

Sustainable Water
Integrated Management (SWIM) -
Support Mechanism



Project funded by
the European Union

Water is too precious to waste

IMPROWARE

PROJECT



IMPROWARE

Athens November 11th, 2013
Andrea De Angelis, Team Leader

MEDITERRANEAN SEA

treatment plant

Beneficiary Countries and Areas

Egypt: Nubariya

Tunisia: Korba

INNOVATIVE MEANS TO PROTECT WATER RESOURCES IN THE MEDITERRANEAN COASTAL AREAS THROUGH RE-INJECTION OF TREATED WATER

IMPROWARE —



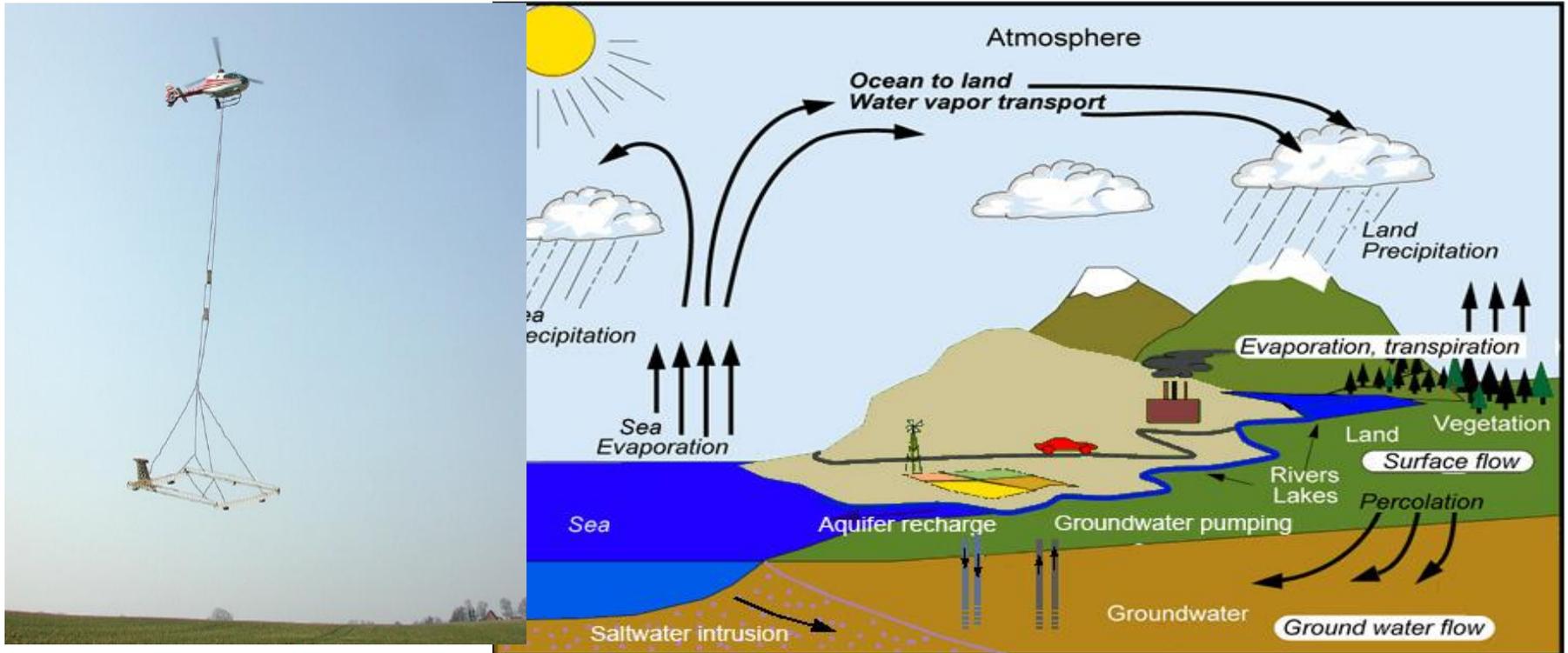
50 100 150 200 km

Specific objectives

- SUSTAINABLE DEVELOPMENT: To improve the economic development prospects of rural by increasing water availability for agricultural activities, consequently reducing the current over-exploitation of drinking groundwater.
- POLICY MAKING: To draw the attention of policy makers on the existence of solutions and innovative methodologies to tackle water scarcity problems;
- TECHNOLOGY - and KNOW HOW - TRANSFER: To facilitate in building-up & improving planning and management skills at sub-regional and regional level;
- REGIONAL COOPERATION: To encourage regional co-operation in the area of sustainable and integrated water management through capacity building, institutional strengthening and public participation.

