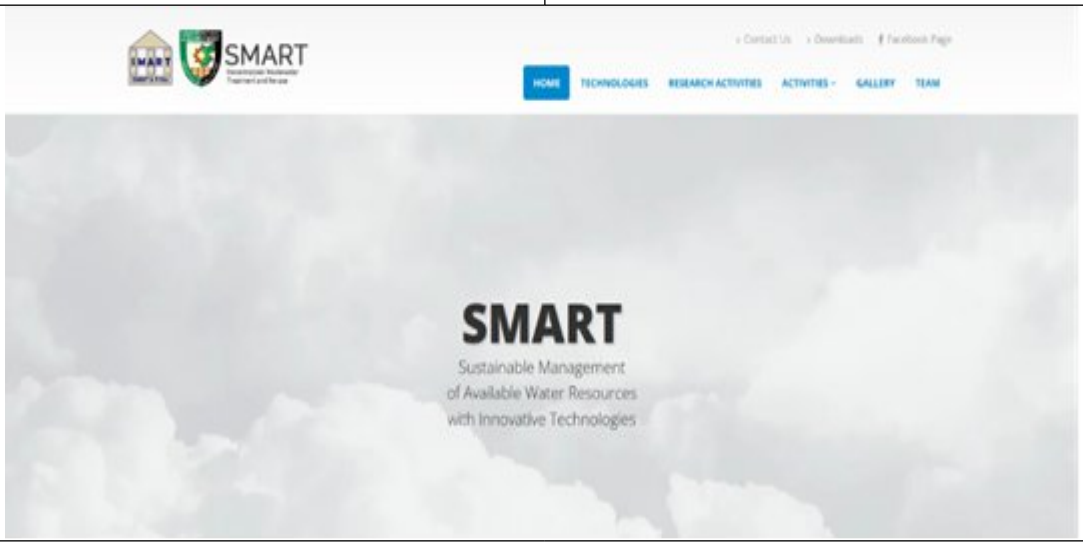
Water Usage and Care

SDG 6.3.1

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

[6.3.1] Wastewater Treatment.

Al-Karak Campus Site Wastewater Treatment Station



SMART

Sustainable Management of Available Water Resources with Innovative Technologies

New Recycled Water Treatment Station at Jerash Campus

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: André Künzelmann, Nabil Wakileh, Naser Almanaseer, Mi-Yong Lee

SPONSORED BY THE
Federal Ministry of Education and Research

Hachemite Kingdom of Jordan
Ministry of Water and Irrigation

SMART

HUBER TECHNOLOGY
WASTE WATER Solutions

ATB

BMU

WAKILEH

BDZ

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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

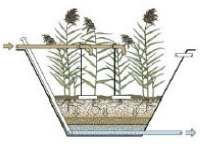
Within the framework of the SMART project, the Fuheis Demonstration, Research and Training Facility started its operation in autumn 2009. It demonstrates various approaches for sustainable integrated wastewater treatment and reuse.

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

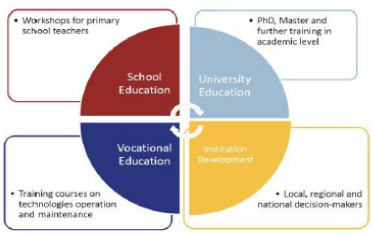
The wastewater treatment technologies at the site include the following technologies:

- 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.



[Fuhais Station]

Al-Balqa Applied University (BAU) has always remained active in sustainable water management,by operating facilities such as the Fuheis Demonstration Station for wastewater treatment and reuse. A German delegation visited the station in April 2025 to review progress under the partnership framework with BORDA in carrying out the rehabilitation and upgrade of treatment technologies. The station makes use of advanced treatment systems, including Membrane Bio-Reactors (MBR), Sequencing Batch Reactors (SBR), and Constructed Wetlands to treat wastewater to a high standard for reuse. This treated effluent is used directly at the station for irrigating citrus, grapes, and olives, limiting the demand for freshwater resources, further effectiveness of which is being leveraged and demonstrated by the university as a model of circular water use. During the visit, it was acknowledged that BAU has been successful in integrating research, training, and applied solutions to make more efficient consumption of treated water, which directly contributes towards SDG 6 (Clean Water and Sanitation), SDG 12 (Responsible Consumption and Production), and SDG 4 (Quality Education) via hands-on learning and international cooperation.

