Enhance the resilience of vulnerable communities through efficient water solutions and addressing climate change in the Eastern area of Khan Younis in the Gaza Strip

Regional Training and Study Tour of Water Users Associations on optimal irrigation management and practices

(12-16 June 2023, Bari - Italy)

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Project Information

Partnership

OXFAM & Palestinian Environmental Friends (PEF)

Targeted Geographical area

Khan Younis

(Al Fukhari area)

No. of beneficiaries

166,246 individuals

Key Problems addressed

- Al Fukhari area is a vulnerable community of 10,000 individuals, located in the access restricted area (ARA), severely affected by the three Israeli invasions resulting in the destruction of water and sewage infrastructure coupled by the lack of investment.
- 70% (5000 dunums) of Al Fukhari is an agricultural area, where 50% are planted with trees (fruits, olive and citrus).
- Farmers have adopted a wide range of coping strategies, some of which have burdened them financially and decreased their profits, including purchasing tank water from private water vendors at high costs (2- 2.5 NIS per CM).
- The RNA identified water scarcity and salinity as main challenges- using saline water damages their crops but buying safe irrigation water overburdens already vulnerable farmers.
- The agriculture sector is also sensitive to the impact of climate change; increased temperatures, decline in annual rainfall and heat waves.
- An in-depth understanding of the impact of climate change on agricultural in Gaza is needed, investigating best agriculture practices, evidence-based recommendations and insights to stakeholders supporting the agricultural sector.

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Objectives and Target group

100-120 Small and medium scale farmers, **300 Donum**

150 laborer's/workers CFW

20 Operators and engineers

5,000 F/M individuals (public awareness)

30% of the entire Gaza population (270,000/ mass media)

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Project Outputs

Outcome 1

To strengthen water resource management through an innovative water management model for agriculture in the Gaza Strip

Output 1.1	Output 1.2	Output 1.3	Output 1.4	Output 1.5	Output 1.6
Innovative model for TWW re-use	Innovative climate-smart agriculture models	Evidence-based advocacy actions	Awareness – Health issues related to RTWW	Sustainable and cost-efficient governance model	Exchange key learnings

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Project Outputs

Output 1.1 a new model of treated wastewater re-use and irrigation operating and providing efficient irrigation water resources to targeted farmers through recovery wells around the treated wastewater (TWW) infiltration basin in Al Fukhary	A hydrogeological and hydraulic modeling study to apply a recovery wells technology model
	Two Treated wastewater recovery wells and PVC system with carrier line
	Sub main irrigation network from main carrier to agricultural lands

