

# *MediWat project*

Sustainable management of environmental  
issues related to water stress in  
Mediterranean islands

start: 1<sup>st</sup> June 2010 – end: 31 May 2013

**Kick off meeting**  
**23-24 September 2010**  
**Palermo - Italy**

# Presentation style

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**K**keep

**I**t

**S**imple

**S**tupid !

# Project's rationale

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- In Med islands, more than in continental areas, water resources are chronically featured by progressive **availability shortening** and **quality worsening**. In addition, recent **climate change** and **global warming** phenomena are further contributing to aggravate the stress afflicting such resources.
- To manage such a situation, adequate policies must be adopted and implemented starting from planning effective strategies based on **integrated solutions** and/or **tools**, technical as well as managerial, that must be locally **sustainable**.
- **MEDIWAT** basically aims at providing Med islands's decision makers with the updated know-how necessary to define their strategies for managing local water resources under stress conditions.

# Main objectives

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- identifying and/or developing **integrated, innovative and sustainable solutions** (technical, operational and administrative) for managing those problems afflicting Med islands due to quantitative shortening and qualitative worsening of local water resources;
- planning the implementing the proposed solutions through the elaboration of **strategic master plans**;
- setting up a continuously updatable **web-based “advisory platform”** for supporting Med islands key-actors when planning water resources management.

# Partnership

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Category	Acronym	Role
Public Authorities	RDWW MRA WBL	will manage the WEB platform and will tailor strategies and policies on the basis of territorial needs
Research/Academic Institutions	UNICT IRSA TUC UB CEMAGREF	will have the responsibility of planning and managing the pilot projects
Water Companies	DEYAX AQUAGEST (WBL)	will provide their technical support on the actual applicability of the proposed solutions and will contribute to the implementation of pilot projects

# Partnership

<b>Partner Name</b>	<b>Acronym (Nationality)</b>
Sicilian Region, Regional Department of Water and Waste, Water Observatory Service	RDWW (Italy)
University of Catania, Department of Agricultural Engineering	UNICT (Italy)
Water Research Institute of National Research Council, Department of Bari	IRSA (Italy)
Malta Resources Authority	MRA (Malta)
Water Board of Lemesos	WBL (Cyprus)
Technical University of Crete	TUC (Greece)
Municipal Enterprise for Water and Sewage of Chania	DEYAX (Greece)
University of Barcelona	UB (Spain)
CEMAGREF Aix en Provence	CEMAGREF (France)
AQUAGEST MEDIO AMBIENTE S.A. Delegation of Balearic Islands	AQUAGEST (Spain)

# Planned activities and related objectives (1/2)

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- Identifying problems, constraints, needs and priorities related to water resources management in Med islands for carrying out specific SWOT analysis;
- Assessing the current State of Art of available solutions for managing water quantity shortening and water quality worsening problems in insular contexts;
- Carrying out pilot projects for evaluating specific tools for mitigating water quantity and quality stress as well as managing water demand, namely:
  - 1) treating and reusing wastewater, desalting brackish water in small insular towns and/or residential and tourist areas;
  - 2) optimising aquifers yield in coastal areas affected by sea-water intrusion for safeguarding groundwater quality;
  - 3) optimising water consumptions at small-basin level;
  - 4) saving water in agriculture and in domestic supply systems;
  - 5) using renewable energy for water distribution.

## Planned activities and related objectives (2/2)

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- Performing the assessment of the proposed solutions for evaluating their actual implementation and sustainability in specific local/regional territories;
- Implementing a database (web-based) of technical solutions and tools for managing environmental problems due to water resources stress in Med islands;
- Defining local or even inter-islands strategies aimed at implementing the identified solutions through the elaboration of strategic master plans for sustainable water resources management;
- Setting up a continuously updatable web-based platform (basically an inter-islands network of knowledge, expertises and cooperation) as a tool for updating, when necessary, in force local master plans and with an advisory role for interested authorities;
- Disseminating intermediate and final results of the project through several initiatives and events in which local key-actors and stakeholders will be actively involved since from the beginning.



