

## Template for Evidence(s) UI GreenMetric Questionnaire

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

### [4] Water (WR)

#### [4.4] Consumption of treated water





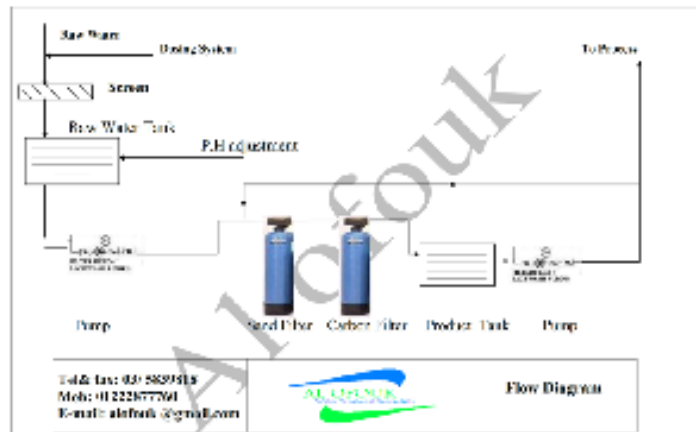
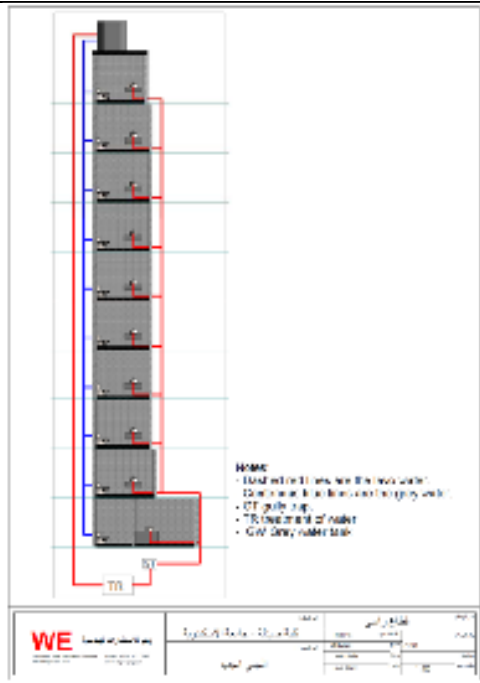
100 m<sup>3</sup> Desalination Unit, Wadi El-Natroom (Faculty of Agriculture, Alexandria University)



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)



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)



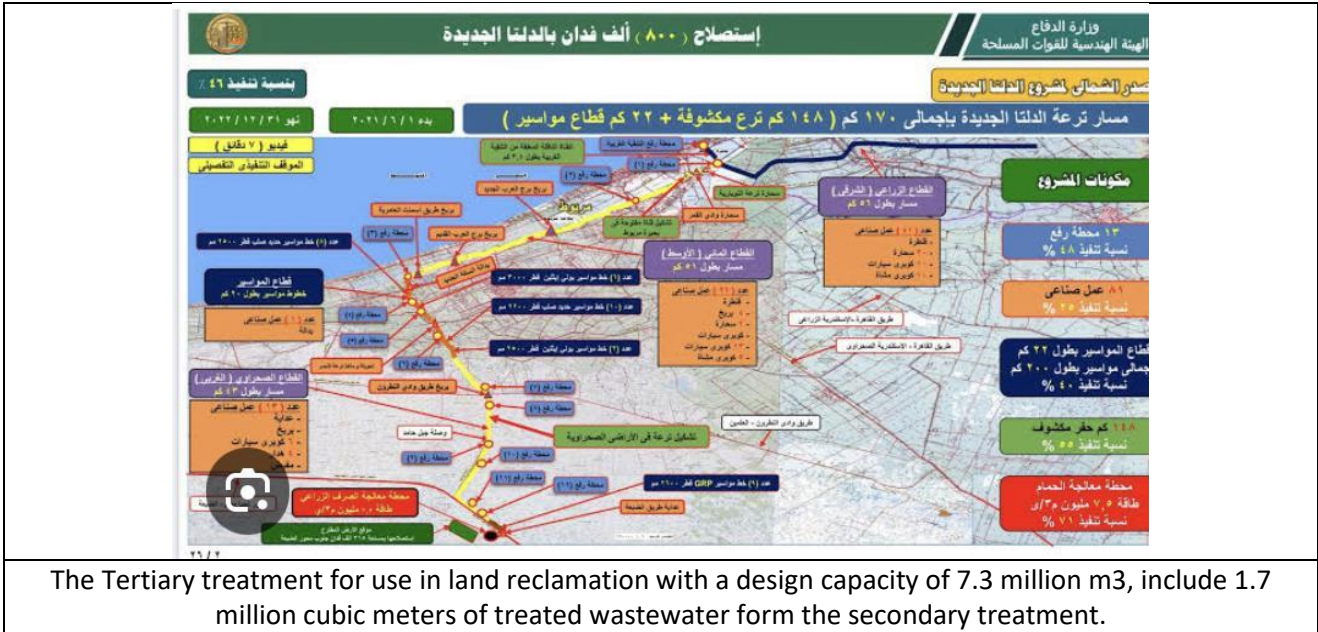
### Reused water at Alexandria University