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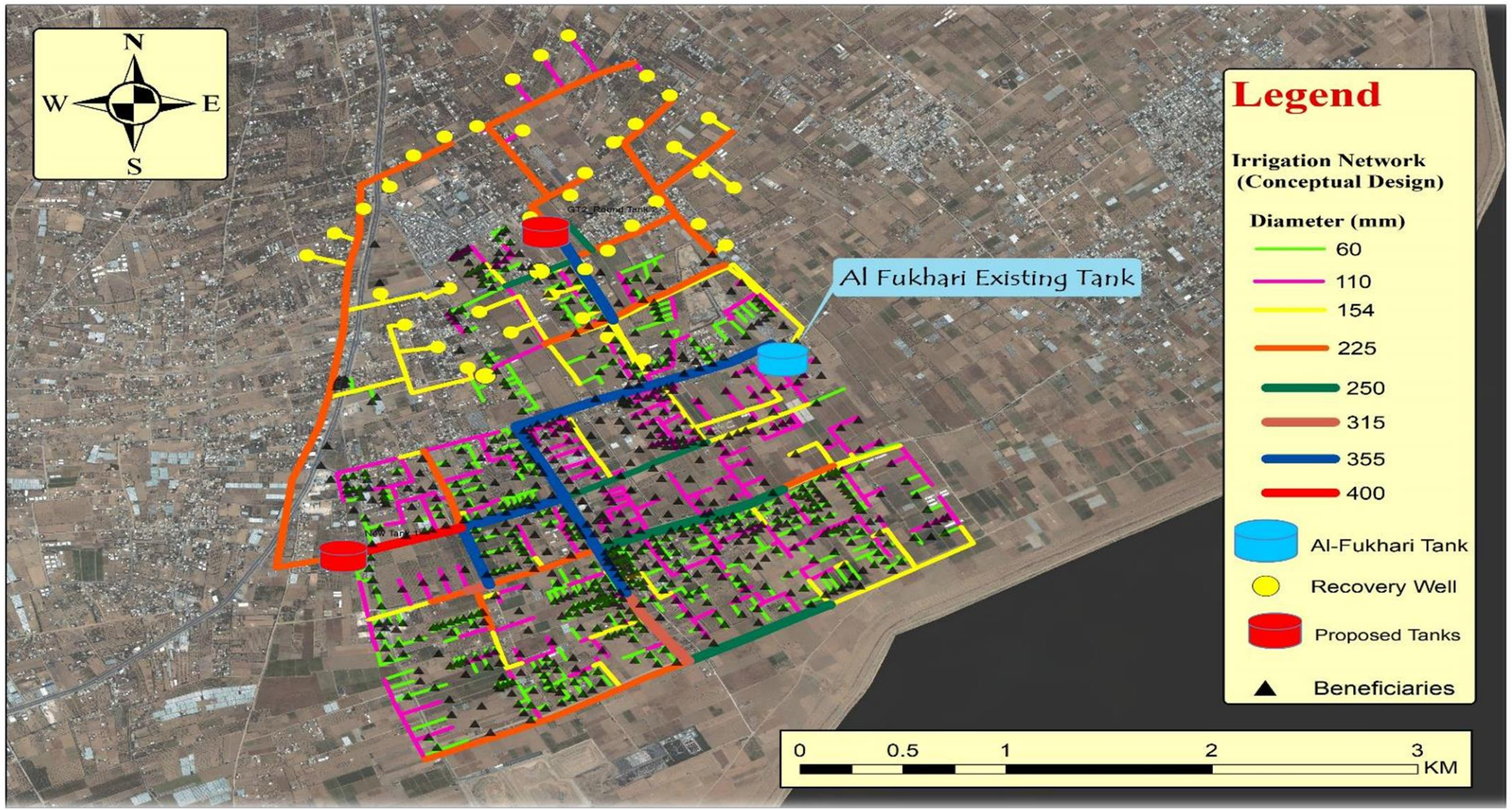