German Delegation Visit Highlights Treated Water Reuse and Advanced Wastewater Technologies at BAU's Fuheis Demonstration Station

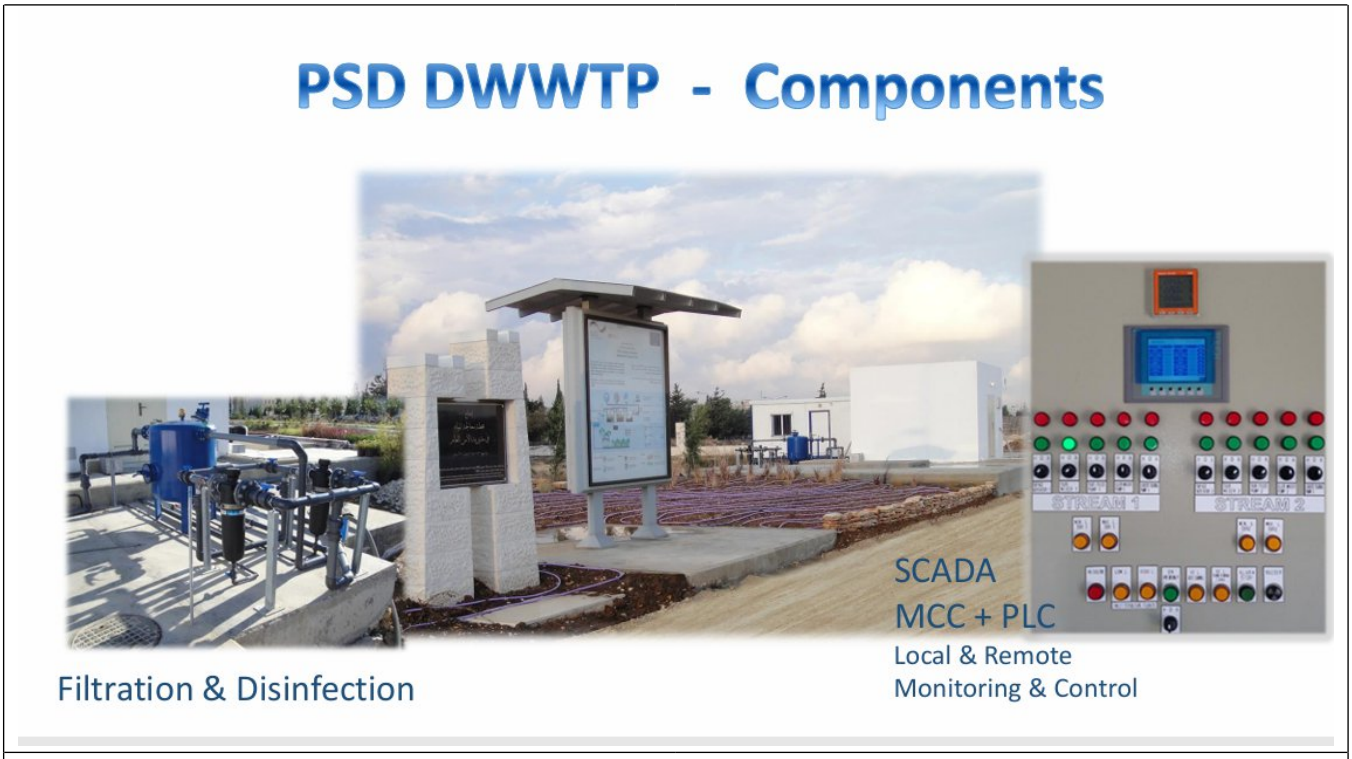
[Training course on wastewater treatment concludes at BAU]

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

تعزيز تنمية المهارات لمعالجة مياه الصرف الصحي وإعادة استخدامها في الزراعة ضمن برنامج التعليم والتدريب التقني والمهني العالي في الأردن

Strengthening skills development for wastewater Treatment and Reuse in Agriculture in a recently established higher TVET programme in Jordan (WATRA)

[Developing Skills to Treat Wastewater and Reuse it in Agriculture]



SWEM project Sustain water MED

PowerPoint Presentation (swim-sustain-water.net)

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

Funded by the European Union

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Integrated Wastewater Management In The Mediterranean

