DEVELOPMENT OF TOOLS AND GUIDELINES FOR THE PROMOTION OF SUSTAINABLE URBAN WASTEWATER TREATMENT AND REUSE IN AGRICULTURAL PRODUCTION IN THE MEDITERRANEAN COUNTRIES

MEDAWARE

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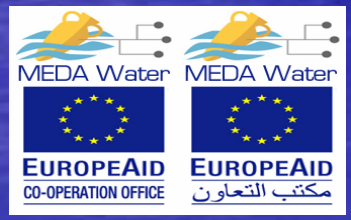


Introduction

- The Project is funded by the Euro-Mediterranean Regional Programme for Local Water Management – MEDA WATER – under the MEDA Programme, being the principal financial instrument of the European Union for the implementation of the Euro-Mediterranean Partnership

EU Partners

- Greece
  1- National Technical University of Athens, (NTUA)
  2- Prospect Systems, Civil Non Profit Corporation
- Spain
  CARTIF, Centro de Automatimazion, , Robotica y Techologias de la Informacion y de la Fabricacion

MED Partners

- Cyprus — Agriculture Research Institute
- Jordan — University of Sciences and Technology
- Lebanon — American University of Beirut
- Morocco — Chouaib Doukkali University
- Palestine — Ministry of Environmental Affairs
- Turkey — 1-Middle East Technical University
  2-Istanbul Technical University

Objective

Identification of

- Existing situation in participating countries in regards to water and wastewater management policy
- Existing situation related to operation of urban wastewater plants and effluent disposal methods and practices applied
- Potential negative impacts from non sustainable operation of wastewater treatment and disposal methods with emphasis on reuse practices in agriculture

Objective

Development of

Specifications for urban wastewater treatment technologies and for wastewater agricultural reuse methods

Appropriate tools, guidelines and a database for the effective control and monitoring of the operation of the wastewater treatment plants

A multi-criteria analysis software to guide responsible authorities to efficient solutions for sustainable operation of treatment systems, and health and safety of agricultural reuse schemes

Objective

Other Activities

Organization of a series of training workshops, conferences, pilot studies, etc., aiming at capacity building, information and know-how transfer and raise of awareness

Establishment of a network between the authorities of the Med. Countries for the exchange of information and intra regional transfer of experience

Description of Activities

- Duration: 42 months
- Starting: May 2003 - Ending: October 2006
- 7 Tasks
- Plus one task for coordination/management

Coordination Task

- Greece is the project coordinator
- Main Duties:
  - To ascertain the overall progress of the work
  - To establish a continuous and effective communication channel between the participants
  - To communicate with the Commission
  - To consolidate the obtained results
  - To manage the dissemination activities
  - To contact third parties in order to participate in the dissemination activities

Deliverables of Project Coordination

- Project Website http://147.102.83.100/projects/meda/meda.htm
- Progress reports every six months
- Interim reports
- Final report (including all required deliverables and financial documents)

Task 1

- Determination of the Countries Profile (M 1-6)
  - Climate, Population, Water Use and Agriculture (M 1-4)
  - Water Policy and Institutional Framework (M 1-6)

Deliverables of Task 1

- **Completed** and available on project website:
  - An indicator-based report containing information related to population density, economic growth, water potential and consumption, agriculture etc, to illustrate the existing situation in the participating countries
  - A concise report containing:
    - analysis of the water planning and wastewater management policies, socio-economic instruments and legislation applied in the participating countries
    - presentation of all actors involved
    - presentation of the available funding programs for the Mediterranean countries

