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Sustainable Water Integrated Management (SWIM)
Demonstration Project

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WADIS-MAR



Water harvesting and Agricultural techniques in Dry lands:
an Integrated and Sustainable model in MAghreb Regions

State of the Art

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Implemented by



Project website: www.wadismar.eu

WADIS-MAR project – short reminder

- General objective
 - to improve living standards of the rural population
 - To combat water scarcity/drought and overexploitation
 - to mitigate on-going desertification processes in the framework of climate change
- Specific objectives
 - to increase water availability through artificial aquifer recharge and evapotranspiration reduction
 - to enhance water quality by reducing pollution caused by unsustainable farm practices
 - to promote water efficient farming systems and the use of more stress-tolerant crops
 - To promote best agricultural practices
- Strategic Approach
 - To apply “soft” modern rehabilitation interventions and promote the use of modern techniques through a bottom-up approach
- Areas
 - Oued Biskra in Algeria and
 - Wadi Oum Zessar in Tunisia

WADIS-MAR project – short reminder

- Expected Results:
 - Realized a sustainable Integrated Water and Agricultural Management (IWAM) System
 - Improved agricultural practices and rational irrigation techniques
 - Improved capacity and awareness of local and national institutions
 - Implementation of the across-countries activities for knowledge/experiences exchange and improvement of best practices
- Target Groups
 - households, smallholder irrigation farmers, herdsman, users of wells
- Implementing Partnership
 - NRD - Desertification Research Group, University of Sassari, Italy (Leader)
 - UB - Universitat de Barcelona, Spain
 - OSS Observatoire du Sahara et du Sahel
 - IRA - Institut des Régions Arides, Tunisia
 - ANRH - Agence Nationale des Ressources Hydrauliques, Algeria

Preliminary achievements in each target country

- Activity 2 - IWAM System design
 - Sub activity A 2.1 - Existing data collection and geodatabase realization (Results)
 - i. Thematic maps georeferenced and collected data homogenized/ structured within project GeoDB
 - i. Stratigraphic (TN&DZ), geologic (TN&DZ), hydro-geologic (TN&DZ), climatic (TN&DZ), soil profiles and chemical analyses of soils (DZ) , admin. GIS data (TN&DZ), RS imagery
 - ii. Several thematic guidelines prepared and shared with all partners (disseminated soon, through the website)
 - Sub activity A 2.2 - Field data survey (Results)
 - i. Hydro-geological characterization of the intervention site in Algeria and in Tunisia done based on project available dataset
 - ii. Water samples collected in Tunisia and Algeria (several campaign conducted in 2012 and 2013)

Preliminary achievements in each target country

- Activity 2 - IWAM System design
 - Sub activity A 2.2 - Field data survey (Results)
 - i. Chemical and isotopic analysis
 - ii. “Guidelines for groundwater sampling” explaining field based procedures and techniques shared among all partners to be used for upcoming field surveys;
 - iii. Tender launched both in DZ & TN →technical lack in terms of measurements instruments defined and list of equipment to be purchased through tendering finalised.
 - iv. Hydro- geological 3D-model implemented in Algeria at preliminary state in Tunisia
 - Sub activity A 2.3 - Public Participatory GIS PPGIS (Results)
 - i. PPGIS working plan set and implementation began in TN
 - ii. Meetings with stakeholders done, results analysed and report produced
 - iii. 3 action plan matrix (one for each sub-catchment)

Preliminary achievements in each target country

- Activity 2 - IWAM System design
 - Sub activity A2.4 – IWAM Final design
 - i. Areas of artificial aquifer recharge intervention selected
 - ii. Demo fields, farmers and practices (mainly irrigation) identified
 - iii. Preliminary plan built, actual costs estimated both in TN & DZ
- Activity 3 IWAM System construction (Results)
 - This activity is started with strong delays
 - Implementation of agronomic interventions for water harvesting techniques, soil erosion control, cropping diversification and water saving strategies started in selected four sites in Tunisia
- Activity 4 Performance assessment and maintenance phase (Results)
 - This activity is not yet started
- Activity 5 - Awareness raising and capacity building (Results)
 - Sub activity 5.1 Capacity building
 - i. “Regional Training Workshop on Database and Modelling” organized

Preliminary achievements in each target country

- **Activity 5 - Awareness raising and capacity building**
 - Sub activity A 5.2 Interchange experience and South-South transfer results.
 - Started (even though at early stage): a research of IRA is planned to go to Algeria to set out a common collaboration platform
 - Several national/governmental institutions were contacted and involved within project activities (i.e. CRDA in TN, ITDAS in DZ, ARPAS in Italy)
- **Activity 6 – Dissemination**
 - Participated to several national and international events
 - WADIS-MAR leaflets, document folders and pens prepared
 - Undergraduate/graduate thesis, PhD research programs activated in Italy, Spain and TN
 - Synergy/Interaction with other relevant international projects focusing in water governance issues (i.e. CADWAGO)

