Template for Evidence(s)
UI GreenMetric Questionnaire

University : Alexandria University
Country : Egypt
Web Address : https://alexu.edu.eg/

[4] Water (WR)

[4.2] Water Recycling Program Implementation

The water sewage of the Aquaculture of the Faculty of Agriculture (Alexandria University, Egypt)

100 m3 Desalination Unit, Wadi El-Natroom (Faculty of Agriculture, Alexandria University)

Innovative Renewable Energy (RE) Driven - Multi Stage Flash (MSF) System with Salts Precipitator and Nano Filtration (NF) Feed Water pre Treatment (RE-NF-MSF). (Faculty of Agriculture, Alexandria University)

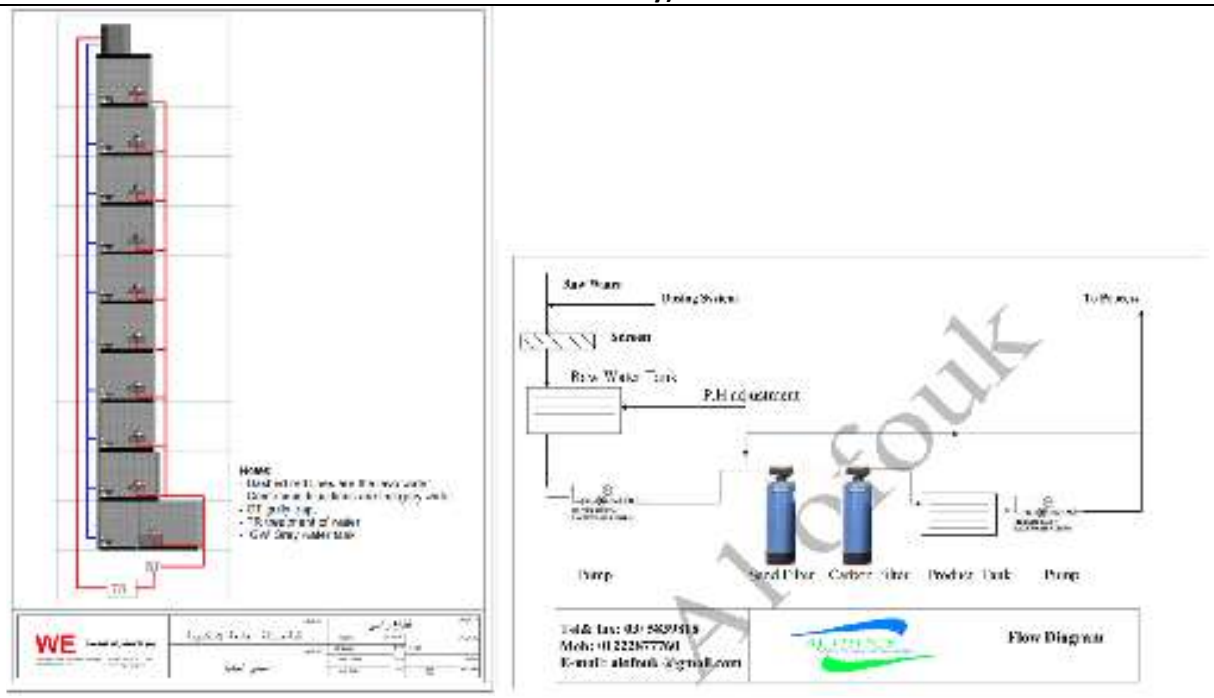
Water Excellence Center - Alexandria University

The program's students visited the drinking water treatment plant in Alexandria (Al-Mansheya 2) to learn about the stages of water purification and the plant's boredom.