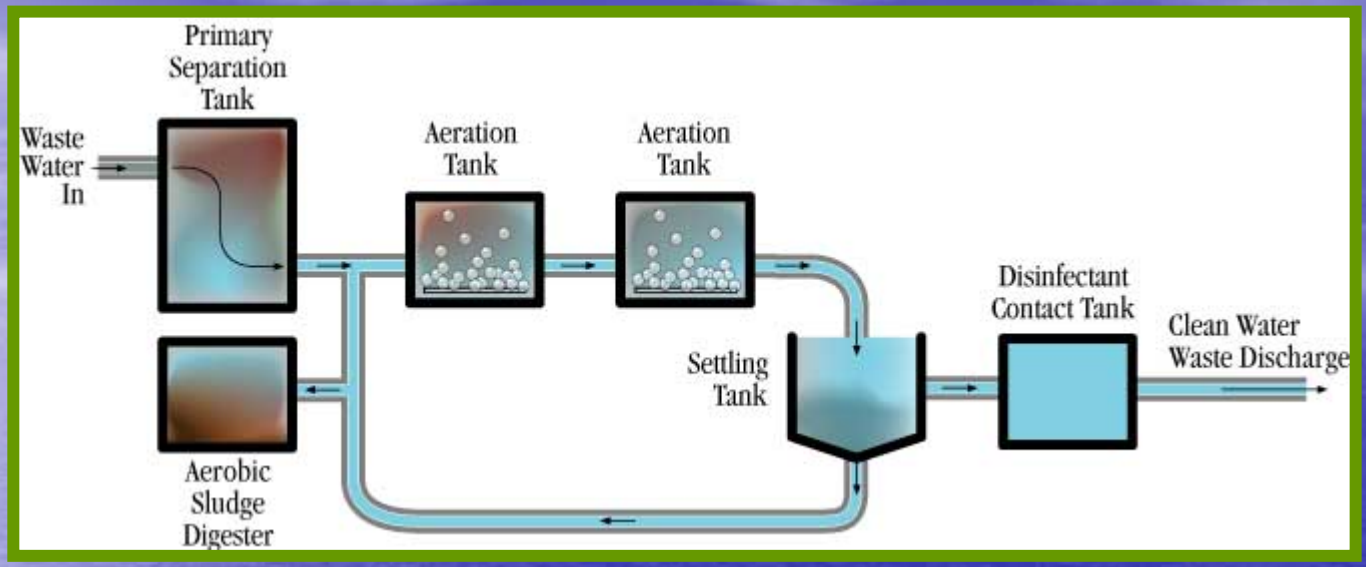
Task 2

- Evaluation of the Existing Situation Related to the Operation of Urban Wastewater Treatment Plants and the Effluent Disposal Practices with Emphasis on the Reuse in Agricultural Production (M 5-10)

  - **Number and location of plants**
  - **Population served**
  - **Technology applied**
  - **Effluent quantity and quality**
  - **Final disposal**
  - **Wastewater reuse in agriculture**
  - **Impacts on environment and public health**

Deliverables of Task 2

- **Completed** and available on project website:
  - A report containing an overview and assessment of the information collected on topics related to task 2 in order to get a clear view of the actual needs and prevailing problems in each country.


Primary
Separation
Tank
Waste
Water
In
Aeration
Tank
Aeration
Tank
Disinfectant
Contact Tank
Clean Water
Waste Discharge
Settling
Tank
Aerobic
Sludge
Digester

Alfalfa crops in Beit Lahaya area

Orchard trees irrigated
with reclaimed wastewater

Task 3

- Analysis of Best Practices and Success Stories in wastewater treatment and reuse (M 7-11)
  - The criterion used for selecting “best practices” was the contribution of the system to the overall increase in wastewater reuse in the country
  - Data was acquired through literature review, Internet search, review of relevant projects, communication with experts and operators of relevant systems

Deliverables of Task 3

- A report on best practices is **completed** and available on the project website
- Other outputs:
  - Acquisition and dissemination of knowledge of effective practices in urban wastewater treatment and wastewater reuse
  - Motivation of all operators involved in water planning to implement such systems