1. Aquifer characterization by geophysical investigation

By Ground electromagnetics (TEM) for both near surface and deeper penetration, and b) Magnetic Resonance Sounding (MRS)



2. Modelling to support aquifer recharge (starting from the use of CATHY, UNIPD, and CODESA) studying specific methodologies for reusing wastewaters to recharge coastal aquifers in arid regions suffering from saltwater intrusion

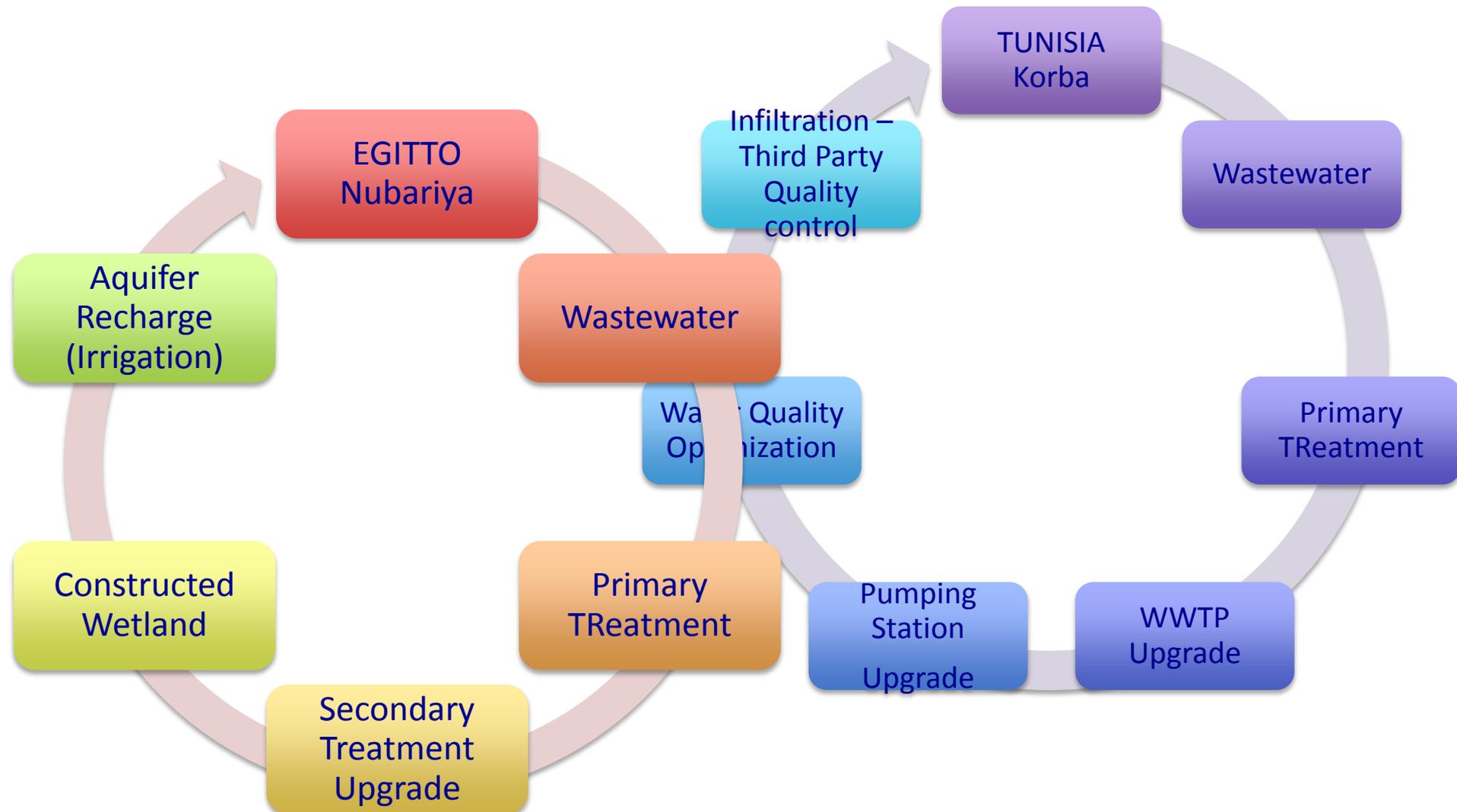
3. Pilot Activities in two Sites

Implementing pilot activities in 2 demonstration sites:

- In Nubariya, by upgrading a Waste Water Treatment Plant & building and connecting to the WWTP a Constructed Wetland aimed to make tertiary water treatment;
- In Korba by improving the existing treatment plant, aiming to the better Water Quality in order to improve the aquifer recharge.



