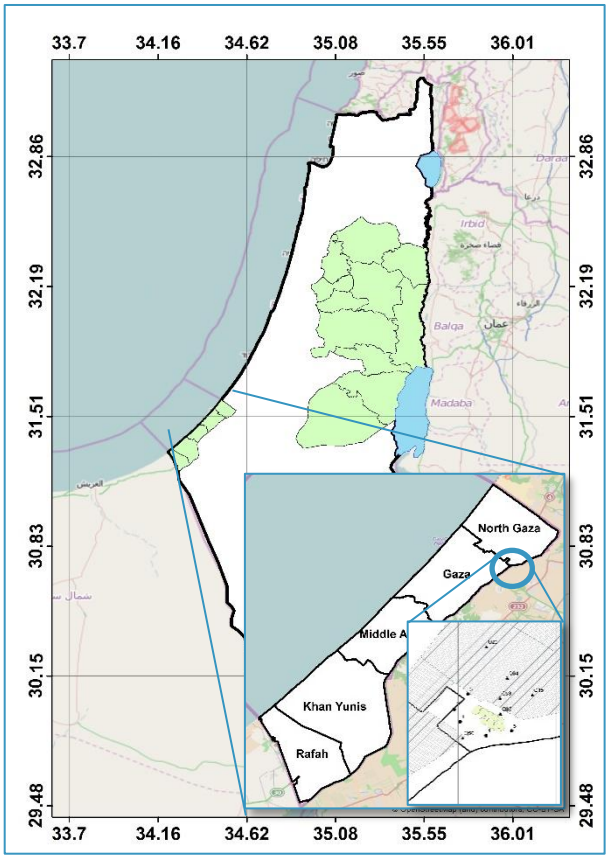
ICID2015
26th ERC & 66th IEC

# NORTH GAZA EMERGENCY SEWAGE TREATMENT ROJECT - NGEST

## *Recovery and Reuse Scheme*



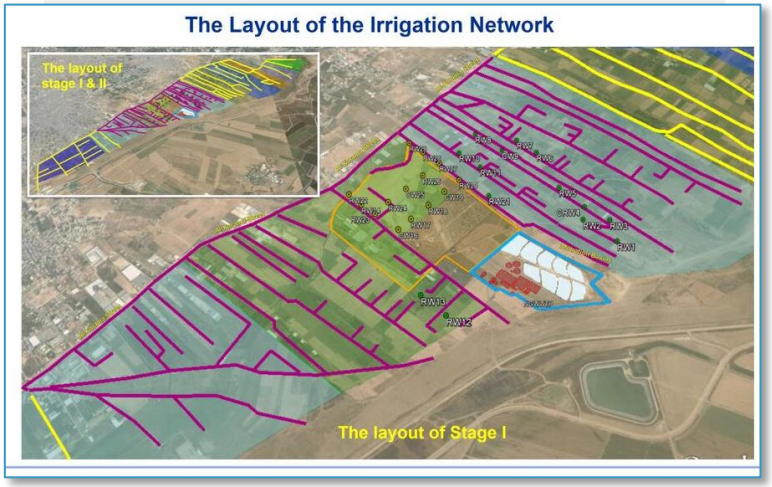

**Mr. Sadi Ali**

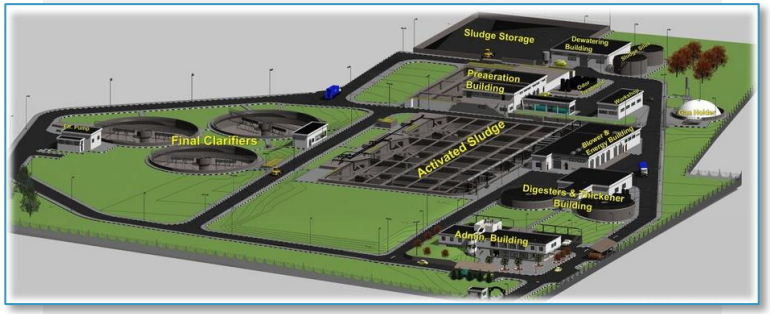
Palestinian Water Authority, Sali@pwa-gpmu.org

سلطة المياه الفلسطينية
PALESTINIAN WATER AUTHORITY

# Description of the case study

| Poject's name | Country | City | Start Date-End Date | Water Sources | Uses |
|---|---|---|---|---|---|
| NGEST Project – Recovery & Resue Project | Palestine | N. Gaza | _____ | Treated Wastewater | Reuse for Irrigation |




## Sources

| | |
|---|---|
| **Origin** | *Domestic* |
| **Water reused ($m^3$/Y)** | *39,160 $m^3$/day* |

## Uses

| | |
|---|---|
| **Crops** | *Olives, Citrus, wheat, vegetables* |
| **Irrigated Area (Ha)** | *1500 Ha* |
| **Cost of the Cubic meter (€/$m^3$)** | *0.23* |

## Water Reuse Chain

| | |
|---|---|
| **Treatment** | *Step 1: Pretreatment and Activated Sludge*<br>*Step 2: Final Clarifiers and Activated Sludge*<br>*Step 3: Digesters, Blowers and Gas Holder*<br>*Step 4: Dewatering and Sludge Storage* |
| **Disinfection** | *Chlorination* |
| **Storage Capacity ($m^3$)** | *Mainly the Aquifer, Recovered Water Tanks (2x4000), Infiltration Basins (9 basins total 9 Ha)* |
| **Irrigation** | *Piping Irrigation (a total of 103 km of pipes)* |

# How do I illustrate the question:

## Which practices, technologies and institutional framework to create effective, safe and cost effective water reuse chain?

The Effluent Recovery from the aquifer & Reuse project consists of 28 recovery wells, 2 tanks (of 4,000 $m^3$ each), booster pumps and irrigation network. The project will utilize the generated methane gas to operate part of the WWTP and solar panels will be installed to cover the reminder power need for WWTP and for the Recovery Scheme.

The institutional framework is currently under preparation. However, once completed the project will be handed to Coastal Municipalities Water Utilities (CMWU). CMWU in cooperation with the municipalities and through farmers associations will have to gradually improve the collection rate to cover the O&M costs and to ensure effective delivery and usage of the treated water.

The available power from grid, stand-by generators, generated methane gas and solar panels should secure around the clock power for the WWTP and during the day for the recovery & irrigation scheme. This will contribute towards reducing the cost of cubic meter of the treated wastewater and will provide sufficient and good quality irrigation water for the farmers.

A monitoring program is on place to ensure the safety of the infiltrated and delivered water with updated groundwater model to examine the expansion patterns of the plume.

ICID2015
26th ERC & 66th IEC

# How do I illustrate the question:

## Can we successfully reuse raw or low treated waste water?

The NGEST project is considered the largest reuse project in Palestine. There were previous experience from PWA to use partially treated wastewater to irrigate olives trees and palm trees in Shiekh Ijleen area in South of Gaza City.

However, the raise of awareness among the end users plays a vital role in deliver such reuse water (raw or low treated). This can be achieved through powerful and effective users associations along with well structured and operated infrastructure.

Until the completion of the new WWTP, the Infiltration Basins receiving partially poor effluent which substantially improved due to being subject t to soil aquifer treatment, however, this practice has impacted negatively the performance of IB.

The application of the proposed low treated wastewater in the Gaza Strip could be realized due to the fact that many farmers are switching to plant olives and citrus. Such crops can bear the relatively high levels of nitrate and chloride. At the early stages of the implementation should avoid seasonal crops, such as tomatoes and vegetables.