Major challenges and problems encountered

- Challenges (related to EU water governance dilemmas)
 - Increasing groundwater resources availability and to improve the quality through technical intervention
 - WADIS-MAR → artificial aquifer recharge efficiency
 - WADIS-MAR → Water use efficiency (agric. sector)
 - Mitigating an unequal distribution of water in space\time
 - WADIS-MAR → decreasing conflicts, involvement of stakeholder in technical decision making (bottom up approach)
 - Gender: to ease woman engagement in WR management
 - Adopting technical/technological adaptation measures to face the increasing water scarcity both in the surface or sub-surface spatial domain
 - Rehabilitation of traditional WHT (i.e. wells, jessours and tabias)
 - Promotion of traditional cultures with an important economic values and support of crop diversification
 - soils quality (mainly salinization) → adopting conservative agricultural practices
 - Empowering and facilitating dialog among different stakeholder involved in the water resources governance
 - Transferring scientific knowledge

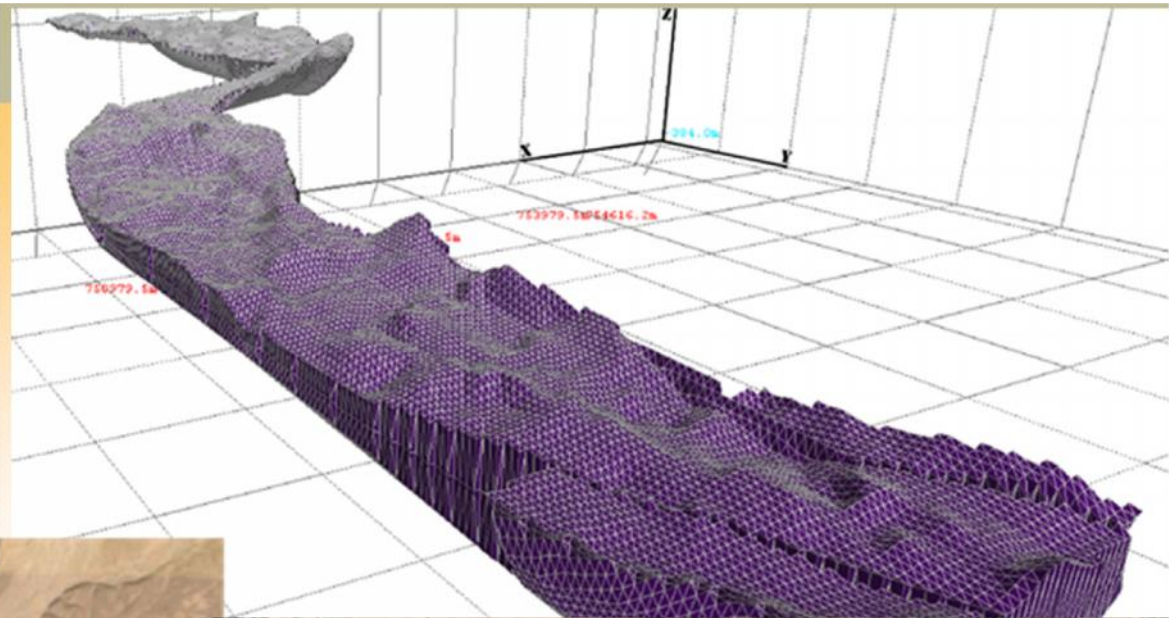
Major challenges and problems encountered

- Problems
 - Internal i.e.
 - Inception phase too long (almost a year)
 - Difficulty of partner's administration to manage the allocated budget (mission travel, tender management, works realization) (impact: almost 1 year of delay; status: not yet solved)
 - Non eligibility of TVA (impact: almost 1 year of delay; status: not yet solved)
 - The administrative/technical capacity of project partners lacks
 - technical planning has been made through the applicant's internal technical and scientific capacity
 - Partner's administrative procedures should always be verified carefully
 - Applicant's administration have cumbersome internal regulations
 - External i.e.
 - Political transition (i.e. in Tunisia)
 - VISA issuing (i.e. in Algeria: short term visas to be reissued every 3 months)
 - Logistics in Algeria: field activities carried out with armed escort
 - EU-related
 - . difficulty to comply EU rules/procedures for tender procurements
 - 6 unsuccessful tenders (in Tunisia), not possible to be applied in Algeria.
 - Partners do not have direct commitment with the EC → they are not directly empowered
 - EC regulations appear very “far” and cumbersome
 - Impact: difficulty in management of budget