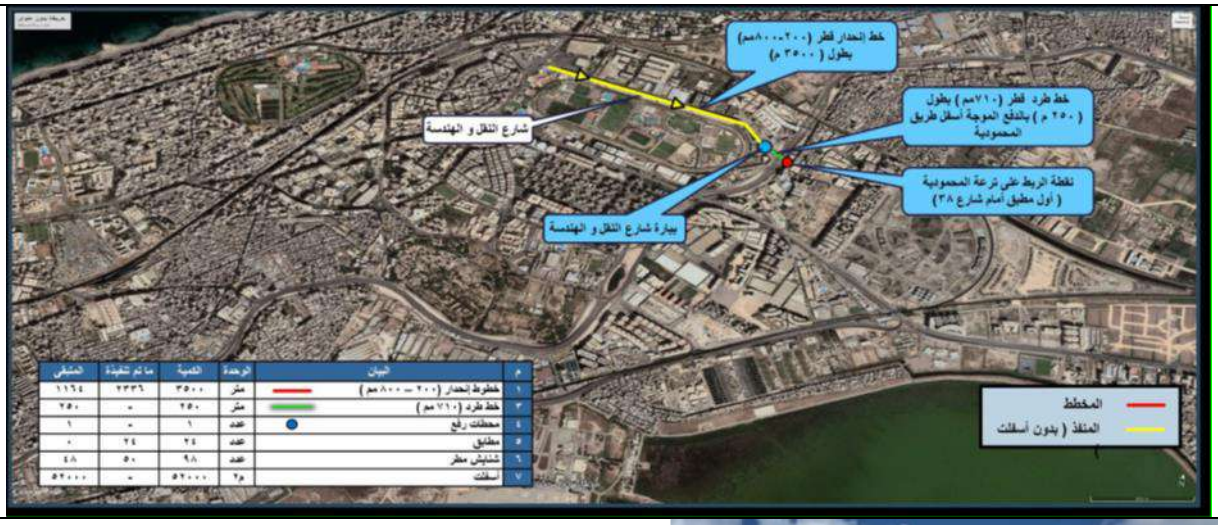
Water Excellence Center - Alexandria University

Training for civil and environmental engineering students at the Eastern Wastewater Treatment Plant in Alexandria

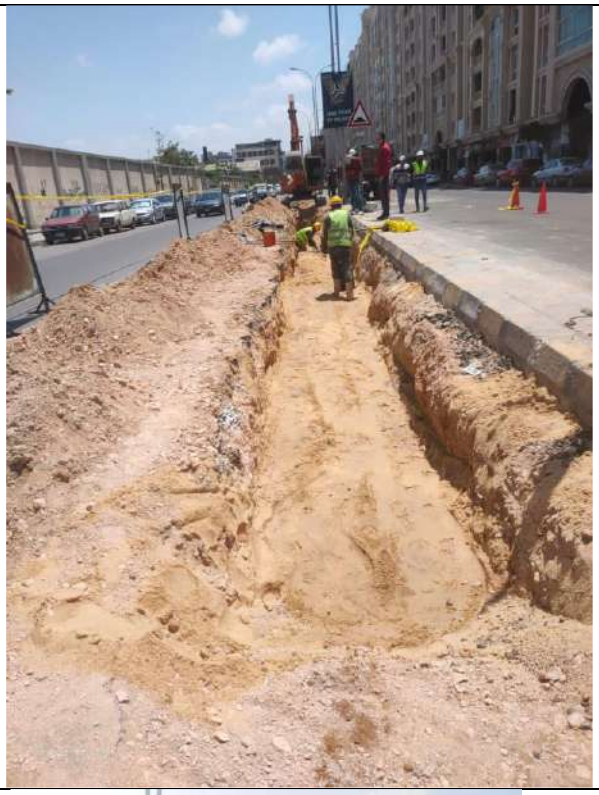
The sewage water will be treated and reused in the irrigation of green areas in the project (Alexandria University)



Grey water recycling system by Faculty of Pharmacy (Alexandria University)

