

(IRCWEE) Supports consciousness, education, and training on water conservation and recycling. Founded in 2009, the center works as a nucleus of seminars, workshops, and training programs involving integrated water resource management, wastewater reuse, environmental protection, and renewable energy.



[Engineering Department](#)

The **Engineering Department** is responsible for the **planning, implementation, monitoring, tracking, and evaluation** of all **water management programs** across the university. It also develops and applies **enhancement methods based on water consumption tracking reports**, ensuring continuous improvement in water efficiency and sustainable resource use.



6 CLEAN WATER AND SANITATION

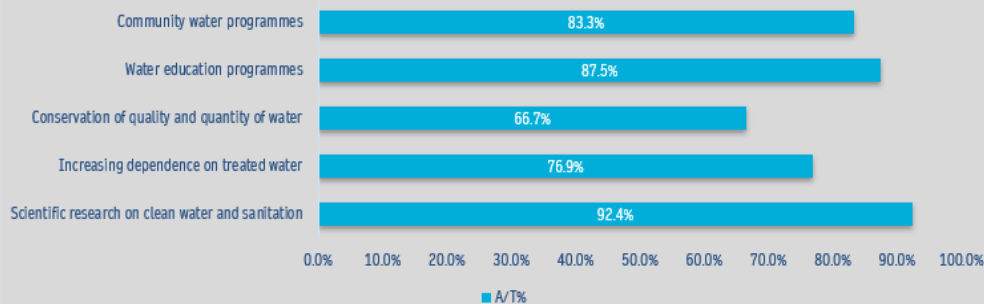


No.	Sustainable Development Goal
6	Clean Water and Sanitation

81.4%

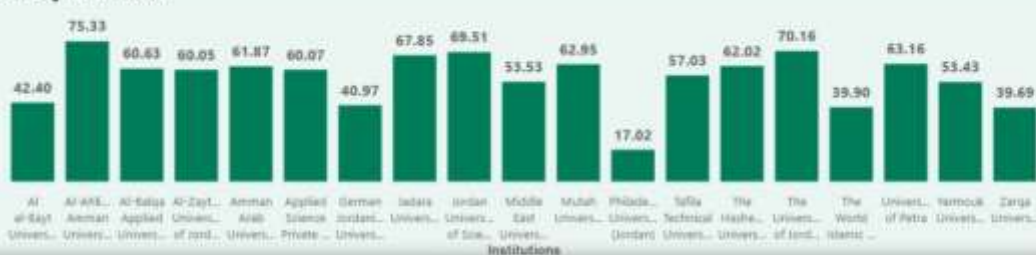
Code	Sub-Goal	2025		
		Achieved	Target	A/T%
A	Scientific research on clean water and sanitation	171.00	185.00	92.4%
B	Increasing dependence on treated water	50.00	65.00	76.9%
C	Conservation of quality and quantity of water	4.00	6.00	66.7%
D	Water education programmes	7.00	8.00	87.5%
E	Community water programmes	10.00	12.00	83.3%

Clean Water and Sanitation



SDG 6 – Clean Water and Sanitation: Institutional Progress and Achievements (2025)

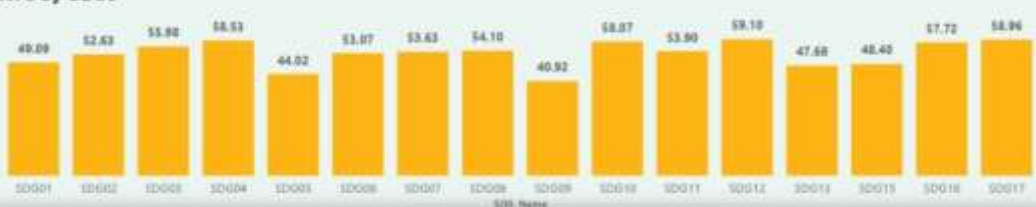
Score by Institutions



Note: Click On any [Institution] OR [SDG]... for Details.