## Expected results

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- **identification of sustainable solutions** effective in Med insular areas for managing water quantity and quality problems (**intermediate result**);
- **elaboration of strategic master plans** for implementing the above solutions (**final result**);
- **implementation of a permanent WEB based “advisory platform”** aimed at supporting Med islands decision-makers when planning water resources management (**final result**);
- **continuous updating of the WEB platform** essential for elaborating, when required, local master plans and for supporting their adoption within local water management policies (**long-term result ensuring the continuity of the project after its lifespan**).
- **enhancement of the awareness of potential stakeholders**, ranging from local decision-makers to environmentalists and citizens associations, towards the problems matched by the project and their possible solutions.

*Working plan structure:  
Components and Phases (n)*

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- **Component 1:** *Communication (2)*
- **Component 2:** *Management and coordination (2)*
- **Component 3:** *Master plans (2)*
- **Component 4:** *Analysis and assessment (3)*
- **Component 5:** *Pilot projects (3)*

*Working plan structure:  
C1 - Phases*

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- **Component 1: *Communication***
  - **2 Phases:**
    - C.1.1 **Public level**
      - **Responsible: WBL**
      - start 01/06/2010
      - end 31/05/2013
    - C.1.2 **Technical Level**
      - **Responsible: IRSA**
      - start 01/06/2010
      - end 31/05/2013

*Working plan structure:  
C2 - Phases*

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- **Component 2: *Management and coordination***
  - **2 Phases:**
    - C.2.1 *Administrative management and coordination*
      - Responsible: RDWW
      - start 01/06/2010
      - end 31/05/2013
    - C.2.2 *Scientific coordination*
      - Responsible: IRSA
      - start 01/06/2010
      - end 31/05/2013

*Working plan structure:  
C3 - Phases*

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- **Component 3: *Master plans***
  - **2 Phases:**
    - C.3.1 **State of art in the participating islands**
      - **Responsible: MRA**
      - start 01/06/2010
      - end 31/03/2011
    - C.3.2 **Elaboration of Strategic master plans**
      - **Responsible: RDWW**
      - start 01/03/2012
      - end 28/02/2013

*Working plan structure:  
C4 - Phases*

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- **Component 4 : *Analysis and assessment***

- **3 Phases:**

- C.4.1 *Overview of available solutions*

- **Responsible: UB**

- start 01/10/2010

- end 30/11/2011

- C.4.2 *Local/regional assessment of solutions*

- **Responsible: DEYAX**

- start 01/07/2011 end 31/10/2012

- C.4.3 *Web-database and advisory platform implementation*

- **Responsible: UNICT**

- start 02/01/2012

- end 31/12/2012

*Working plan structure:  
C5 - Phases*

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- **Component 5: *Pilot projects***

- **3 Phases:**

- C.5.1 Pilot projects on quantity stress
  - **Responsible: CEMAGREF**
  - start 01/09/2010
  - end 31/08/2012
- C. 5.2 Pilot projects on quality stress
  - **Responsible: AQUAGEST**
  - start 01/09/2010
  - end 31/08/2012
- C. 5.3 Pilot projects on demand management
  - **Responsible: TUC**
  - start 01/09/2010
  - end 31/08/2012

# *Pilot projects*

Pilot Project		Location	Title
C 5.1	Pilot projects on Quantity stress	Crete, Corsica, Sicily	Application of different kinds of wastewater treatment and reuse systems for landscape and crop irrigation
		Malta	Optimisation of aquifers yield under conditions of sea water intrusion
		Sicily	Application of small desalination plant for potable water supply
C 5.2	Pilot projects on Quality stress	Balearic islands	Upgrading effluent of seasonal storage ponds to achieve wastewater quality standards
		Catalonia	upgrading quality of wastewater coming from point and non-point sources by means of decentralized natural treatment systems
		Apulia	Application of wastewater treatment by innovative process for tourist areas
C 5.3	Pilot projects on Demand management	Eastern Sicily	Deficit irrigation techniques of horticultural crops
		Western Sicily	Evaluating drought vulnerability and selecting innovative best practice for managing water scarcity
		Corsica	Optimization of water resources management at small basin level
		Crete	Use of renewable energy for transfer and distribution of water
		Cyprus	Water saving innovative techniques by demand management