4. Comparison of different methodologies used by the two pilot projects.





5. Capacity Building and communication

- Adaptative response to the project from Stakeholders
- Ensure extension and communication, Community awareness, and public participation means at national and regional levels.
- E-Learning. & Deliver Technical and Policy Guidelines.
- Improve technical and institutional capacities, and enhance regional cooperation for sustainable and integrated management of water resources.
- Export the experiences gained to other ENPI Mediterranean countries by disseminating the results of the project, demonstrating best practices and the correct use of the state-of-the-art technologies.

Management: Work Packages





WP2-3 Constraints & Achievements

WP2 & 3 – Egypt & Tunisia Investigation & Modelling –

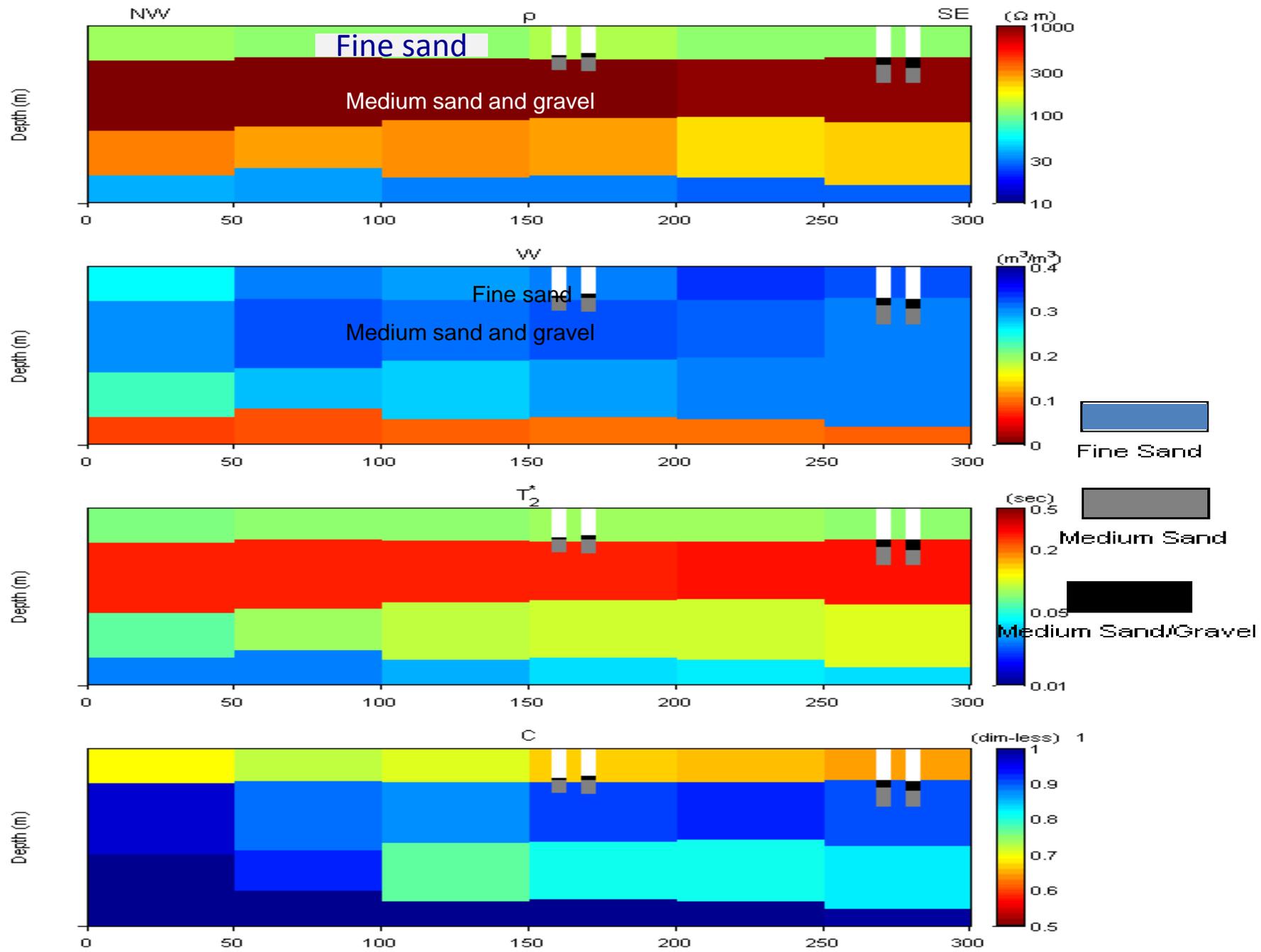
EGYPT issues:

- **Data collection**
- **Cooperation between EEAA and Ministry of Water Resources and Irrigation (RIGW)**
- **Airborne Investigation**
- **Ground TEM and MRS (December and January)**

TUNISIA issues:

- **Korba Site**
- **Data Collection DGRE**
- **Savings from Airborne – Investigation also in Tunisia (subject to an Addendum)**







WP4 ACHIEVEMENTS for PILOT PROJECTS

Egypt

Time for EEAA preparatory work and Public Tender

Task #1 – General analysis and definition of the plant configuration, process, and parameters

Task #2 -- Detailed engineering (Project Design of WWTP and CW)

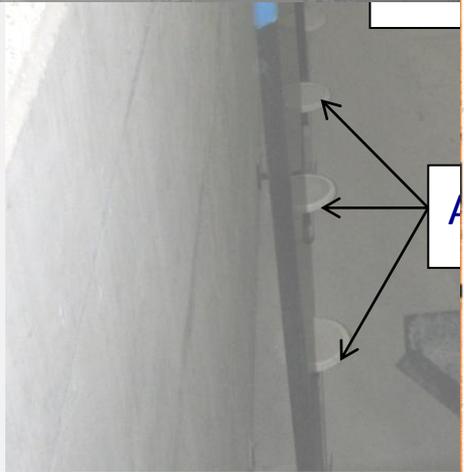
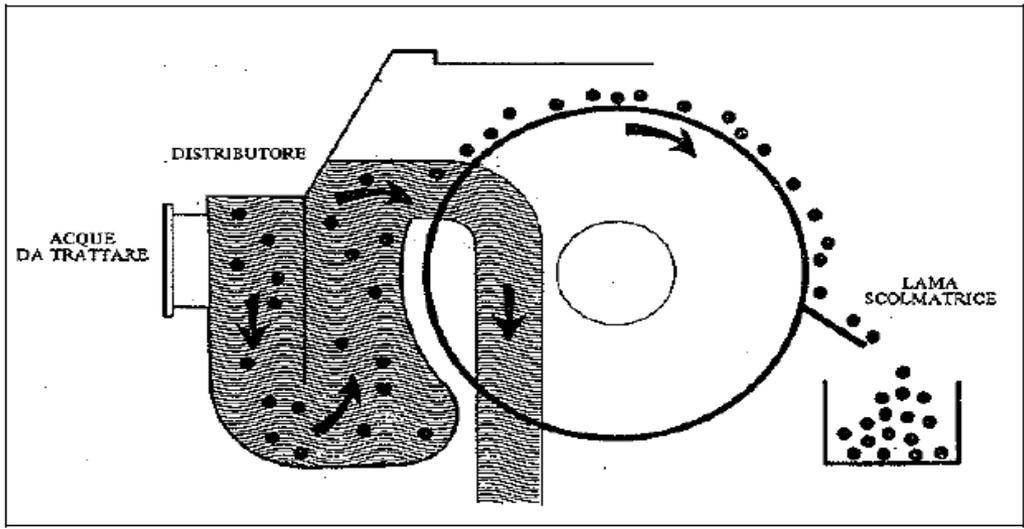
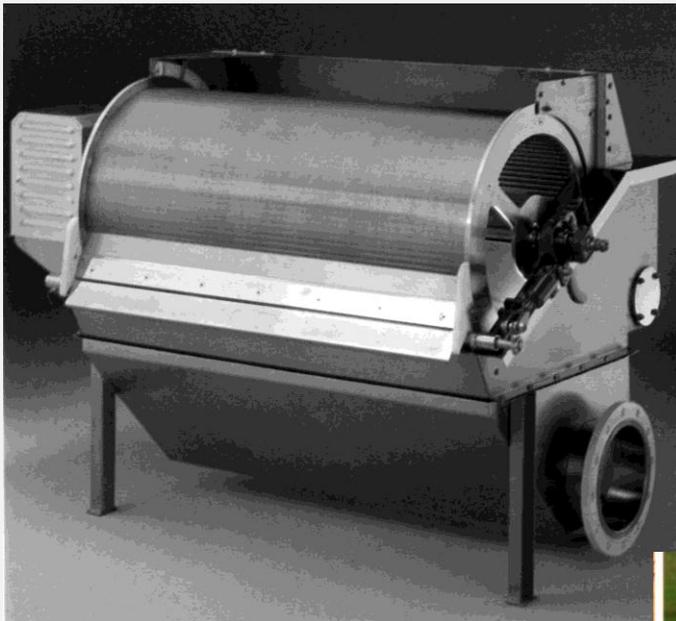
Task #3 – Tender Procedure Ongoing