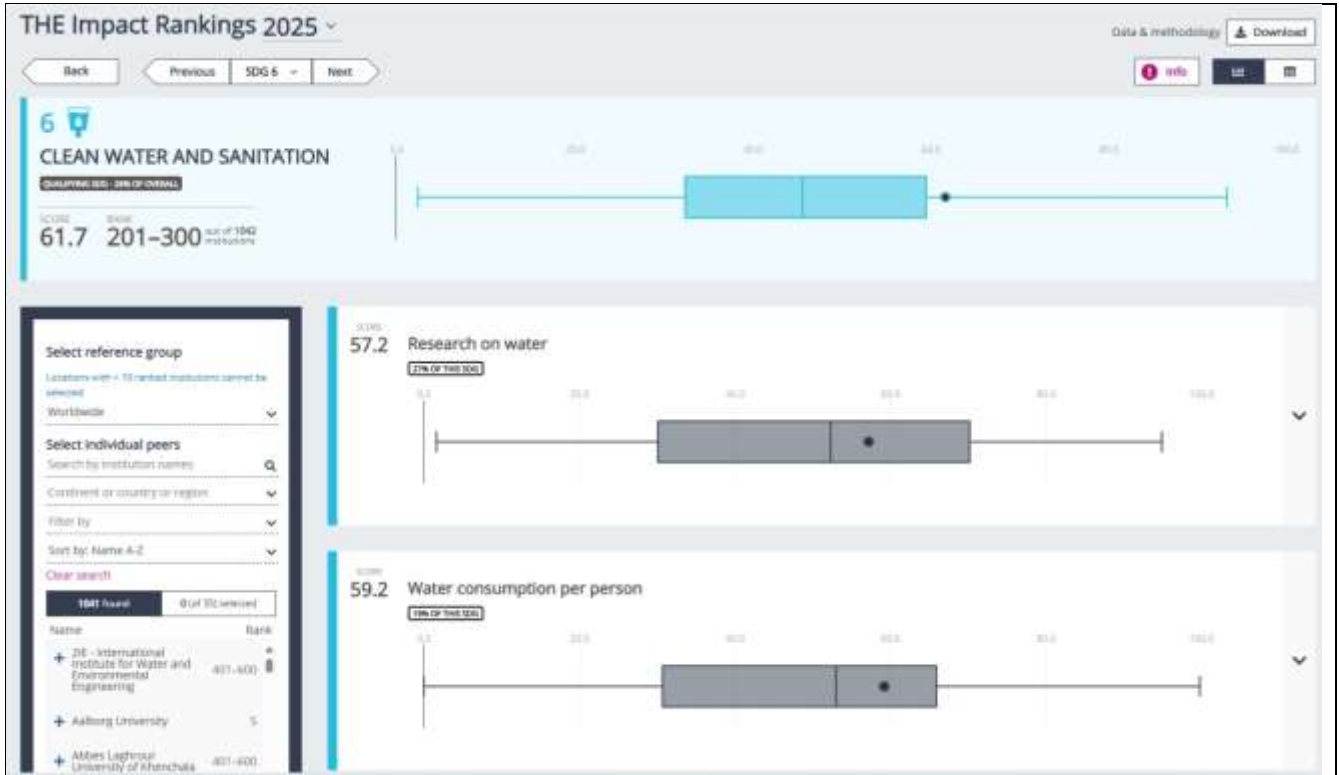
Score by SDGs



SDG01	SDG16
SDG02	SDG11
SDG03	SDG12
SDG04	SDG13
SDG05	SDG15
SDG06	SDG18
SDG07	SDG17
SDG08	
SDG09	



HOME



Tracking the Achievement of SDG6 by Dashboard



Tracking the Achievement of SDG13 by Dashboard



Al Balqa Applied University
Al Salt - Jordan

جامعة البلقاء التطبيقية
الأردن - السلط

Policy Name:	Water Re-Use		
Code:	BAU_025	Issue date:	2016
Issue No:	2018, 2020, 2023	Confidentiality status:	Public
Accreditation:	Quality Assurance and Continual Improvement Council (QACIC)		

Responsibilities:

Implementation:	All BAU's Academic Colleges, Administrative Units, Scientific Centers
Revision and improvement:	Development and Quality Assurance Center

