تكنولوجيات الصحراء

desert technologies

A Renewable Energy Company

Sustainable drinking water supply for rural areas and displaced communities

Regional capacity building workshop on the Water - Energy Nexus *Beirut, 11-12 July 2017*
Operational Toolkit: Renewable

CLEAN ENERGY

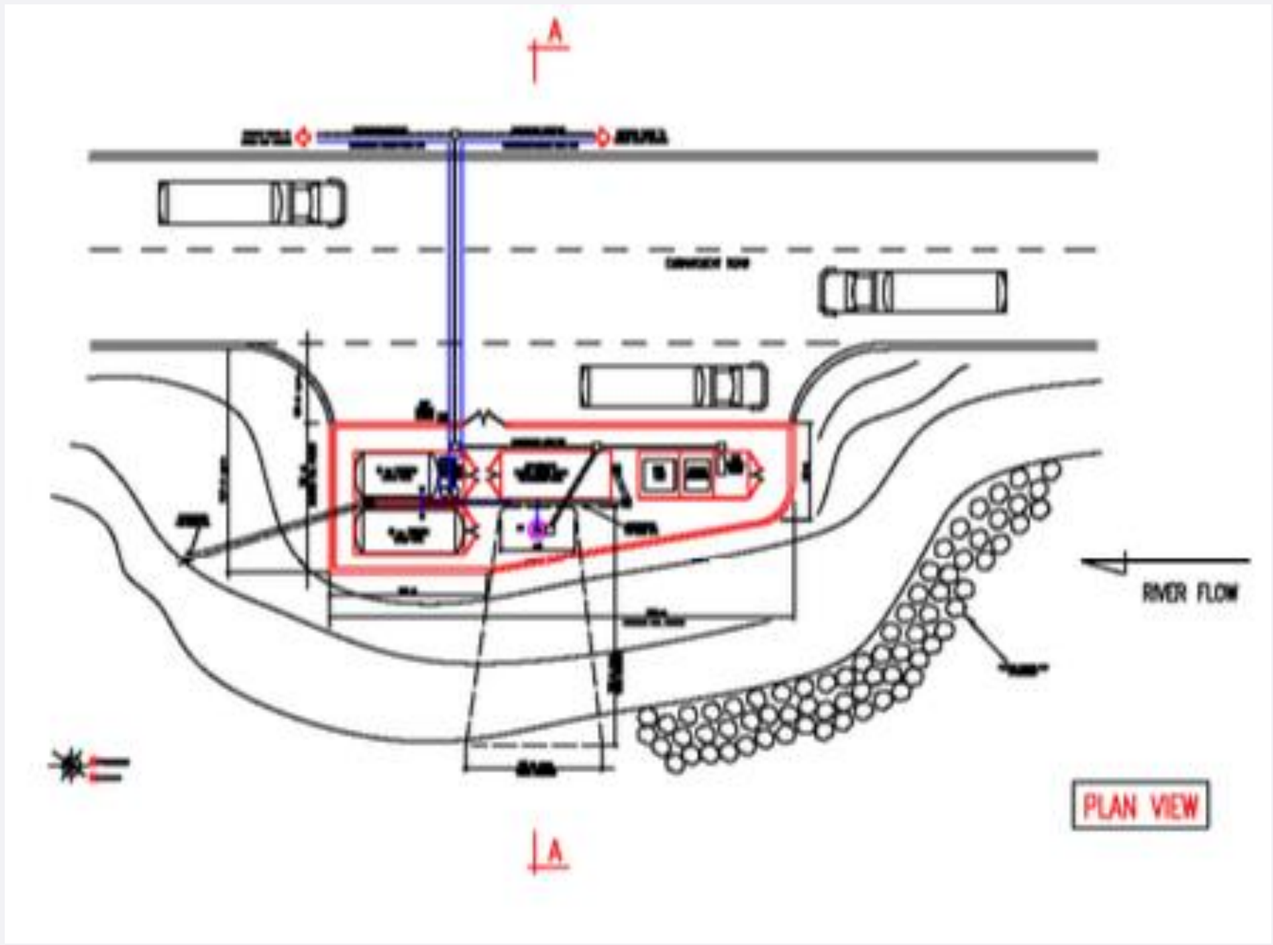
Integrated solar PV company from manufacturing , EPC through to Operation and Maintenance

CLEAN WATER

Design and build of water and wastewater purification, desalination, solid waste to energy treatment and soil remediation systems

Oasis Water Project

Reverse Osmosis Water Treatment Plant with Photovoltaic System for Al Ghreej Village, Iraq