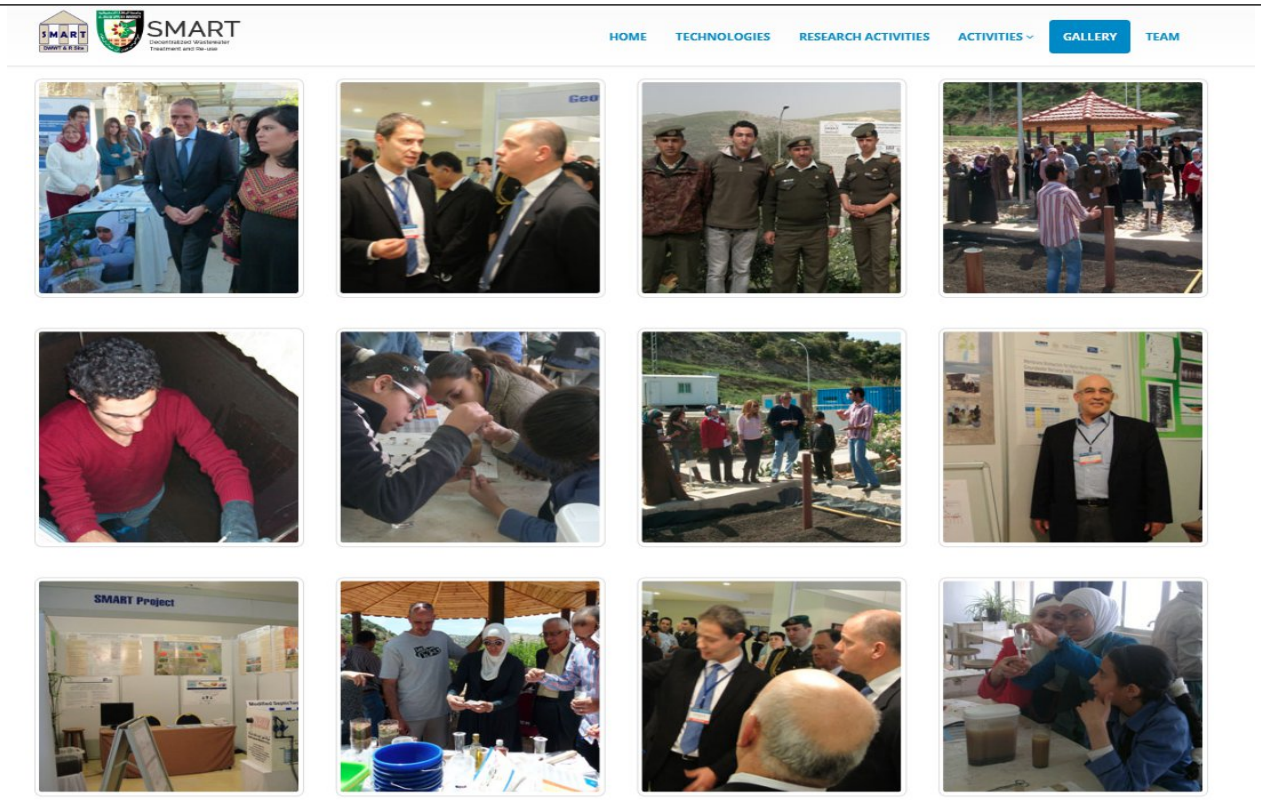
الجدول الثالث- محطة معالجة المياه العادمة

Item No.	Description	Unit	Quantity	Rate JD	To
3/11	Section- 11 Mechanical Works				
	FIRE EXTINGUSHER				
3/11/2	Supply, install and test fire extinqusher 6kg type ABC all in according to drawings and specification Three	No.	3		
	DOMESTIC COLD AND HOT WATER SYSTEM				
3/11/3	Supply and Installation of HDPE Pipes PE10 Including storage, transportation and handling of all pipes, fittings,valves and accessories (including all types of bends, adaptors, collars, tees, flexible couplings, hangers reducers, blind flanges) and all other materials required in accordance with the specification and complay with DIN 8074, DIN 8075 ,DIN 19533 and in accordance with the Drawings, the Technical specifications and set out in the preamble to the complete satisfaction of the Engineer.				
A	Ø25mm inside diameter Fifteen	lm	15		
	Mechanical works in treatment plant.				
3/11/4	Design, built package treatment plant (WWTP) complete with all mechanical equipment's (screens, filter, chlorine system, sluicegates, ultrasonic flow measurement, pumps, pipes, valves control panels, manhole etc.....) as per specification and drawing of the package wastewater treatment plant, tacking into consideration drawings and specifications are as guidance only to design and built the package treatment plant. One	LS	1		