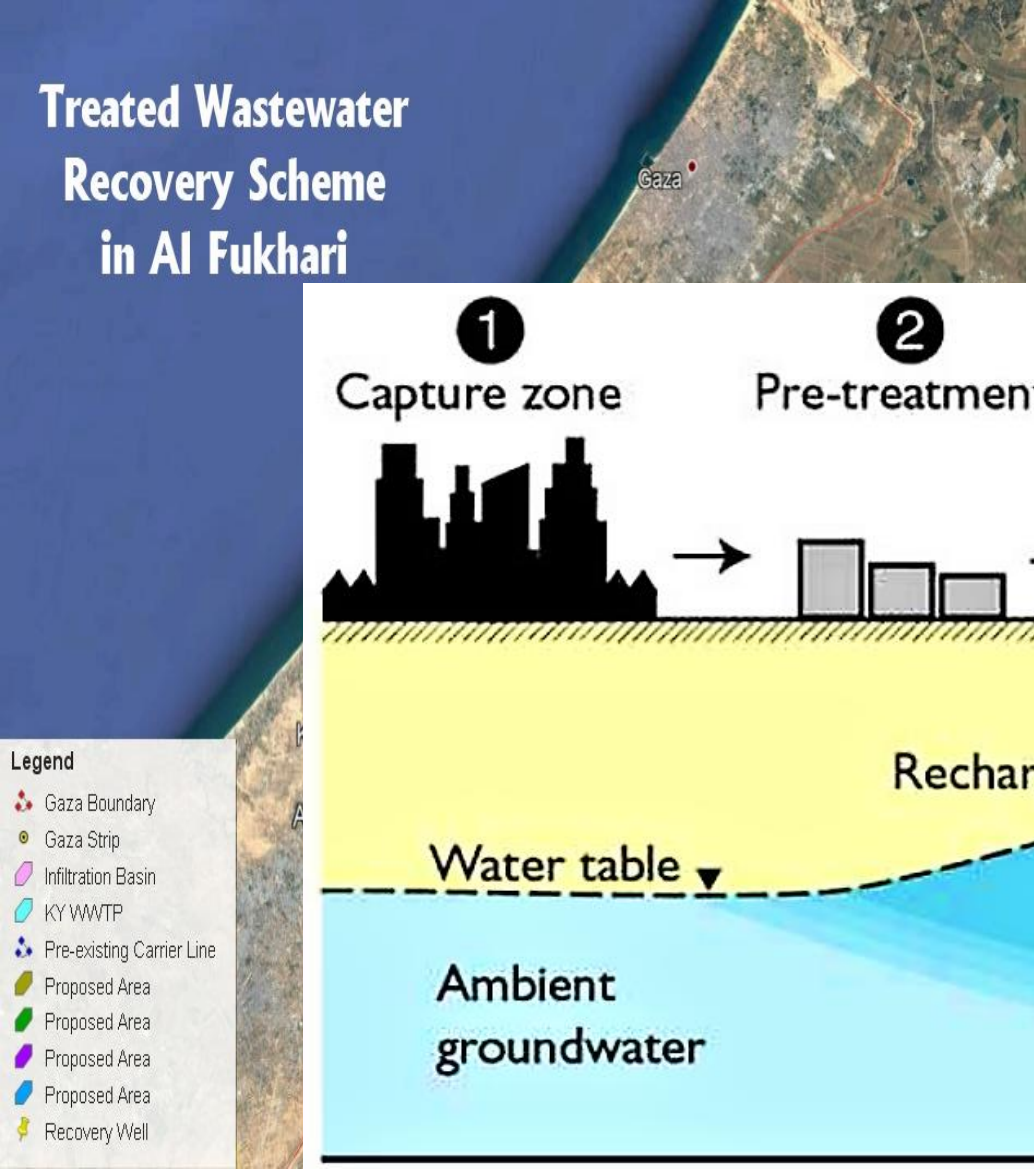
Conceptual design