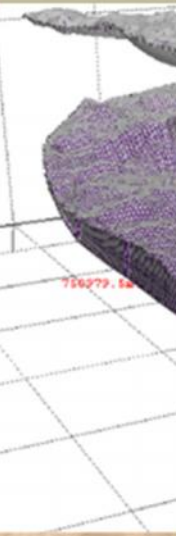
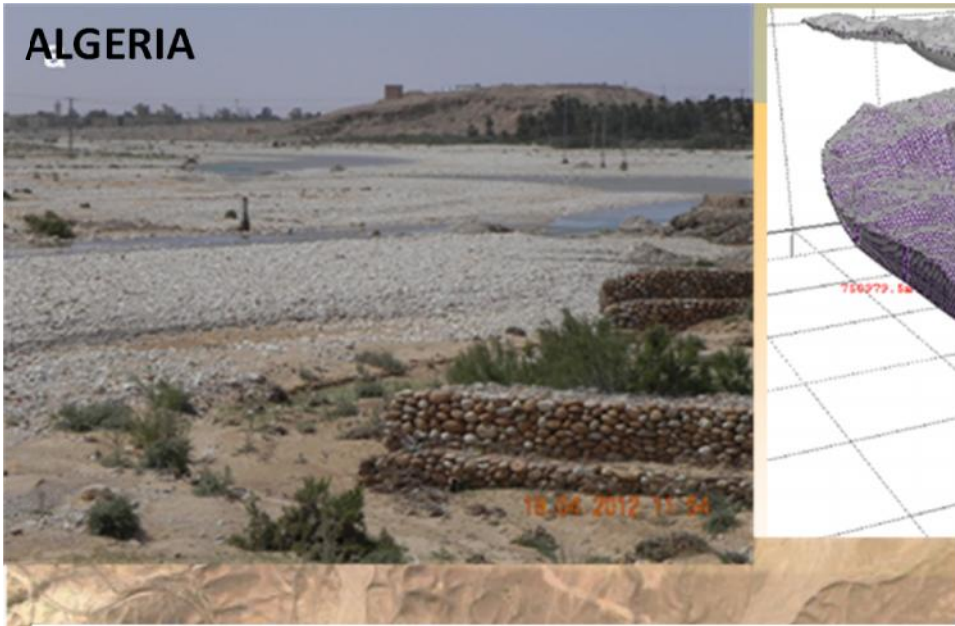
Replication potential of the project

- WM contribution is mainly technical
 - WHT in other sites are already replicated (TN→DZ) and elsewhere replicable
- WM approach creates capacities
 - mainly at early stage of the process (..... and later on to be applied!)
- WM acts within national legal framework/policy/strategy
 - In TN proposed interventions are CES compliant (n° 95-70 du 17 juillet 1995)
- WM's contribute to water policy debate:
 - highlights the role of monitoring phase which is not actually emphasized at national level (both in TN and DZ)
 - Water quality: WM has specific dedicated activities
 - WM is enabling institutional connections among gov. institutions that area ctully not collaborating (i.e. in DZ)
- WM is supporting, through the farmers, sustainable and successful irrigation management practices
 - → extensions of the experience at local level
 - Low cost and providing affordable products
 - i.e. rehabilitation of existing wells to be used for alternative activities than agriculture (Tunisia)
 - WM is actually setting up its activity of south-south experience sharing
- Proposed solutions are technically and economically sustainable

ALGERIA



ALGERIA



Algérie - Système de recharge Proposition II - section A-A'

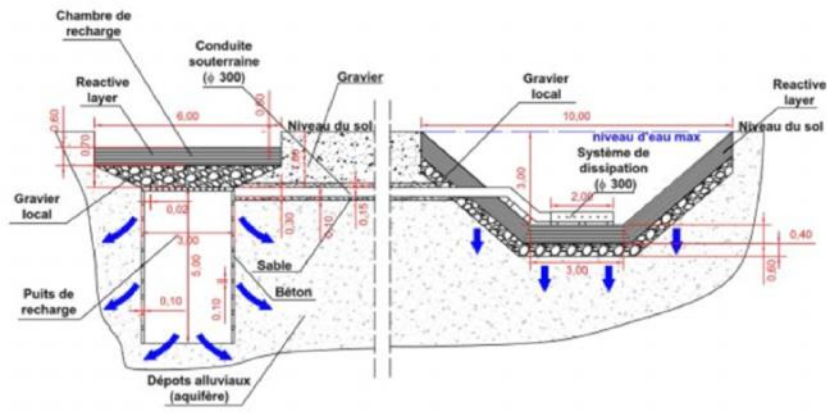
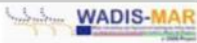