الجدول الثالث- محطة معالجة المياه العادمة

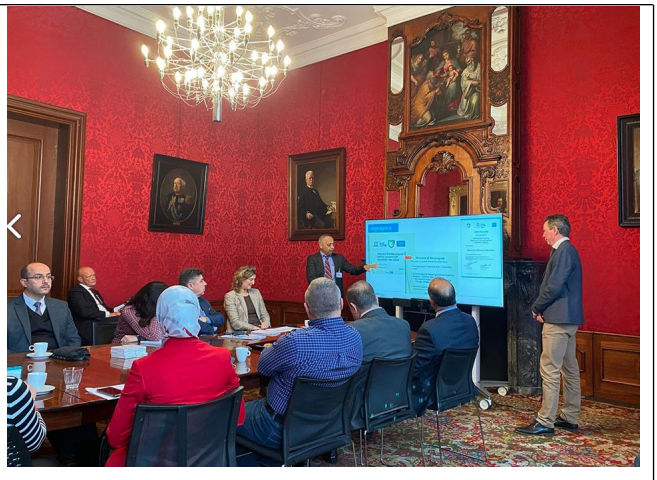
Item No.	Description	Unit	Quantity	Rate JD	Total JD
3/11	Section- 11 Mechanical Works				
	WASTEWATER PIPE				
3/11/5	Supply and install Sewer pipes, solvent welded UPVC according to Bs. 4517 or Din 19531, 19534, including accessories of same quality, wall brackets, fittings and all related civil works and as per shown on drawing and specifications				
A	Ø110mm outside diameter Five	lm	5		
B	Ø80mm outside diameter Two	lm	2		
C	Ø50mm outside diameter Four	lm	4		
	VENT PIPE				
3/11/6	Supply and install UPVC vent pipe from drain pipe to the roof the price including pipe, vent cap, fitting, support, and any necessary work and equipment and as shown in drawings and specifications and the size pipe as followings:				
A	Ø50mm diameter Six	lm	6		
	STORM WATER PIPE				
3/11/7	Supply and install storm water pipes , solvent welded UPVC according to Bs. 4517 or Din 19531, 19534, including accessories of same quality, wall brackets, fittings and all related civil works and as per shown on drawing and specification				
A	UPVC, Ø110mm diameter Five	lm	5		
	CLEAN OUT				
3/11/8	Supply and install Clean out point, floor mounted, and chrome threaded cover size 20 x 20 cm of best quality as shown in drawings and specifications, and Engineer Instructions				

BAU Wastewater Treatment Construction



Training courses and workshops

http://smart.bau.edu.jo/gallery.htm




المركز الدولي لبحوث المياه والبيئة والطاقة (IRCWEE)

تاريخ الخبر: الخميس 2-3-2023 17:16

تعزيز تنمية المهارات لمعالجة مياه الصرف الصحي وإعادة استخدامها في الزراعة ضمن برنامج التعليم والتدريب التقني والمهني العالي في الأردن

(836 مشاهدات) (0 تعليقات)

Tweet

WORLD WATER ACADEMY

UNESCO

IHE DELFT

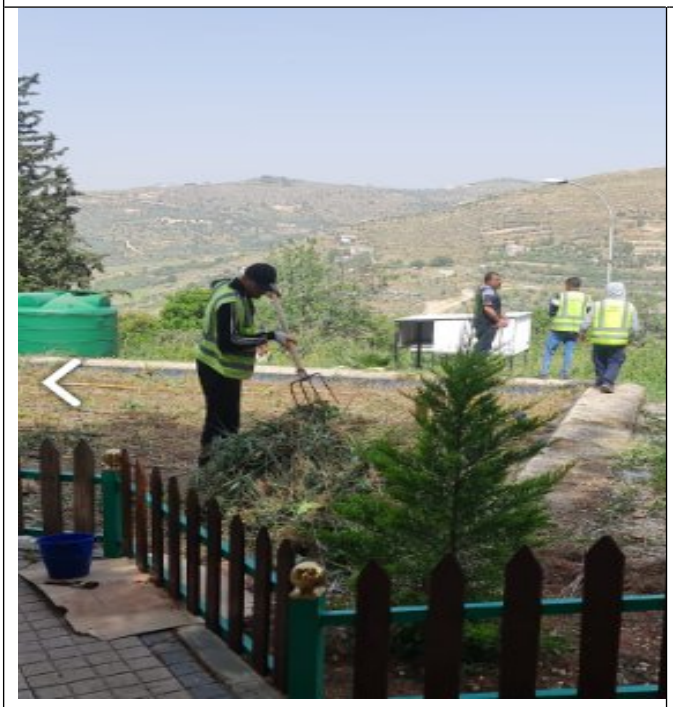
Nuffic

WATRA WEEK III

Regional Advanced Training Course in Water Treatment

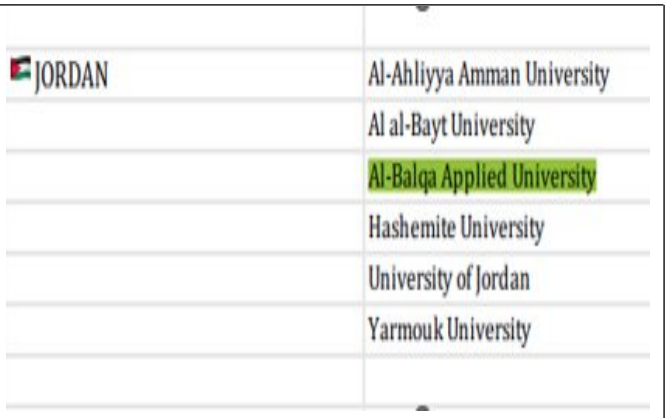
March 2023 19-23

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



Opening and clearing internal roads and removing obstacles inside Al Balqa Applied University Station for Excellence in Water and Environmental Engineering and Technology

Raising water and environmental awareness among children / water treatment techniques



BAU's membership in UNAI (United Nations Academic Impact)

The 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.

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