RW1
INFILTRATION BASINS
FIELD OFFICE
RESERVOIR
SHADING
SGH
KHANYOUNIS WWTP
N
BNF location
Carrier line 8"
Carrier line 6"
Submain network 4"
Submain network 2"
Al Fukhary boundary

Treated Wastewater Recovery Scheme in Al Fukhari



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SUPPLY OF MATERIALS

SAMPLES OF FIELD WORKS

SAMPLES OF FIELD WORKS

SAMPLES OF FIELD WORKS

SAMPLES OF PLASTERING WORKS

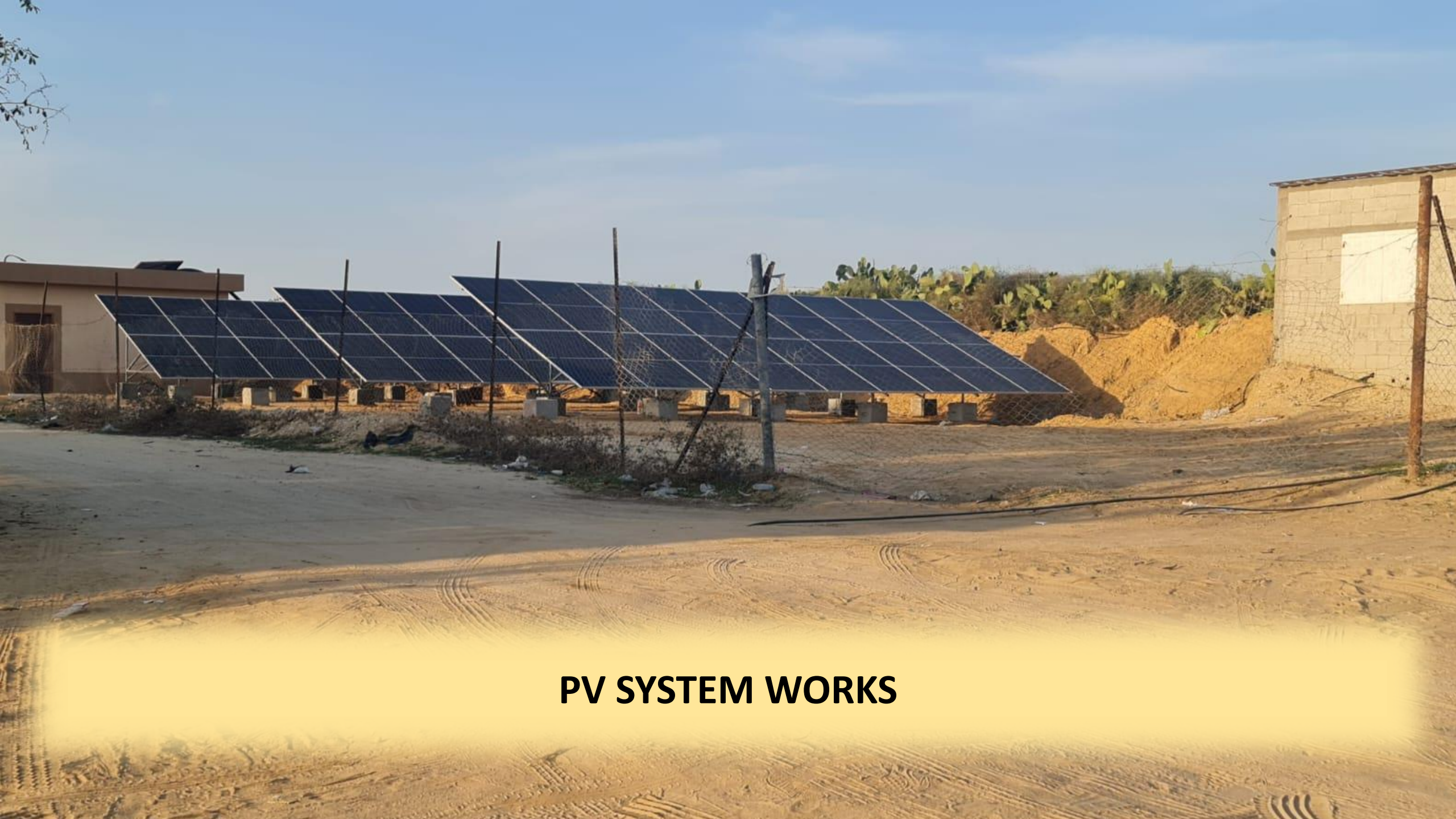
MECHANICAL INSTALLATION WORKS

FLOWMETERS INSTALLATION WORKS

BOOSTER PUMPS' WORKS

ELECTRICAL WORKS

PROVISION AGRICULTURE INPUTS THROUGH CFW



PV SYSTEM WORKS

Project Outputs

OUTPUT 1.2

Innovative climate-smart agriculture models

Drip irrigation system for 300 Donums, Fencing and plantings using CFW

2 pilots of climate-smart agriculture (shading, greenhouse)

Shading model

Smart green house model

https://oxfam.box.com/s/ckgod4yro63y7ayy7pn3t565fa5gddw6

Project Outputs

OUTPUT 1.3

Evidence-based advocacy actions

Policy brief about innovative approaches

Online and offline influencing actions targeting national and international actors

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Project Outputs

Output 1.4 Farmers and communities are better informed about health and environmental knowledge, practices and safety procedures related to RTWWR	Establish a community based RTWWR monitoring and management committee
	Establish a women's farmers committee in Al Fukhary 5 to 6 women
	Build the capacity of targeted farmers and workers on the practical application of RTWWR for irrigation.
	Conduct a public awareness and mass media campaign on safe RTWW chain from irrigation to consumption.
	Train farmers and families on mainstreaming gender in water resource management, RTWWR and climate change.
	Conduct a simulation exercise at the initiation of RTWW to targeted agricultural lands.

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AWARENESS SESSIONS

GENDER MAINSTREAMING TRAININGS

GENDER MAINSTREAMING TRAININGS

FARMERS CAPACITY BUILDING

WORKERS' TRAINING

COMMUNITY COMMITTEES' PARTICIPATION

Project Outputs

Output 1.5

Sustainable and cost-efficient governance model operating with high quality control standards by committed farmers and relevant stakeholders

Legal framework and Tariff system for RTWW using the recovery wells model

Monitoring and verification system for the treatment and reuse cycle considering the recovery wells model