RO water Plants 160 m3/day
Accumulation Tank 15 m3
Distribution pump system 3Kw
Generator shelter 40 KVA
Photovoltaic system

UNEP “Support for the Environmental Management of the Iraqi Marshland”,
UNOPS IQOC, Amman, Iraqi Ministry of Environment, Iraqi Ministry of Water Resources

The United Nations SDGs in the Oasis Water Project

Involvement of local communities and national authorities

Eradication of poverty through clean water

Reduction of water conflicts

Improvement of agriculture and food supply

Responsible use of land

Better hygiene and sanitation conditions

Responsible use of water

Children freed from water collection

Improved resiliency to climate change

Women involved in the acceptance of the project

Optimal use of local resources

Supply of clean water to rural communities

Sustainable development of rural communities

Use of solar energy resource

Improved standard of living

Improvement of local economy

Growth of small businesses

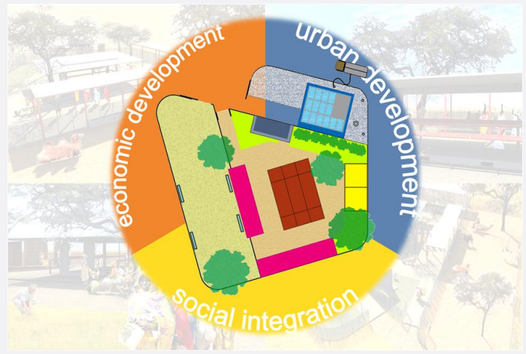
Priority Population Groups

Rural communities suffering due to water scarcity and/or inadequate water supply management.

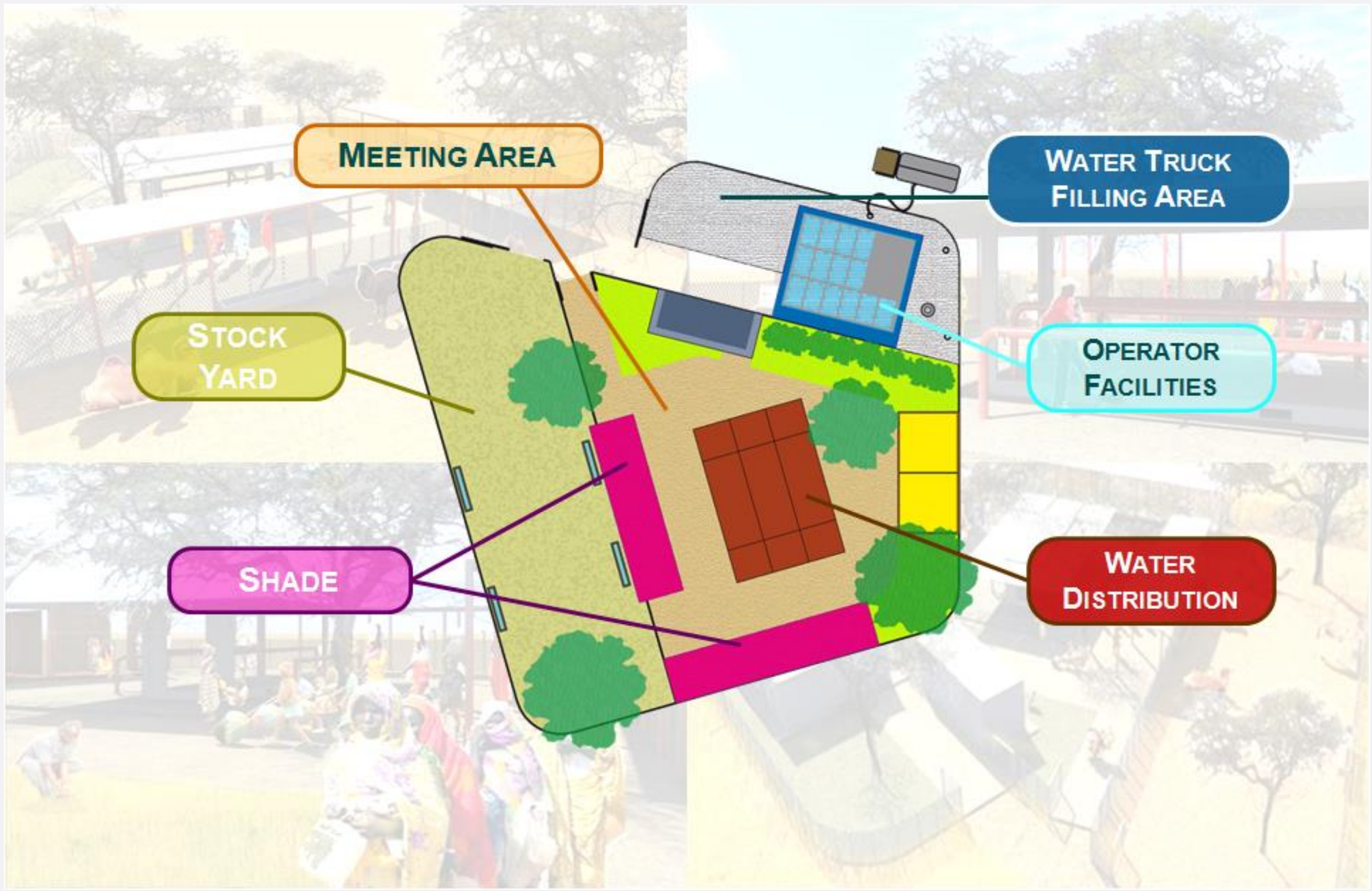
Displaced peoples / Refugees Camps urgently looking to reestablish themselves, temporarily or permanently, in areas not adequately serviced by water infrastructure.