Policy (Arabic):

تلتزم جامعة البلقاء التطبيقية بالحفاظ على مصادر المياه المتنوعة ودعم الهدف السادس من أهداف التنمية المستدامة للأمم المتحدة، والذي يركز على المياه النظيفة والصرف الصحي. ونهدف إلى تحقيق ذلك من خلال البحث العلمي التطبيقي، وبناء شراكات محلية وإقليمية ودولية قوية، وتنفيذ المشاريع والبرامج والمبادرات التي تدعم الاستخدام المستدام للمياه. وتشمل جهودنا توظيف التكنولوجيا المناسبة لتحسين استهلاك المياه، وزراعة النباتات المرنة، وحماية مصادر المياه من التلوث، وتعزيز حصاد مياه الأمطار، وتطوير برامج معالجة وإعادة استخدام مياه الصرف الصحي، وتعزيز ثقافة الحفاظ على المياه، وتشجيع ممارسات إعادة التدوير داخل الجامعة والمجتمع الأوسع.

Policy:

Al-Balqa Applied University is committed to conserving diverse water resources and upholding the United Nations' Sustainable Development Goal 6, focused on clean water and sanitation. We aim to achieve this through applied scientific research, building strong local, regional, and international partnerships, and implementing projects, programs, and initiatives that support sustainable water use. Our efforts include employing appropriate technology to optimize water consumption, planting resilient vegetation, protecting water sources from pollution, enhancing rainwater harvesting, developing wastewater treatment and reuse programs, promoting a culture of water conservation, and encouraging recycling practices within the university and the broader community.

Water Re-use Policy

BAU Water Consumption Tracking



Water Management Strategies and Adaptation Actions under a Global Change Context for the Mediterranean Region

WATER4MED

01 June 2024 - 31 May 2027



About the Project

The WATER4MED project aims to develop innovative solutions for water management in the Mediterranean region, focusing on adaptation to increasing climate change challenges.

Our goal is to improve water governance models and propose solutions for water storage and flood mitigation.



WATER4MED



MODIFIED SEPTIC TANKS TREATING DOMESTIC WASTEWATER: COMPARISON BETWEEN SUSPENDED AND ATTACHED GROWTH SYSTEMS



Dead Sea Project

Objective

This research project investigates the potential use of a low-cost modified septic tank using two modules of bacterial growth (suspended and attached) to treat domestic wastewater. The plants will be optimized to comply with the Jordanian Standard JS893-2006.

Technology description

Two septic tanks with dual operational conditions (anaerobic and aerobic) are constructed and operated in parallel. Unlike the suspended growth reactor, the anaerobic/aerobic fixed bed reactor contains corrugated plastic sheets, where the microorganisms are attached to the surface of the jacking material and degradation processes take place.

Raw wastewater flows into the first pre-treatment chamber and transferred by gravity to the next two anaerobic chambers and eventually to the aeration chamber. Compressed air is introduced to the aeration chamber through diffusers and serves as a mixing device that promotes the growth of microorganisms and thus degradation processes.

Research topics

Treatment process will be optimized by varying operational parameters that affect the treatment performances and efficiencies, e.g. hydraulic loading (retention time) rate, organic loading rate, aerobic and anaerobic conditions, intermittent aeration rate etc.

The influences of microorganisms growth module on removal process will be monitored by measuring TSS, pH, Temp., COD, BOD, nutrients, faecal indicators, pathogens (both influent and effluent) on a regular basis.

Adaptation of the technologies under local climatic conditions in Jordan, depending on changes of influent suspended solids and organic loading.

خزانات التخلل المعدلة لمعالجة المياه العادمة: مقارنة بين نظامي النمو البكتيري المعلق والمثبت

Conventional anaerobic septic tank

خزان التخلل اللاهوائي

Anaerobic/aerobic modified septic tank

خزان التخلل المعدل اللاهوائي/الهوائي

الأهداف

يهدف هذا المشروع البحثي لتقييم إمكانية اعتماد نظام خزان التخلل المعدل بنظامي نمو البكتيريا (المعلق والمثبت) لمعالجة المياه العادمة بهدف معالجة مياه الصرف الصحي على مياه معالجة للمياه العادمة الأردنية (JS893-2006).