Figure 6

Algérie - Système de recharge Proposition II - plan général

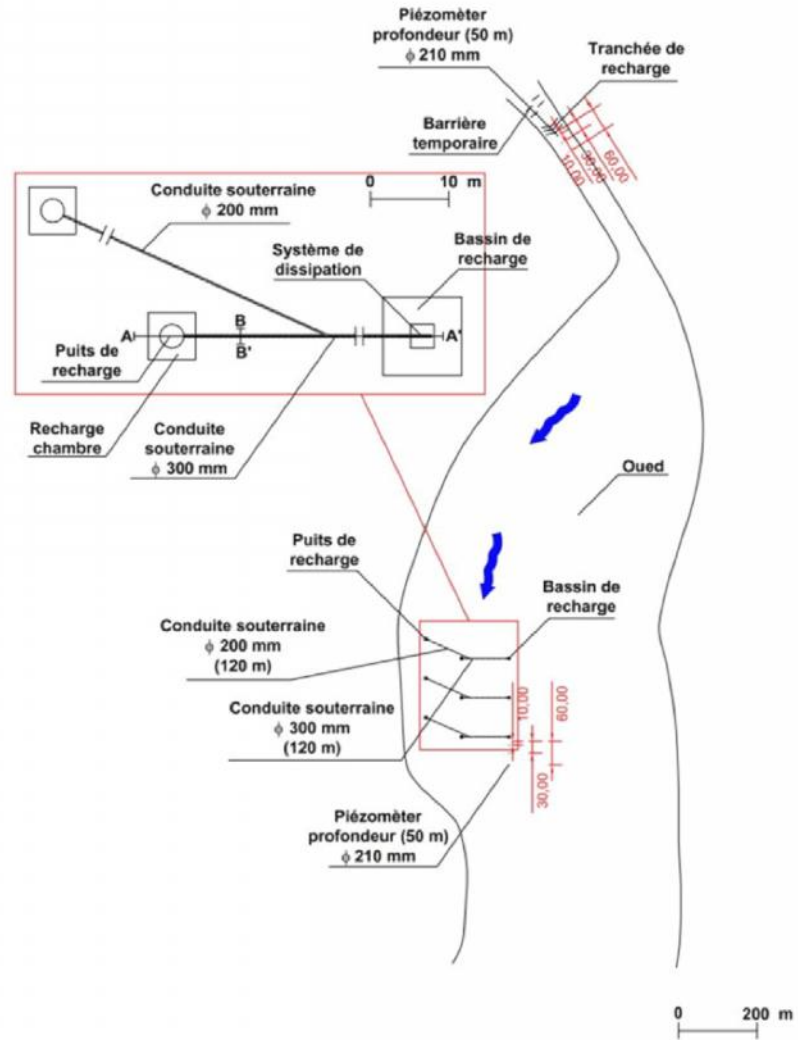


Figure 4



TUNISIA



Site 1 Bedoui



Site 2 Megarine

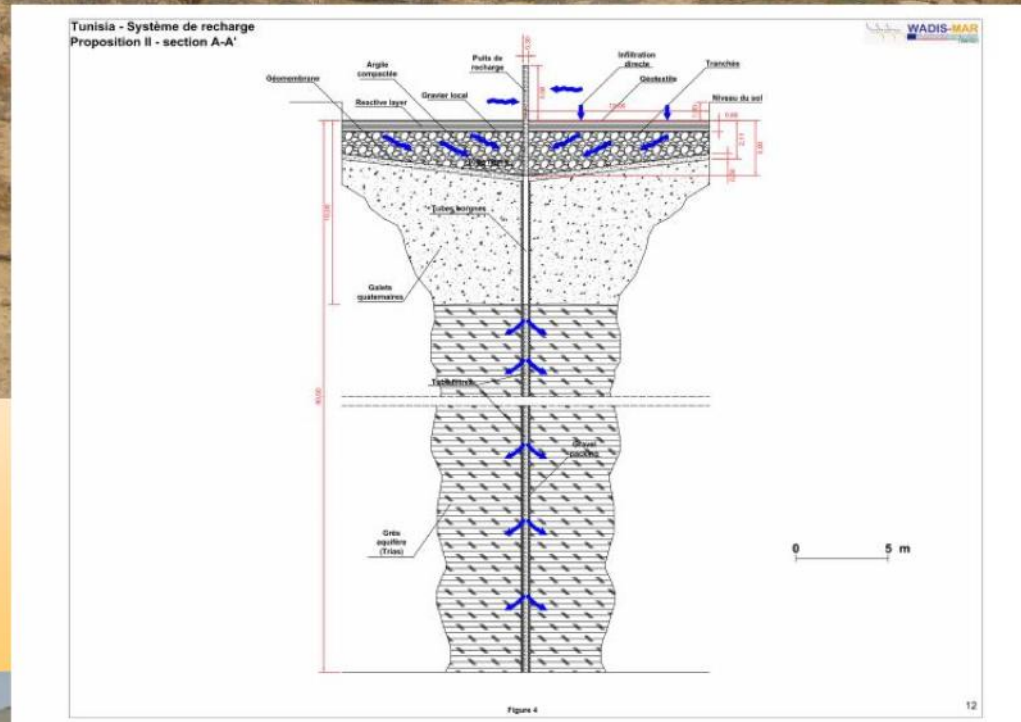
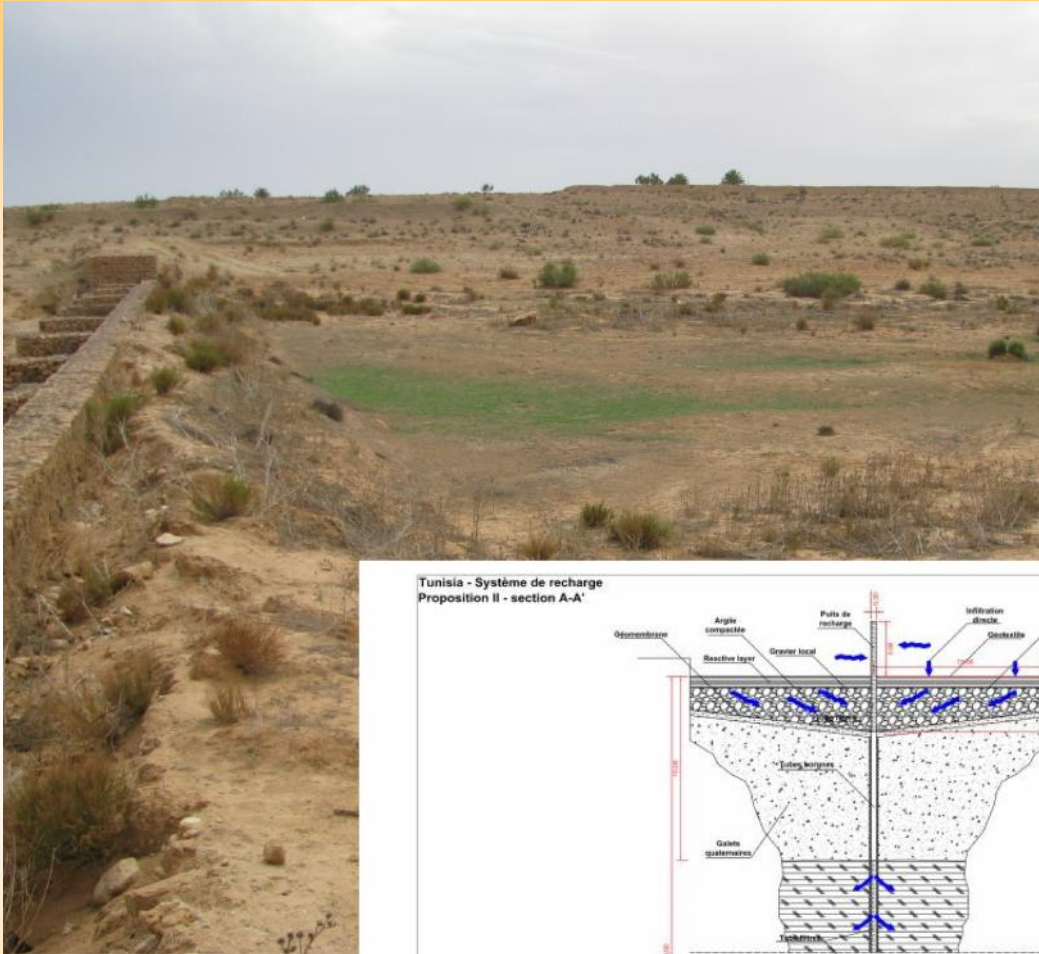


Site 3 Chaabt El Enze



Site 4 Ksar Hallouf

Some pictures



TUNISIA



UNISS



UNIVERSITAT DE BARCELONA



Observatoire du Sahara et du Sahel



IRA



ANRH

Thank you for your attention

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