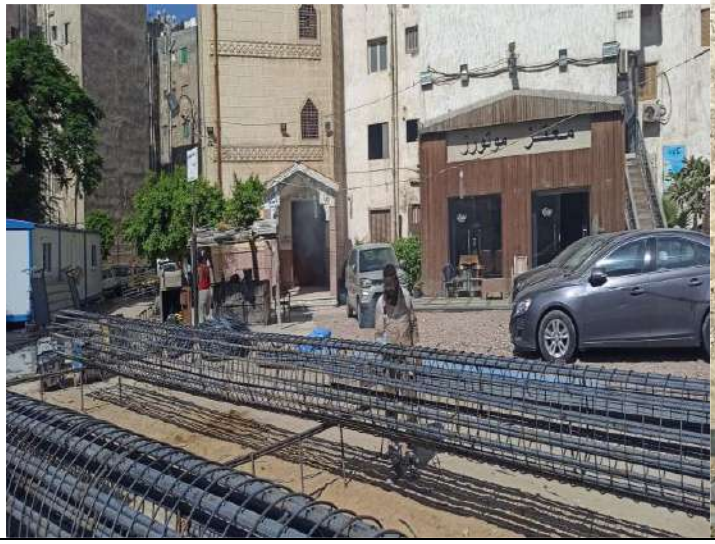


Integrated strategy project for rainwater management in Alexandria Governorate in cooperation with Alexandria University





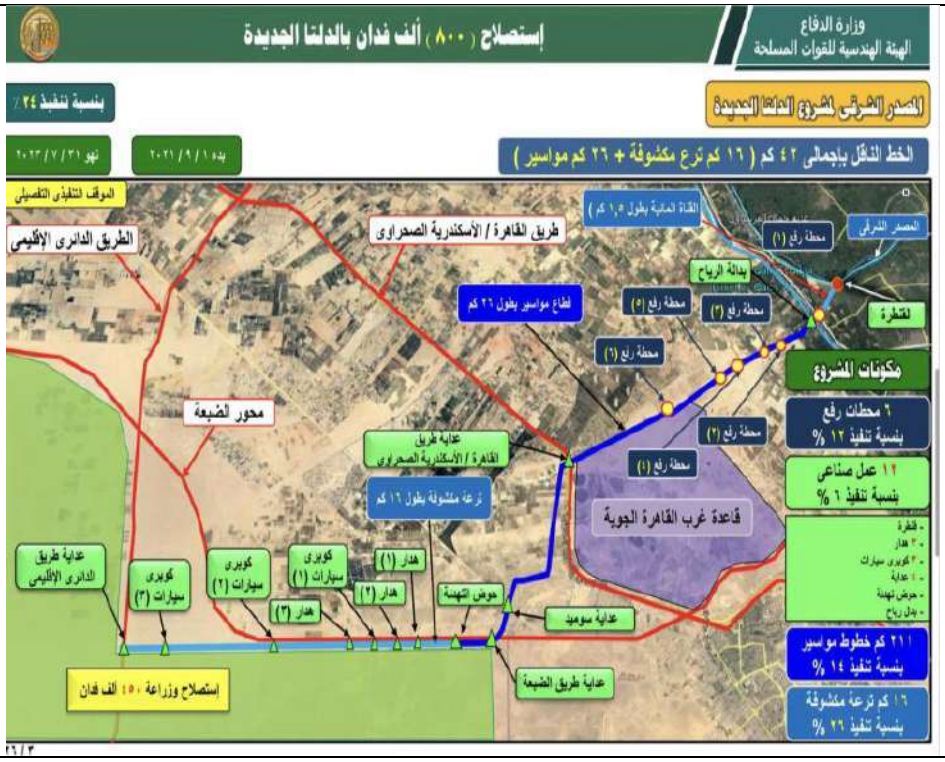
Integrated strategy project for rainwater management in Alexandria Governorate in cooperation with Alexandria University



Integrated strategy project for rainwater management in Alexandria Governorate in cooperation with Alexandria University

Reused water at Alexandria University

An amount of water of 967,694.74 is consumed by all colleges and institutes affiliated with the Alexandria University, of which the amount of sewage is 870,925,266 m3, which is lifted through a group of lifting stations to be treated through treatment stations affiliated with the Alexandria Sanitation Company. Secondary biological treatment, where solid waste is separated from liquid waste.