توصيف التقنية

تم بناء مفاعلان متشابهان يمتلئان بتسليطتين مزدوجتين (هوائي ولاهوائي). ويمكن نظام النمو البكتيري المعلق أن يعرف باللاهوائية والهوائية في خزان التخلل ذو نظام النمو البكتيري المعلق لتجزي على سطحها بكتيرية بحيث يتم بناء طبقة رقيقة من البكتيريا على جدرانها السليمة بحيث يتم ذلك عمليات التفتت المختلفة.

يتم تحويل المياه العادمة الخام إلى الحموضة الأولى حيث تتم عملية تفتت لوية وتتخلل بعدها المياه إلى الحمضيات الإهوائية وبسبب طبيعتها ونسبتها إلى الحموضة الهوائية يتم صنع الهواء داخل الحموضة الهوائية لتزويد البكتيريا بالأكسجين لتقوم بعملية التفتت ولتسليم بقايا الكائنات الحية (البكتيريا) في الوضع المعلق وعادة في خزانات التخلل المعدل ذو النمو المعلق.

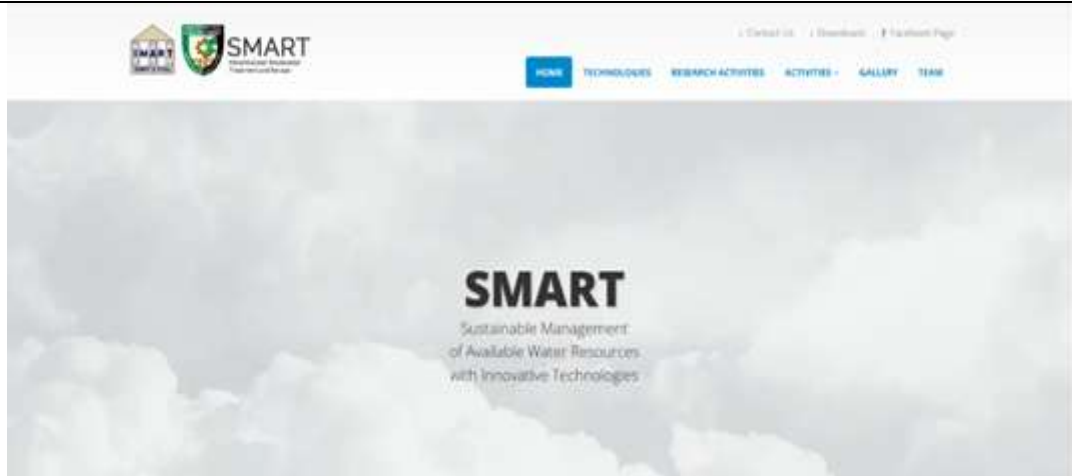
مواضيع البحث

1. سوف يتم مقارنة محطات التفتت من خلال تغيير المعاملات التشغيلية التي تؤثر على أداء وكفاءة المعالجة على سبيل المثال تغيير الحمل الهيدروليكي (تغيير مدة المكوث) وتغيير معدل الحمل الممنوعة والظروف الهوائية واللاهوائية وإحداث الحموضة المتبقية الخ.

2. سيتم مراقبة تأثير التسليطتين (النمو البكتيري المعلق والمثبت) على معالجة المياه العادمة من خلال قياس المواد الصلبة المعلقة والتقلبات ودرجة الحموضة والحرارة ومطابق الأكسجين الجوي والكيميائي والمواد الممنوعة والمؤشرات الزلزالية والكميات المتبقية (كلا المواد الداخلة والخارجة).

3. تكيف الأنظمة المستخدمة على الظروف المناخية في المنطقة اعتماداً على التغييرات في أنماط المناخ السليمة الداخلة والإحلال الممنوعة.