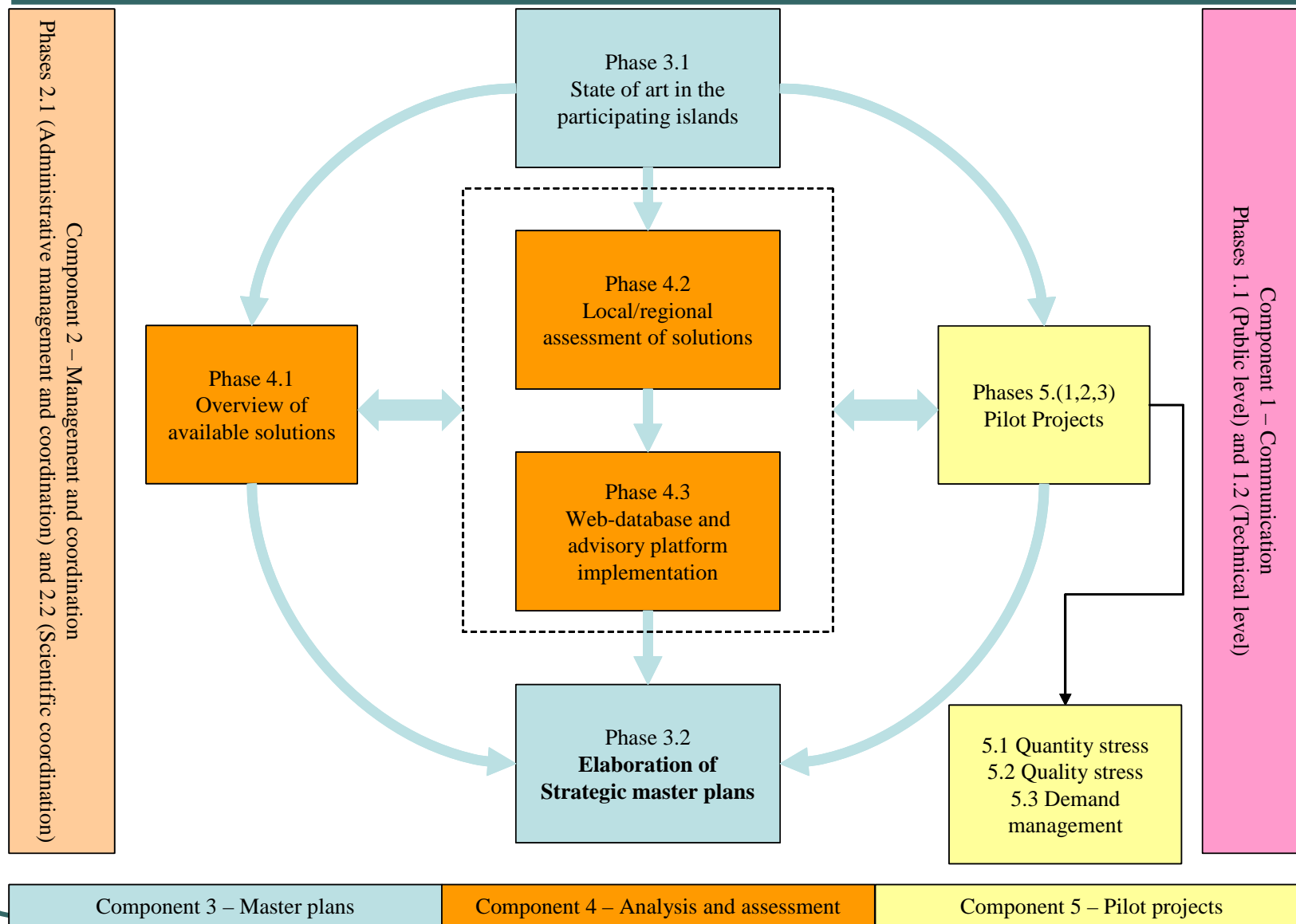


# Partners participation to Components and Phases

Component	Phase	Name*	Partner										
			RDWW	UNICT	IRSA	MRA	WBL	TUC	DEYAX	UB	CEMAGRE F	AQUAGES T	
C1	Communication	C 1.1	Public level (WBL)	X		X	X	X		X		X	X
		C 1.2	Technical level (IRSA)	X	X	X	X	X	X		X	X	X
C2	Management and coordination	C 2.1	Administrative management and coordination (RDWW)	X	X	X	X	X	X	X	X	X	X
		C 2.2	Scientific coordination (IRSA)	X	X	X	X	X	X	X	X	X	X
C3	Master Plans	C 3.1	State of art in the participating islands (MRA)	X	X	X	X	X	X	X	X	X	X
		C 3.2	Elaboration of Strategic Plans (RDWW)	X	X	X	X	X	X	X		X	X
C4	Analysis and assessment	C 4.1	Overview of available solutions (UB)	X	X	X	X	X	X		X	X	
		C 4.2	Local/regional assessment of solutions (DEYAX)	X	X	X	X	X	X	X	X	X	X
		C 4.3	Web-database and advisory platform implementation (UNICT)	X	X	X	X	X	X	X		X	X
C5	Pilot Projects	C 5.1	Pilot projects on Quantity stress (CEMAGREF)	X	X		X	X		X		X	
		C 5.2	Pilot projects on Quality stress (AQUAGEST)			X					X		X
		C 5.3	Pilot projects on Demand management (TUC)	X	X				X			X	

\* in brackets the phase responsible partner

# Working plan structure: Components and Phases interactions



# Component 1: Communication

Is dedicated to the communication within the project

## Phases 1.1: Public level

Responsible: **WBL**

start 01/06/2010 end 31/05/2013

### DELIVERABLES

- Public events organization and reporting
- Project folder
- Event Dissemination Publications
- Website
- Dissemination campaign (DVD)
- Final conference proceedings
- Kick-off and final conferences organization and reporting
- Guide for a translational communication campaign