Treated water

As for the water resulting from first treatment, it is reused within the New Delta Project (the value of the reused water for Alexandria University represents 870,925.266 m^3).

The Tertiary treatment for use in land reclamation with a design capacity of 7.3 million m3, include 1.7 million cubic meters of treated wastewater form the secondary treatment.

Description:

Alexandria University program for water recycling:

1. Providing a sewage treatment plant at the university to make it suitable for irrigating green areas and gardens inside the university campus.
2. The irrigated water supplied to the fish farm at the Agriculture Experimental Research Station of the Faculty of Agriculture is recycled to irrigate the crops, vegetables, and fruits of the land farm. The recycled water is rich with natural fertilizers and enhances the crops production.

3. In addition, the water recycling in Fish Aquaculture of the Faculty of Agriculture, Alexandria University: The water sewage of the Aquaculture of the Faculty of Agriculture, Alexandria University which consist of eight ponds (one acre and quarter/each) in Abis region. Alexandria University used the recycled water for crops culturing in the adjacent agriculture research center in Abis.
4. The use of biochar produced from Agricultural waste and waste Forests in residual removal chlorpyrifos pesticide Imidacloprid is from water agricultural drainage. Cooperation project between the Egyptian Academy of Research Science and Technology and the Czech Academy of Sciences.
5. IOT Pilot Project in Egypt by Shanghai Water Saving Irrigation Corp. Etd performed an automatic controlled irrigation systems IOT project for modern irrigation technology. The company implanted the IOT platform project to irrigate economic crops and facilitate irrigation systems to overcome the water shortage problems in Egypt. This project will be performed in Alexandria University Farm for agroecological farming in Egypt.

Additional evidence link:
Link for Green University:
https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5932&catid=21&lang=ar-AA

Renewable Energy and Water Desalination Activities at Alexandria University

Renewable Energy Center site is a host of different RE technologies and different RE-Desalination technologies. The site " East of EL-Gaar Village" at Wadi El-Natroon has both predictable wind energy as well as an abundance of sunlight. Thus, this is a natural application for a hybrid system.
The modular hybrid power supply concept proposes the coupling of all sources of energy, storage media and loads on the AC-side.

Advantages of the Modular Hybrid RE systems:

- Simplicity in System Design
- Expandable, can be run autonomously or be connected to a larger grid
- Offer higher reliability and supply security
- Lower power cost for the consumers
- Production of AC single phase or three phase
- The AC-side structure provides standardization, quality assurance and serial production
- The coupling on the generation technologies on the AC side offers the possibility of placing the generators far apart from each other (distributed generation).

REC site is planned to be a host of different RE technologies and different RE-Desalination technologies such as:

- Hybrid RE technologies (solar, wind, biomass, Hydrogen and fuel cell)
- Hybrid Desalination technologies (RO, MSF, NF,…. Etc)
- Different types of solar cell technologies (thin film, Mono crystalline, Polycrystalline cells)
- Different solar energy technology (PV, CSP, Solar water heating systems, solar dryers)
- Solar Greenhouses.

Activity: Innovative Renewable Energy (RE) Driven - Multi Stage Flash (MSF) System with Salts Precipitator and Nano Filtration (NF) Feed Water pre Treatment (RE-NF-MSF)-, contract # RDI - C2/S1/148.