Benchmarking Study on Modified Septic Tanks for Domestic Wastewater Treatment Using Suspended and Attached Growth Systems



[SMART](#)

Sustainable Management of Available Water Resources with Innovative Technologies





Sludge Loaded



Drying Sludge



Final Product



Integrated Wastewater Management in Jordan

In view of climate change, a dynamic population development and increasing refugee influx, efficient water management has become an existential challenge, especially for arid and semi-arid regions. Jordan is one of the world's most water scarce countries, where groundwater resources are indispensable for water supply.

Jordan is striving to set a regional example of a successful implementation of IWRM concepts and it is expected that it will be the reference case for IWRM knowledge, methods, and application in the Middle East.

The implementation of IWRM concepts will help to mitigate extreme water scarcity and protect groundwater resources in Jordan. The Jordanian Ministry of Water and Irrigation has identified the treatment and reuse of wastewater as an essential component of IWRM and Jordan's water strategy.

Photo credits: Andre Künzelschmitt, Nabil Wakkleh, Naser Almansoori, Mi-Ping Lee



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Competence Facility for Decentralized Wastewater Management



Sustainable Management of Available Water Resources with Innovative Technologies (SMART)



HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ



Competence Facility for Decentralized Wastewater Management

Within the framework of the SMART project, the Fuheis Demonstration, Research and Training Facility started its operation in autumn 2009. It demonstrates various approaches for sustainable integrated wastewater treatment and reuse.

Different wastewater treatment systems were installed, as well as an onsite laboratory. The treatment systems are operated with raw wastewater and were further developed and adapted to the Jordanian conditions.

The aim is to demonstrate the robustness of the technologies, their low operation and maintenance requirements as well as the possibility to provide effluent qualities that meet the Jordanian standards for the reuse of treated wastewater.

French Design

- Combines sludge & wastewater treatment
- Raw wastewater applied directly to one filter at a time
- Alternating operation allows sludge to turn into compost



The Fuheis Demonstration, Research and Training Facility is unique. It allows for direct comparison of technologies under the same climate and wastewater conditions.

Aerated Design

- Combined secondary treatment & disinfection
- Saturated operation
- Air pump provides oxygen & mixing for increased treatment
- Low maintenance requirements



The wastewater treatment technologies at the site include the following technologies:

- Sequencing- and Continuous- Batch Reactors (SBR, CBR)
- Traditional and Modified Septic Tanks (MST)
- Membrane Bioreactor (MBR)
- Sludge Dewatering Reed Bed
- Anaerobic Bioreactors
- Ecotechnologies: Vertical Flow Treatment Wetlands, Aerated and French Design.

Research at the facility focuses on (i) technology optimization; (ii) nutrient recycling; (iii) pathogen removal; (iv) wastewater reuse; (v) sludge management & groundwater recharge.

Agricultural and garden plots are dedicated to study the reuse of treated wastewater. The test plots are planted with lemon trees that are commonly produced in Jordan and have relatively high irrigation requirements. Small garden plots demonstrate further possible ways to use treated wastewater at a household level.

Furthermore, the facility serves as Training and Capacity Development platform. It is used by students to conduct their PhD, Master and Bachelor studies or to gain further qualified training. Ministries, local companies, donors and further interested parties use the facility to increase their knowledge on the different wastewater treatment systems installed, including their operation and maintenance requirements.



Fuheis Station





Al-Karak Campus Site Wastewater Treatment Station



[New Recycled Water Treatment Station at Jerash Campus](#)



BAU Irrigation System Using Treated Wastewater



HOME TECHNOLOGIES RESEARCH ACTIVITIES ACTIVITIES - GALLERY TEAM



Training courses and workshops





The “[WATRA PROJECT](#)” a series of training workshops and study tours where organized by BAU, IHE Delft, and funded by the World Water Academy (WWA) in the Netherlands



[Raising water and environmental awareness among children / water treatment techniques](#)



[A workshop at Al-Balqa Applied University to review modern technologies for treating olive water resulting from olive presses.](#)



[Collaboration between BURDAA Germany and Al-Balqa Applied University](#)



Practical training for students of the Wastewater Treatment Department at inside Al Balqa Applied University Station for Excellence in Water and Environmental Engineering and Technology