- **Cyprus**

Larnaca Wastewater Treatment Plant

Sand Filter

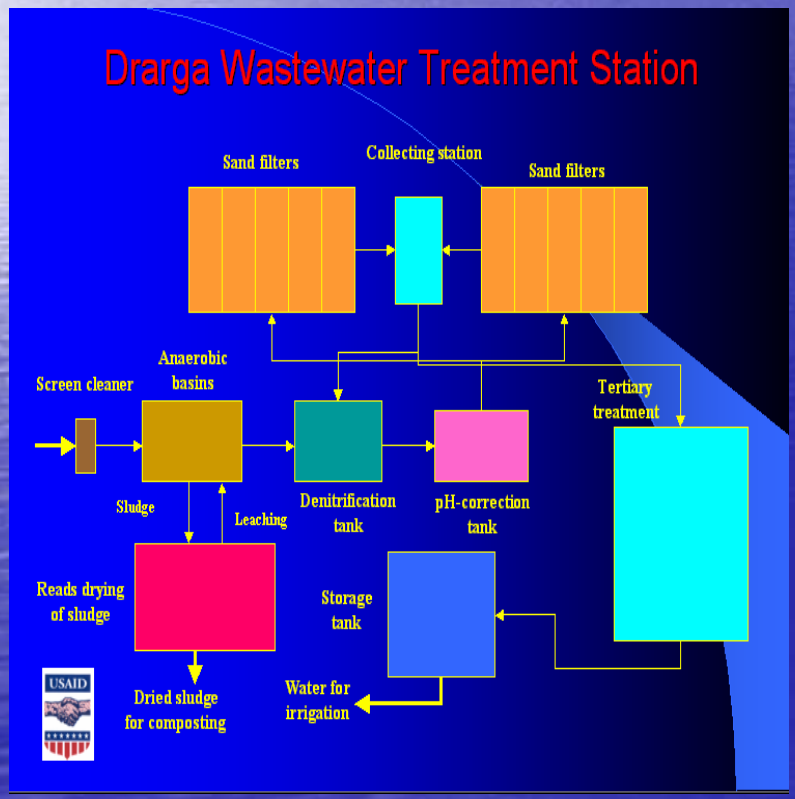
Irrigation Pumping Station

Filter Press

Sludge Drying Beds

Morocco

- Ben Slimane reuse system (South of Rabat, Morocco)
- Ville de Drargua Wastewater Treatment Plans (Morocco)



Palestine

Wastewater reuse in Al-Bireh (Palestine)
Beit Lahaya area

Task 4

- Development of Specifications for Innovative Urban Wastewater Treatment Technologies and Systems (M 11-21)
  - Review of the urban wastewater treatment technologies/systems, and technical standards (Months 11-15)
  - Development of technical specifications for urban wastewater treatment technologies and systems (Months 15-20)
  - Training on the urban wastewater treatment technologies and systems (Months 20-21)

Deliverables of Task 4

- Specifications and information sheets for the urban wastewater treatment technologies and systems that can be adapted in Mediterranean countries **Completed**
- The training activities will equip the actors involved with the necessary knowledge for the promotion of appropriate systems in their territories **Currently being implemented, back to back with activity 5.3**
- These specifications will be uploaded at the project information website and presented in forum discussions **Completed**

Task 5

- Development of Specifications for urban wastewater utilization (M 21-26)
  - Review of the urban wastewater reuse systems focusing on the reuse in agricultural production (Months 21-22)
  - Development of specifications for the urban utilization focusing on the reuse in agricultural production (Months 22-25)
  - Training on the urban wastewater reuse technologies and systems (Months 25-26)

Deliverables of Task 5

- Specifications for the sustainable reuse of urban wastewater in the agricultural production **On-Going**
- The training activities will equip the actors involved with the necessary knowledge for the promotion of sustainable reuse of wastewater in agriculture and the promotion of the utilization of non conventional water resources **Currently being implemented, back to back with activity 4.3**

Task 6

- Development of a methodology and a database for the control and monitoring of the urban wastewater treatment plants (M 26-30)
  - Subtask 6.1: Development of a methodology for the dynamic control and monitoring of the wastewater treatment plants ((Months 26-28)
  - Subtask 6.2: Development of guidelines for sampling/analyses/equipment (Months 26-28)
  - Subtask 6.3: Development of a software database for the control and monitoring of wastewater treatment plants (Months 26-30)

Deliverables of Task 6

- A methodology for the dynamic control and monitoring of the wastewater treatment plants
- Guidelines for sampling/analyses/equipment
- Operators and competent authorities will possess various tools for the effective management, control and monitoring of the treatment units and also tools to facilitate them in their reporting obligations

Task 7

- Development of a multi-criteria / guiding support software tool for the assessment and valuation of safe wastewater agricultural reuse (M 31-42) – The development of the tool will be based on information collected in Tasks 1, 4, 5 and 6

Task 7 (cont'd)

- Development of the specifications of the tool including:
  - the structure of the input and output data
  - the structure of the databases
  - the criteria that will be taken into account in order to rank the wastewater treatment technologies and the performance of a plant (Months 31-33)

Task 7 (cont'd)