Tunisia

Interventions in Nubariya WWTP

- Replacement of the pumping station
- Construction of a pre-treatment section
- Reactivation of the sludge recirculation system
- Replacement of the sludge scraper bridges
- Implementation of a monitoring system
- Replacement of specific parts irrecoverably damaged

Interventions



- Horizontal Sub-surface CW
- Net area: about 1200 m²
- 2 lines which can operate both in series and in parallel;
- Flowrate expected: about 200 m³/d
- Plants: probably *Phragmites australis* because is the most suitable plant. It grows fast and can exist during different seasons of the year.



Phragmites australis -
common reed is a
reference species for CW
systems

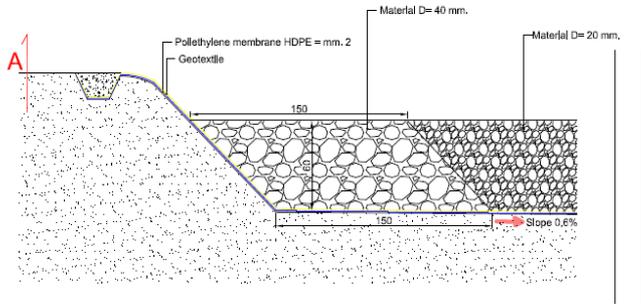
Pontederia cordata
– pickerelweed is
aesthetically
pleasant

Iris pseudacorus -
pale yellow iris is an
ornamental plant

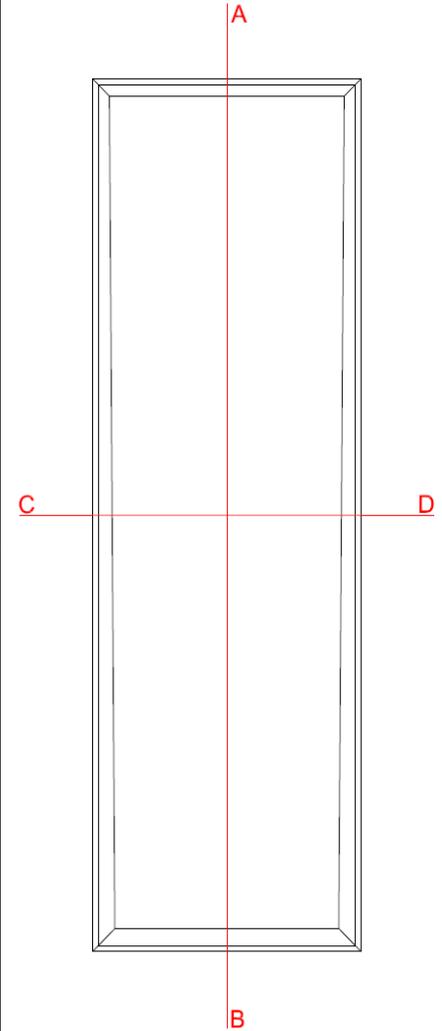
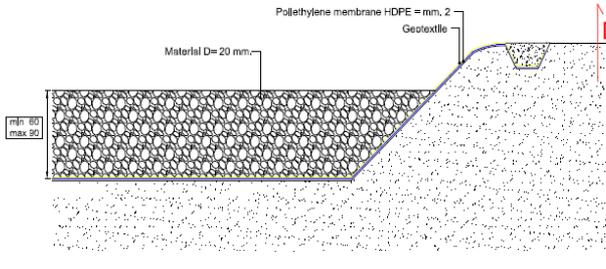
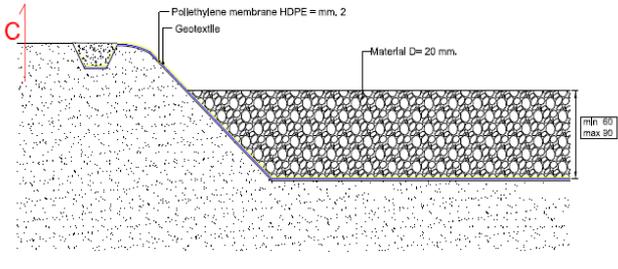
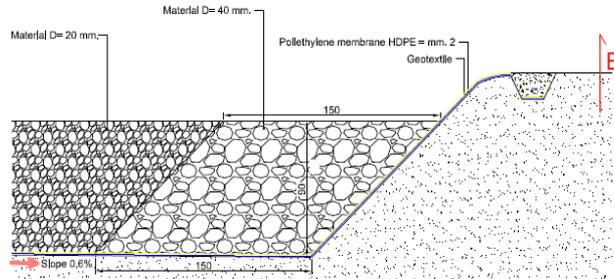
Cyperus papyrus – papyrus
is one of the most
representative plants for
the history and culture of
the Egyptian Country