Communities of mixed groups (e.g. farmers, workers, nomads, displaced people) potentially suffering from conflict due to the use and allocation of water.

Strategic Approach - Social Development



1 Promote social development in rural areas



Strategic Approach - Modular Design

2 Use *modular design* for future development

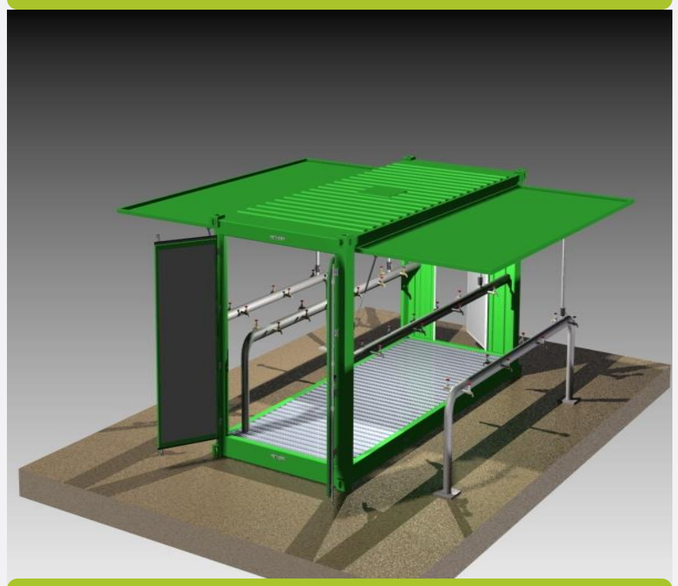
Preassembled containers enable additional components to be easily added. For example:

- Increased water storage capacity
- Extended water distribution network to sustain villages and agriculture.

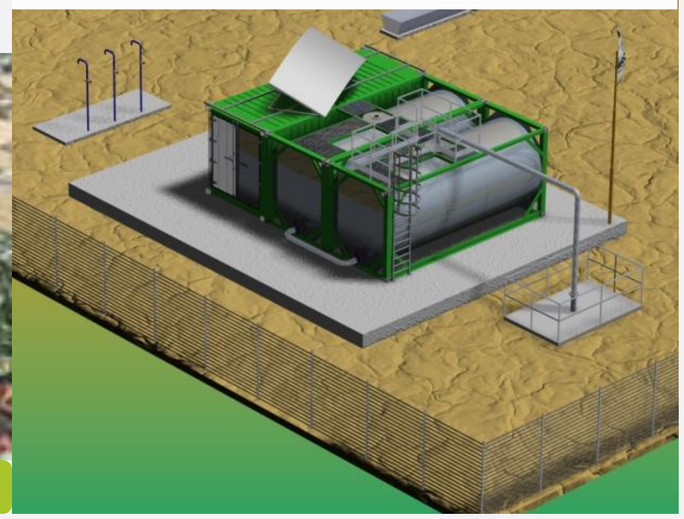
EXTENDED WATER DISTRIBUTION NETWORK

WATER TREATMENT PLANT

WATER DISTRIBUTION CONTAINER



WATER STORAGE CONTAINER



Strategic Approach - Construction Time

3 Optimize construction time

PREASSEMBLED CONTAINERS:

all the electromechanical components have been installed and tested in Italy. Once onsite containers only have to be opened and connected.

FLEXIBLE HOSES:

that can be easily installed avoiding wasting of time in connecting pipes and possible leakages among pipes connection. It will reduce also submerged pump maintenance time since there will be no pipes to be removed but only the flexible hose.