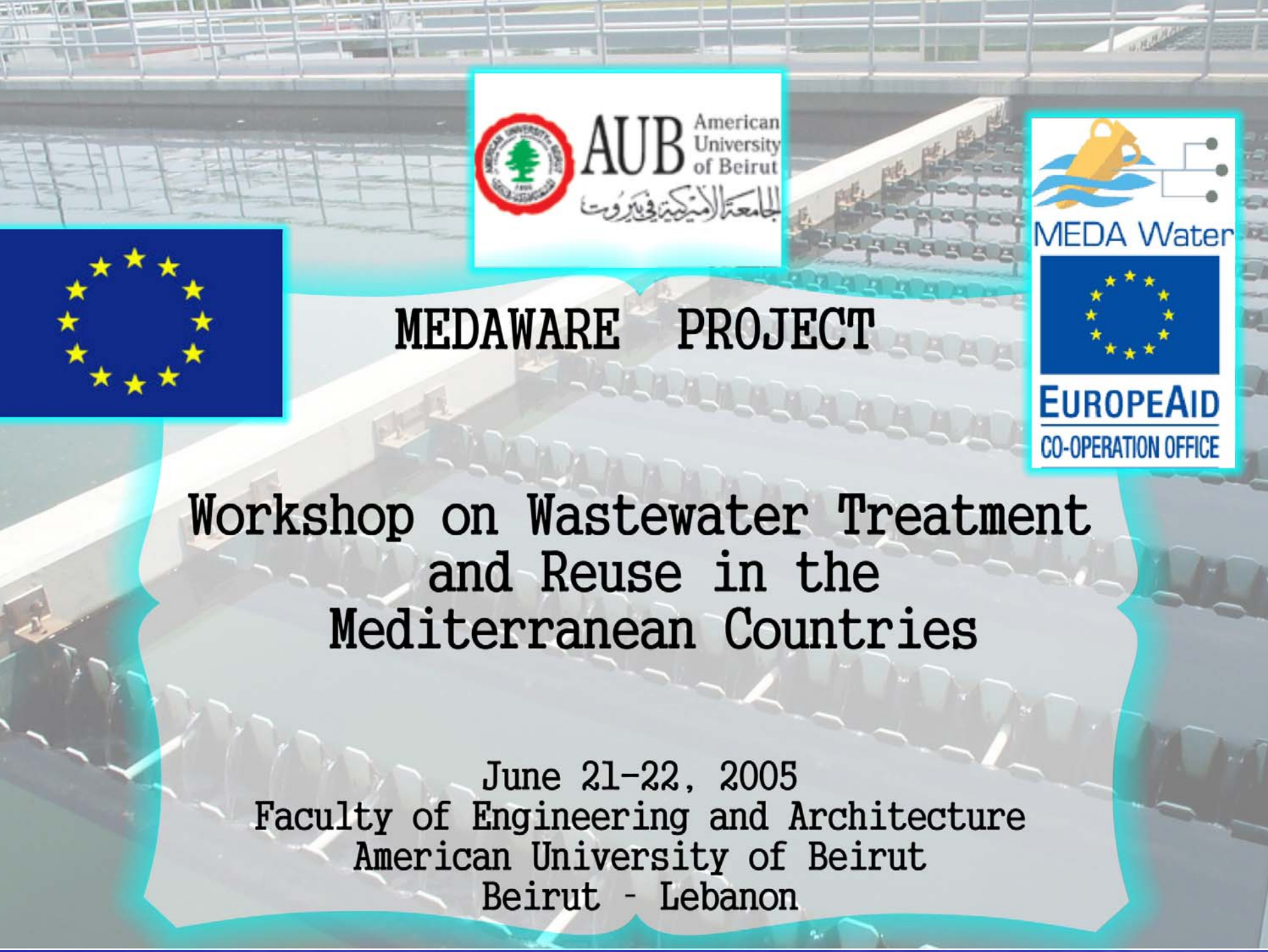
- Development, during Months 33-36, of:
  - appropriate databases containing data on wastewater treatment technologies, standards and limits for safe use of the final effluent, wastewater reuse technologies, etc.
  - the software tool
- Testing and validation of the software among the partners aiming at its improvement (Months 37-39)
- Training on the use of the tool during pilot studies in each country (Months 39-42)

Deliverables of Task 7

- The English final version of the software tool
- A practical manual for the easy use of the software tool

Dissemination Activities

- Website describing the project and its outcomes
- An advisory group was formed in order to involve local policy makers (involves actors in all participating countries)
- Two International conferences
- Publications in national and international journals
- Training workshops
- Printed material describing the project and its results
- Personal meetings of the working groups with those interested in being informed on the project



MEDAWARE PROJECT

Workshop on Wastewater Treatment and Reuse in the Mediterranean Countries

June 21-22, 2005
Faculty of Engineering and Architecture
American University of Beirut
Beirut - Lebanon

Thank You for Your Attention