- MEDIWAT brochure
- Database of involved stakeholders and key actors

## Phases 1.2: Technical Level

Responsible: **IRSA**

start 01/06/2010 end 31/05/2013

### DELIVERABLES

- Technical events
- Technical events reports
- Technical and scientific publications
- Web based advisory platform guide
- Intention agreement

# Component 2: Management and coordination

is dedicated to the centralized management

**Phases 2.1:** Administrative management and coordination

Responsible: **RDWW**

start 01/06/2010 end 31/05/2013

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- Start-up report (\*)
- Activity reports
- Financial reports
- Communication reports
- Minutes of official internal meetings
- Audit certificates

**Phases 2.2:** Scientific coordination

Responsible: **IRSA**

start 01/06/2010 end 31/05/2013

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- Planning pilot projects
- Scientific and Technical reports
- Minutes of technical and scientific meetings

(\*) Deliverable already done

## Component 3: Master plans

Insular water problems and priorities will be assessed, local reference frameworks will be analysed, transnational strategies will be developed and, in the final phase of the whole project, the operative products (strategic master plans) will be elaborated and drafted.

### Phases 3.1: State of art in the participating islands

Responsible: **MRA**

start 01/06/2010 end 01/06/2010

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- State of art of current water resources status in Med islands
- Water needs and priorities in Med islands
- SWOT analysis of local reference frameworks