Nubariya – CW Design

INLET ZONE



OUTLET ZONE



Conclusion

- The main conclusion of stakeholders meetings consisted in “Emphasizing the value of the Water Quality” in Korba in IMPROWARE and remarking the “lack of trust” between:
 - ✓ The actors working on the quality of wastewater
 - ✓ End-users, the Public and the Administration
 - ✓ Public institutions
- The project will then set out technical, institutional, and regulatory solutions that build trust and promote the use of Wastewater and the rational use of water resources, with the involvement of population.
- During the Steering Committee (October) ONAS expressed strong interest in doing of Korba a Best Practice site, addressing the issue.

Participation, le renforcement des capacités, la diffusion

OBJECTIFS

- 1. Renforcer les capacités participatives et les stratégies de communication avec les personnes cibles présentes, afin d'améliorer les capacités existantes pour le processus des décisions en vue
- 2. Encourager le dialogue multilatéral, pour identifier les besoins et engager les parties prenantes avec attention les aspects de planification
- 3. Développer une stratégie de communication participative qui répond aux besoins des parties prenantes, y compris les relations agricoles et les services de vulgarisation pour le développement de l'agriculture en Tunisie
- 4. Établir un lien entre les stratégies à court terme et les stratégies à long terme pour garantir la pérennité de l'attention des décideurs politiques et des parties prenantes dans les pays participants en vue d'obtenir l'assistance technique pour établir les conditions de réussite d'ici

TACHES

- 1. Identification et analyse des parties prenantes
- 2. L'ordre en œuvre de processus participatif
- 3. Campagne multimédia
- 4. Stratégie de communication
- 5. Diffusion au sein des EOP de la région méditerranéenne

RESPONSABILITES

- 1. Rapport d'analyse des intervenants
- 2. processus participatif
- 3. Cours d'accompagnement en ligne
- 4. Conférence finale
- 5. Méthode et directives techniques





The different points of view of the Focus Groups are represented by the placards, filled out by the participants, and collectively grouped after the discussion between the stakeholders .

structures
n

CULTURE

Qualité "EAU"

SANTÉ Sanitaire

La Rech et Dev est développée de le Domaine au EUT

ENTATION
NIVEAU
?

positive points

CAPACITY Development

suggestion

Protection de la ressource en eau contre l'invasion marine

Le cadre Réglementaire de l'utilisation de EUT est élaboré et promu de la région méditerranéenne