Feasibility study to explore PPP model for TWW distribution and investment

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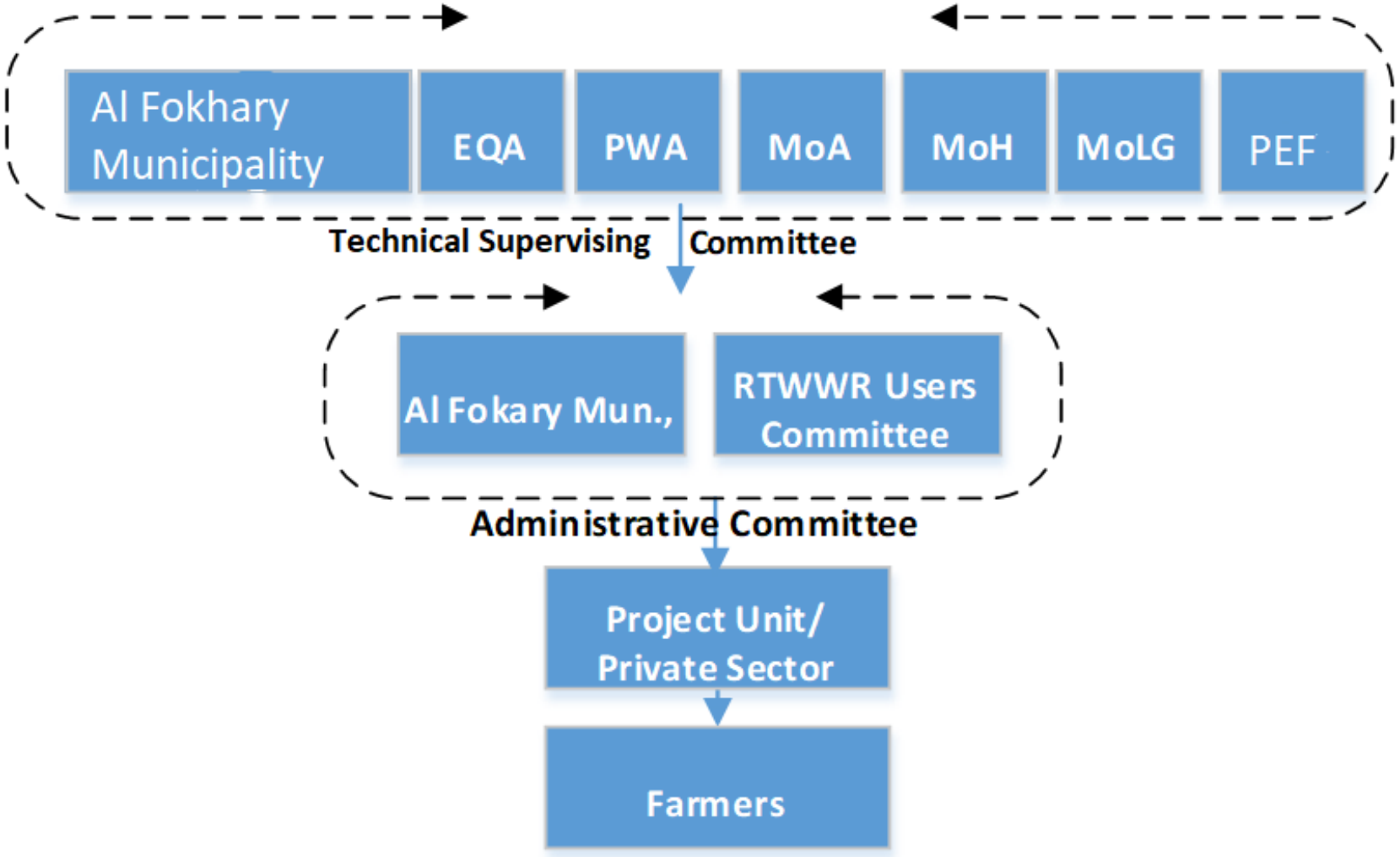
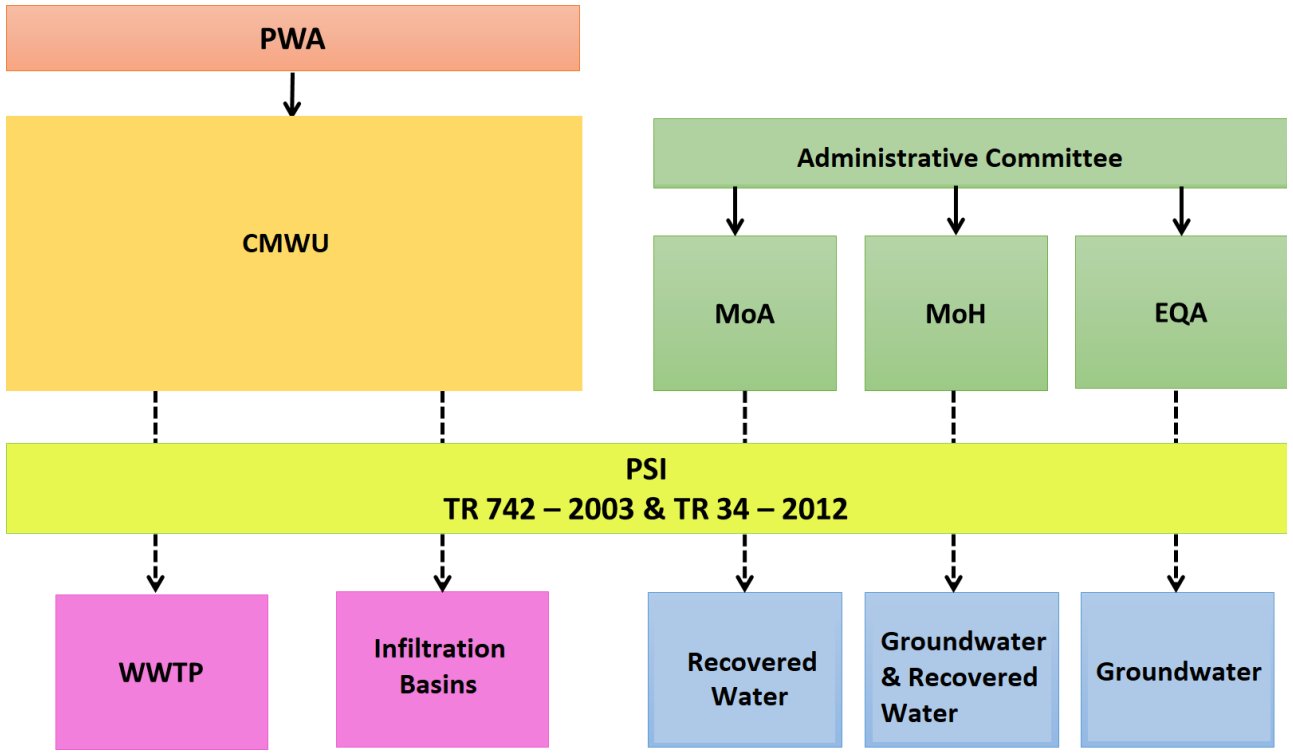