### Phases 3.2: Elaboration of Strategic master plans

Responsible: **RDWW**

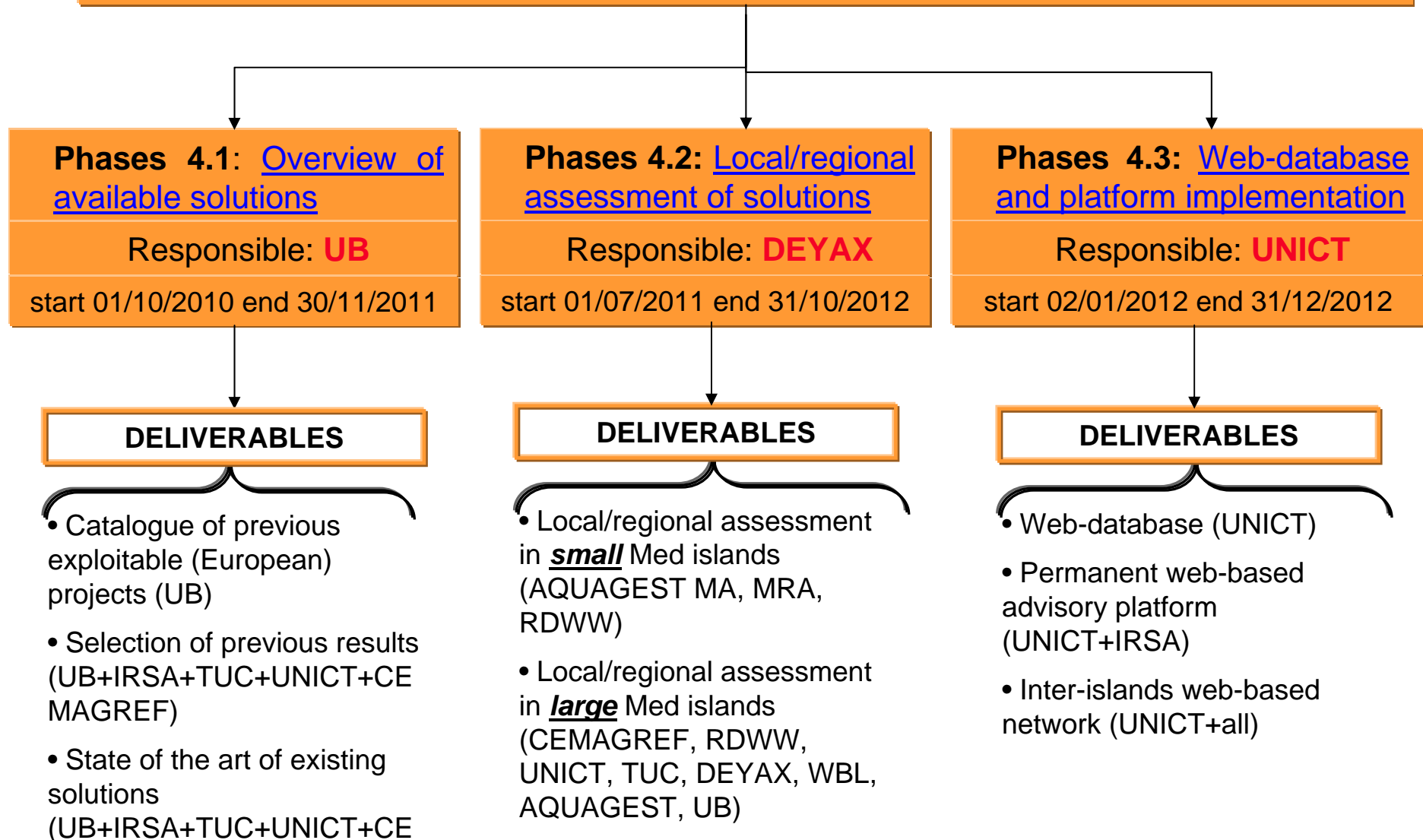
start 01/03/2012 end 28/02/2013

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- Strategic master plan for water management in ***small*** Med islands
- Strategic master plan for water management in ***large*** Med islands