PREASSEMBLED CONTAINERS

FLEXIBLE HOSES

Strategic Approach - Operation Costs

4 Contain operation costs

Photovoltaic solar systems are **especially suitable** for this kind of installations: it is possible to calculate with high precision their yearly production, moreover they supply the abundant solar energy available in these areas.

Operation costs can be reduced with the introduction of **solar panels** on the top of the containers.

The solar panel system feeds the distribution booster system, integrating the diesel generator and reducing energy cost and oil supply giving more autonomy to the yard.

PHOTOVOLTAIC PANELS BEING MOUNTED

DIGGING WATER DISTRIBUTION CHANNELS & PUMPING STATION

SOLAR ENERGY ACCUMULATION

Strategic Approach - Operation Costs

4 Contain operation costs

The electricity produced by the solar system is sent directly to the pump which in turn pumps water through a pipe to a storage tank. These solar pumping systems are sized to store extra water on sunny days: the water is available on cloudy days and during the night when the photovoltaic system doesn’t work and is off.

Components of a solar/wind water pumping system are:

- **Photovoltaic panels and/or wind generator and tower**

  PV panels and/or wind generator produce electric Direct Current (DC)

- **Water pump**

  Submersible water pumps to lift water from great depth

- **Pump controller or inverter**

  It protects the pump from high or low voltage conditions and maximizes the amount of water pumped in not ideal conditions

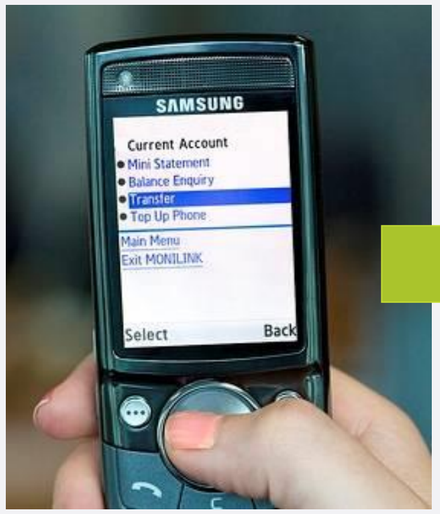
- **Tank & Water distribution pipeline**

  Between the well and the tank for the storage/treatment of purification of the water

Strategic Approach - Operation Costs

4 Contain operation costs

In some areas where the technology is available and people are willing to pay a small fee for water, the OASIS WATER PROJECT could become partially if not fully **self financing** by facilitating such payments through a **mobile phone money transfer**.



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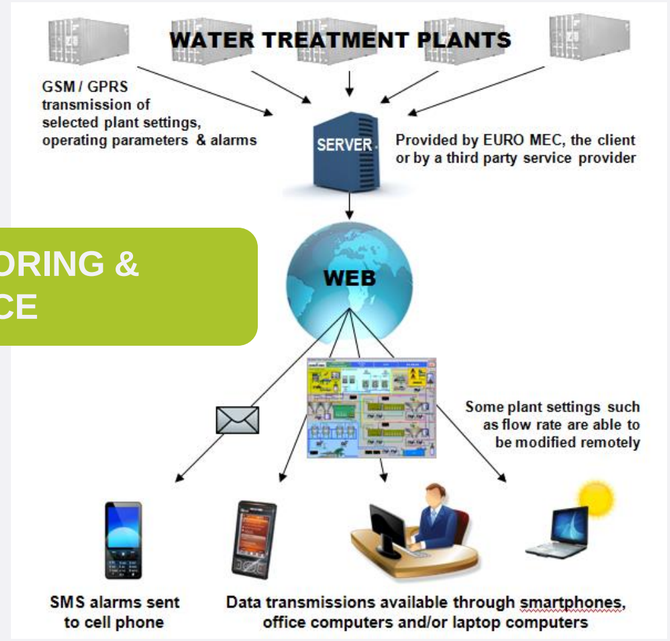
Strategic Approach - Training

5 ***Train*** and ***support*** local operators

We understand the importance of **training** in the installation, operation and maintenance of our systems in order to ensure trouble free operation and longevity of service life.

Remote assistance via telephone and e-mail thanks to the remote monitoring and assistance .

REMOTE MONITORING & ASSISTANCE



THEORETICAL AND PRACTICAL TRAINING


Containerised plants under construction


Practical training on containerised plants


Practical training on mobile water treatment plant


Theoretical training

TRAINING CERTIFICATE


Presentation of certificate of attendance

Oasis Water Project – The phases

The site

The intake system

Oasis Water Project – The phases

The delivery

The yard

Oasis Water Project – The phases

The plug&play system

The PV power

Oasis Water Project – The phases

The distribution pipeline

The water taps

Oasis Water Project – The results

The results

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