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 m<sup>3</sup>, 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<sup>3</sup>).



**Description:**

**Alexandria University program to decrease the water consumption in its faculties and buildings:**

Campus water use is an important indicator in the sustainability scale. The aim is to urge universities to reduce water use, increase water conservation programs, and protect the environment. Among these criteria:

- The water conservation program,
- The water recycling program
- The use of water-saving equipment
- The treatment of wastewater

- 1- The University has applied a strategy in the faculties to decrease water consumption through installation of special parts on water taps, showers, toilette and urinal flushing which can conserve about 50% of water consumption.  
Water saving devices are used instead of traditional devices. For example, the use of a hand-washing faucet with automatic control via a sensor, and high-efficiency bathroom devices. Supplying water taps with water conservation units.
2. Adopting a mechanism to maintain water pipes to prevent waste resulting from leaks.
3. Adopting plans and mechanisms for maintaining the taps and internal supply networks of the university to prevent water wastage.
4. Providing a sewage treatment plant at the university to make it suitable for irrigating green areas and gardens inside the university campus.
5. 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.
6. 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.
7. The use of biochar produced from Agricultural waste and waste Forests in residual 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.



8. 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 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](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.

### **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.

### **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 m<sup>3</sup>, which is lifted through a group of lifting stations to be treated through treatment stations affiliated with the Alexandria Sanitation Company.

1. Secondary biological treatment, where solid waste is separated from liquid waste.
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<sup>3</sup>).
3. The Tertiary treatment for use in land reclamation with a design capacity of 7.3 million m<sup>3</sup>, include 1.7 million cubic meters of treated wastewater form the secondary treatment.

#### **Link for Green Cycle Project:**

<https://fb.watch/mzqhBHazV4/?mibextid=j8LeHn>

**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:**

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VICE PRESIDENT  
Community Service & Environment Development

## Renewable Energy and Water Desalination Activities at Alexandria University

Renewable Energy Center (REC) 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.

The Center Goals are to:

- Remove the knowledge barriers against the installation of RE systems in Egypt.
- Enhance the utilization of renewable energy.
- Develop educational and e-learning program about renewable energy.
- Educate students, graduates, public and key stakeholders in Egypt and the Arab world on the various sources of renewable energy and its successful applications.
- Build the infrastructure necessary to develop, install and maintain renewable energy applications.
- Present a show case or a model for the successful utilization of renewable energy in Egypt.
- Continue excellence in all of our educational programs.

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- Different solar energy technology (PV, CSP, Solar water heating systems, solar dryers)
- Solar Greenhouses.

Activity:

- Hybrid System at Wadi El-Natroon, Egypt (HYRESS system).
- Innovative Renewable Energy (RE) Driven - Multi Stage Flash (MSF) System with Salts Precipitator and Nano Filtration (NF) Feed Water pre-Treatment (RE-NF-MSF).

Sincerely,

Prof.

Community Service & Environment Development  
Alexandria University

  
11-10-2023

