6-1 mechanism for Rationalizing water consumption inside campus.

- The university has developed a plan to use taps to guide water, also irrigated University gardens with modern spraying techniques through Ibrahimia Canal, away from drinking water system.
- Faculty of Agriculture is distinguished among the rest of faculties by owning three large research and production farms, so it has a total area of 340 acres, so it is one of the highest faculties in water consumption, as it is known that agriculture consumes 83% of water resources in the irrigation process. Despite of large amount of water used for irrigation, faculty of Agriculture uses programs to rationalize water consumption in the college farms and inside campus. • faculty farm located in Assiut city next to the university from the western side, it's about 68 acres, after deducting building space. All farm consists of heavy clay lands, so it is not recommended to use drip irrigation and sprinkler methods in it. Recently, uses developed surface irrigation methods. Which applied in parts of the like land, water and crops Department. There are some areas irrigate by drip, part of which is on the farm of the Department of Land and Water and another part in the vegetable farm, but all these areas are research experiments for graduate students and faculty members in the field of rationalizing water consumption with different techniques.

The rest of the farms of the different departments in that farm, their Irrigation methods vary between irrigation in lines, irrigation in pipes, and irrigation in small basins, all of them are developed surface irrigation methods that raise the efficiency of water use.

- The guiding farm in Assiut Valley, which existed about 200 acres, it is a modern sandy land, had cultivated about 80 acres. modern irrigation methods are used, such as sprinkler and drip irrigation to rationalize water consumption (30-40 acres) because of high costs of establishing Modern irrigation networks, that progressive work to install modern irrigation networks, which increases annually. Modern irrigation systems currently cover approximately 35% of the area. Due to the high costs associated with setting up modern irrigation networks, the university is gradually working to expand these networks, increasing their coverage annually. As part of this expansion, in 2021, a drip irrigation network was updated for an area of 10 feddans planted with Jojoba. By the end of 2023, a new drip irrigation network was installed for an additional 4 feddans, which is currently cultivated with wheat.

The rest of the cultivated area, it is irrigated by developed surface irrigation methods, and to increase water consumption rationalization in those areas, a large area of it was covered. Annually, work is done to replace and renew traditional irrigation methods with modern irrigation methods, as it is intended to irrigate the entire area of this farm by sprinkler and drip irrigation methods.

- Al-Gharib farm in Sahel Saleem Center, Assiut Governorate. covers an area of 180 acres, having silt and sandy texture, the entire area is planted with fruit trees, field crops and clover. large areas are allocated to produce seeds. All land of this farm is irrigated by traditional
irrigation methods. intended to use surface development on

all areas of this farm, even though this system is currently applied in fruit farms.

- Assiut University has adopted modern irrigation methods through a well-planned and approved strategy to conserve water by selecting suitable irrigation techniques based on the type of land and plants to be cultivated. In this context, Assiut University, in collaboration with a private company specializing in environmentally friendly economic crops, has planted drought-tolerant crops such as Jojoba. This plant not only withstands extreme drought but also stabilizes and improves soil quality.

- Jojoba, known as "green gold" for its significant economic return and "added value," has numerous applications across various fields: agriculture, medicine, cosmetics, and clean energy (specifically biodiesel fuel).

- The following section outlines the university’s contributions through approved water conservation plans and mechanisms, as well as a future plan to enhance water conservation efforts within the campus and its affiliated farms.

- The university established 8 drainage lysimeters at the Farm of the Department of Soil and Water to enhance water efficiency by determining the actual water requirements for each crop grown in Assiut Governorate. Knowing the actual water consumption of different plants allows for the precise application of water for each cultivated crop, thereby significantly improving water use efficiency and achieving maximum yield for the crops grown.

- **Establishing Modern Multi-Span Greenhouses for Water Conservation**

A multi-span ornamental plant greenhouse was established and inaugurated in December 2023, housing approximately three thousand types of ornamental plants. This modern greenhouse is designed for controlled management of humidity, ventilation, temperature, and irrigation. Plants inside are watered automatically using the Mist irrigation system, one of the latest water-efficient irrigation methods. Additionally, it allows for automated fertilization, where fertilizers are delivered with the irrigation water (fertigation). This greenhouse serves as a pioneering model for training students on water conservation in agricultural irrigation, as well as for preserving and propagating many rare plant species.

6-2 - mechanisms for recycling water and using it again.

Assiut University has a sewage treatment plant to use sewage again. The water used inside the college is drained into the main sewer lines, which in turn transfers all university's water to plant treatment, according to the 2015 Egyptian code for recycling. using treated water in agriculture then This water is pumped again in special lines that contribute irrigation green areas, wooden trees and ornamental trees planted inside campus.

Implementation project about water treatment unit in campus.

The university consolidates the idea of volunteer work and developing citizens services. He revealed that he had signed cooperation agreement between the university and the Misr El Kheir Foundation to implement gray water treatment project. In this regard, Dr Maha Ghanem, Vice President for

Community Service and Environmental Development, meet Director of the Misr Al-Khair Foundation, Mr. Mohamed Farage, and Mr. Ahmed Shawky Al-Kashef, General Director of Contracts at Legal Affairs at Assiut University, to discuss how to activate this agreement. During the meeting, Dr. Maha Ghanem emphasized existing cooperation with president of Misr Al-Khair Dr. Ali
Gomaa and benefactor inside and outside the university, indicating that it was agreed with the Misr Al-Khair Foundation to establish a gray water treatment in unit (g) building in Boys' University City , Assiut University, through the cooperation of Misr El-Kheir Engineering Department , funded by the National Bank , supervised by university's engineering affairs, with the institution training specialists to operate it, on the other hand university providing necessary facilities during establish process and managing Water desalination unit.

In a related context, Professor Muhammad Farage commend university administration's role to support institution and effective participation to benefit from every drop of water, within the framework of implementing the state's strategy to find solutions to the chronic problems in the fields of water and energy.

6-3- a mechanism for maintaining water pipes to prevent wastage resulting from leaks.

The water rationalization mechanism inside the university is limited to constant monitoring for water distribution networks and reporting leaks and broken pipes as soon as they are noticed, to repair them.

As shown, the university working on pipes maintenance: -

1- Alert the maintenance department to pay attention to everything that concerns water and sewage pipes.

2- Periodic pass on the university laboratories to observe water pipes in terms of status, presence of rust and cases of taps.

3- Observe the condition of the pipes in terms of rust and water leakage.

4- Address the faculties' trustees and administrative building responsible to take the necessary steps to change the damaged pipes.

6-4 -Existing plans and mechanisms for maintaining university taps and internal supply networks to prevent water wastage.

There is a mechanism to maintain university taps and internal supply networks to prevent water wastage, which can be summarized in

1- The competent authority in the faculty, scientific department or administration submits a request to the faculty Dean to explain malfunction type and a number of leaking taps that are required to be repaired or replaced.

2- The Dean of the college transfers the request to Maintenance Department or the Construction Department at the University.

3- the maintenance director at the college or university sends plumbing technicians to check malfunctions and taps to be repaired or replaced.

4- The technician goes to malfunction or leak location to check it and told maintenance director the needs for the repair process

5- The maintenance manager agrees to expenditure new taps, spare parts or the supplies that must be available for repairing the malfunction from the college administration.

Based on the foregoing, the exerted efforts from the university in maintaining pipes, water taps and rationalizing water consumption in irrigating gardens led to saving the university's expenses on water from the public water network as shown in the table.