Joint Management Framework for the Recovered Water Facility in Al-Fukhary Area

Monitoring and verification system



Indicator	Monitoring Wells	Recovery wells
General variables		
TDS	●	●
pH	●	●
Dissolved Oxygen	●	●
Nutrients		
Ammonia	●	●
Nitrate/nitrite	●	●
Total nitrogen	●	●
Phosphorus compounds	●	●
Organic		
TOC	●	●
COD	●	●
BOD	●	●
Major ions		
Sodium	●	●
Potassium	●	●
Calcium	●	●
Magnesium	●	●
Chloride	●	●
Boron	●	●
Microbiology		
F.C.	●	●
Clostridium perfringes	●	●
Other		
Heavy metals	●	●

- ● A representative sample from each of the recovery wells: every 6 months for the chemical parameters and every month for the microbiology and every year heavy metals and the salinity of the soil.
- ● A representative sample from each of the two recovery wells monthly

Inspection Monitoring Parameters

- ● Salinity of the soil measured every month
- ● A daily test of TDS, pH and NH_3 using Kits should be performed.

TARIFF SYSTEM AND MONITORING PROGRAM WORKSHOP

Project Outputs

Output 1.6

Exchange Key learning

Key events and seminars in OPT and MENA region to disseminate key learnings and demonstrate the replicability and scalability of the model.

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Challenges

- May 2021 escalation in Gaza Strip and the associated implications on the ground
- Dual use materials needed for the Wells construction and water pumps entry
- Data collection related of the Water source logical prediction and future expectations needed to apply the hydrogeological model

Lessons learnt

- Coordination amongst stakeholders at the institutional and operational levels (project steering committee)
- The establishment of a community based RTWWR monitoring committee
- Farmers and community committees were engaged effectively in the Gender analysis and the socioeconomic study
- Building community committees capacity to enhance the sustainability of the action beyond the project's lifetime.
- Community committee members have been effectively engaged in the mapping of the agriculture land and all stages of farmers selection

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