Additional evidence link: www.areac-agr.com

Water Excellence Center - Alexandria University

The Center of Excellence for Water is a USAID- funded program, managed by the American University in Cairo.
Its goal is to catalyze long-term improvement in Egyptian water resources management by improving its innovative applied research and educated enterprise.
Located at Alexandria University, and in cooperation with four Egyptian Universities (Ain Shams University – Aswan University – Beni Suef University – Zagazig University) and four U.S. Universities (University of California, Santa Cruz, Temple University, Utah State University, and Washington State University),
The Center of Excellence for Water is designed to be a state-of-the-art center that raises the quality of all aspects of higher education, including curriculum, teaching, and applied research to international standards.
The Center supports the Egyptian government, academia, and industry to address water challenges, and prepare a new generation of graduates and entrepreneurs to be change agents that stimulate economic growth.
Leveraging on the public-private partnerships established, the Center of Excellence for Water will be the hub for research and a vibrant network of Egyptian industries, research centers, and ministries.

Evidence Link: https://www.facebook.com/profile.php?id=100069123600268

Elements of Green Building Implementation as Reflected in all new construction and renovation policies in the new buildings in Abis campus:

- The area of the project is 160 acres, a general site for educational buildings, and 120 acres are complementary activities. The percentage of green areas and lake is about 52% in addition to 25% streets and lanes.
- Water-saving plots are used, which will reduce water consumption by about 30%. The sewage water will be treated and reused in the irrigation of green areas in the project.
- Rainwater is collected in the main lake and used for irrigation.
- The use of plants with few water rationed plants to reduce irrigation needs in addition to absorbing quantities of rainwater to reduce the severity of rain spells.

Green Cycle project in the Faculty of Pharmacy - Alexandria University

The project began in October 2022 by organizing a number of events in cooperation between the Community Service and Environmental Development Committee, ASPSA, and the Alexandria Rotary Clubs, under the supervision and organization of Faculty of Pharmacy - Alexandria University.
Also, the faculty is seriously seeking to implement a grey water (wastewater) recycling system that depends on reusing wastewater from sewage basins only (without using wastewater from laboratory basins) by re-pumping it into the flushing bins in the toilets after work. Filtration and primary treatment. The grey water recycling initiative has a significant impact on rationalizing water use.
Also, taking advantage of rainwater for use in irrigation and regulatory operations.
Alexandria University have generalized this initiative in some of the faculties of Alexandria University in gradual stages.
Link for Green Cycle Project:
https://fb.watch/mzqhBHazV4/?mibextid=j8LeHn

Integrated strategy Project for rainwater management in Alexandria Governorate in cooperation with Alexandria University

Remote sensing technology was used to know the current values of Rain and assess the current situation with the help of satellites. This is done with the help of the following artificial satellites:

-TRMM and GPM are two of the NASA satellites. (Administration National Aeronautics and Space Administration, United States of America)

- NOAA (National Oceanic, Atmospheric, and Space Administration, United States of America)
- NCEI (National Center for Environmental Information in the United States of America)

Proposed rain management strategy

A separate network will be created to drain rainwater for the nearest body of water for areas close to the body of water. The first area is the Corniche, where rainwater is collected and discharging it into marine estuaries. The second area is on both sides of the Mahmoudiyah and Beheira axis near the airport. The rainwater is collected and part of it is drained on the canal and the other part on the airport lake.

In the third stage of the project, the two projects on the airport lake to exploit rainwater will be linked to the New Delta project. The rainwater will be used to irrigate the crops, vegetables, and fruits in the New Delta.

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2. **Treated water:** As for the water resulting from first treatment, it is reused within the New Delta Project (the value of the reused water for Alexandria University represents 870,925.266 m^3).
3. The Tertiary treatment for use in land reclamation with a design capacity of 7.3 million m3, include 1.7 million cubic meters of treated wastewater form the secondary treatment.

Additional evidence link:

Link for Sustainable Development: https://alexu.edu.eg/index.php/en/sustainable-development
https://alexu.edu.eg/index.php/en/2015-11-24-10-38-07/ranking?id=6011
http://sustainability.alexu.edu.eg/

Link for Green University:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5932&catid=21&lang=ar-AA