①+②+③
↓
LES IMPACTS SANITAIRES

MO-
2
04

Capacity development

professionnelle
ation / dans
ation
la gestion

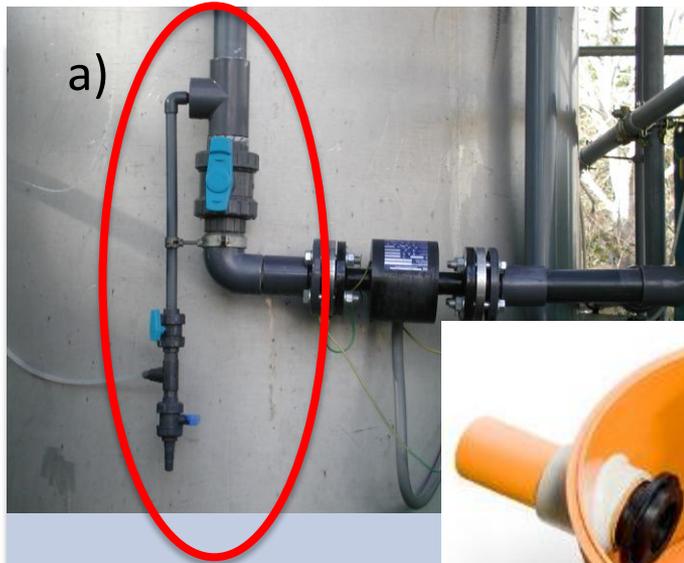
Water Quality

Suggestions : E

des eaux usées

de suivi E

Significant Outcome of the Adaptative Strategy



However it was decided that between the Korba WWTP and the recharge system will set-up a sampling point in the pipe which transports water from the WWTP to the recharge system. The sampling point will be used for monitoring activities (e.g. with automatic sampler for monitoring physical chemical parameters and a sampling point suitable for monitoring microbiological quality). The monitoring point will be managed by a third part will be identified accordingly between ONAS and DGRE (e.g. a local NGO or an third authority).

The sampling point will be realized through a tap if directly applied on the pipe (see image a for example) or a small tank (see image b for example).

Regarding Egypt – Problemes - Answers

The Way Ahead

WP5 – Egypt

- High Level Working Group with all the stakeholders (EEAA, WWHC, RIGW, MOFA, M. of Cooperation, Local Authorities of Nubariya)
- Project Office in Cairo, now skilled with European Rules. A number of people at 0 costs on behalf the EEAA.

Interim Report (end of January) to decide on the Extension to be required (not more than 6 months), until February 2015.

Main Challenges and Problememes (& Solutions)

- **Kick Off Meeting only in February 2013**
- **FAO left the project mainly for the incompatibility of the UN rules with the one of EC (Addendum N. 1)**
- **Change of site from Sinai-Al Arish (50 Km from Gaza) to Nubariya**
- **Constraint to do physical reinjection of the water on behalf of the Egyptian Security (replaced by software and modelling simulation of it): (Addendum N. 2)**
- **Central Authorities: only thanks to the Central State Authroties (inlcuding IMELS) we could realize some activities**
- **Difficult Involvement of the Stakeholders in Egypt**
- **Capacity Building with all the partners, administrative and in terms of contents (Aarhus University will provide capacity buidling on the Hydrogeologic Survey)**
- **Open Up of the Aarhus (Convention) to non-UN-ECE countries**

Replication

- It seems soon of speaking of replication, but there has been such a big investment – particularly from the IMELS – to state that we have prepared the future with strong Capacity Building schemes: European project preparation and Sustainable Water Management.
- ONAS has more than 100 WWT plants in all Tunisia. The capacity to provide a Best Practice with IMPROWARE must be taken into consideration.
- On Nile Delta, the desalinization is such an effort that must be continued utilizing any drop of water (Treated Water, Constructed Wetland can contribute if the experiences are multiplied and well supported, even in a PPP perspective)
- In Egypt started a project idea to optimize the effort done so far in capacity building to EEAA on project management in European projects
- As Some Twinning projects are ongoing between IMELS and Egyptian authorities, a new Twinning on the Regulatory Framework of Sustainable Water Integrated Management will be proposed to the EEAA, Ministry of Water, and other key institutions.
- The Research Institute of Ground Water (RIGW) is a target group that will provide technical assistance to our investigations. We have started to discuss with them on possible extensions to areas not fully covered by data, and – especially if there will be no constraints with the Egyptian Security to implement ReInjection so far constrained in the area.

<http://www.improware.eu>

+39 06 57228183

Call for Contributions for a Symposium
(June or September 2014)

THANK YOU FOR YOUR ATTENTION

Sustainable Water Integrated Management (SWIM) - Support Mechanism



Project funded by
the European Union

Water is too precious to waste

IMPROWARE

PROJECT



For more information, please visit:

www.improware.eu

Or contact:

IMELS – DG Sustainable Development, Climate and Energy
via Cristoforo Colombo 44, 00147 Roma
T: +39 06/57228183 - info@improware.eu