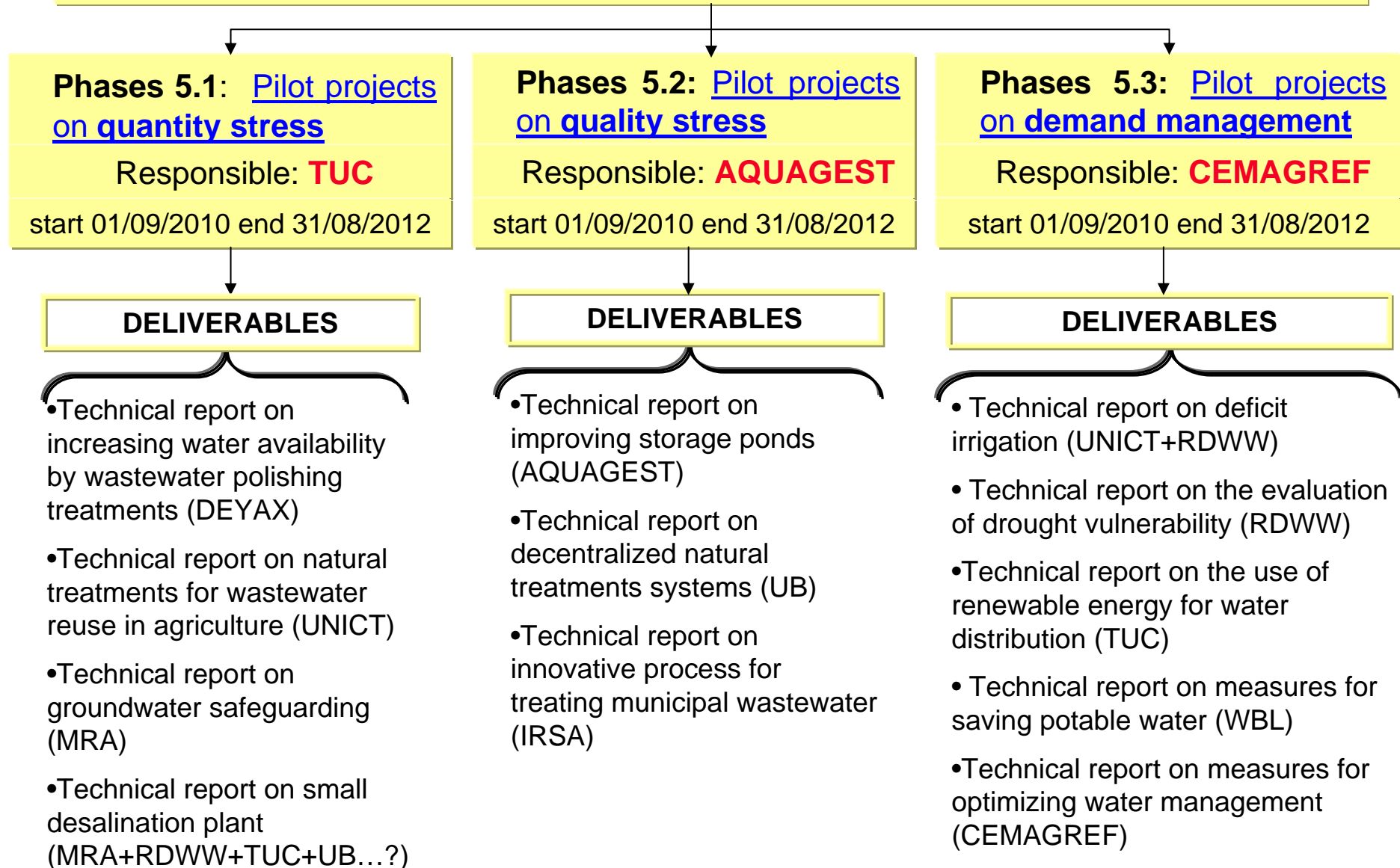
## Component 4: Analysis and assessment

the state of art of existing tools and results of previous projects will be assessed; implementable solutions (existing or achievable through the pilot projects) will be defined at local level; the web database and the advisory platform will be implemented



# Component 5: Pilot projects

is focused on the implementation of the planned pilot projects, tackling in detail different aspects of matched water problems and including designing, construction and execution



*After so many commitments, please  
don't get frustrated*

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**You have just to remember the first law of engineering**

***Where is a problem,  
there is a solution!***



*.....and also remember that*

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**Nothing is**

- more **difficult to achieve**
- more **risky** in realization
- more **uncertain** concerning success

**than introducing an innovation.....**

*“since the innovator has as enemies those who were successful under the old way of thinking and as friends those who may profit from the innovation”*

according to Nicolò Machiavelli (1469 – 1527) in “The Prince”

*And now, please let's start !*



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Abstract of possible  
activities for each partner



# D.E.Y.A.X.

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- **Component 1 (Communication):**
  - Preparation of information material for dissemination of results in Crete.
  - Participation in the collection of information for the project's web site.
  - Organization of a workshop in Crete regarding the "Integration of treated municipal wastewater into the management of water resources in islands"
- **Component 3 (Master Plans):**
  - D.E.Y.A.X. along with TUC will produce a report with master plan on the subject "Development of a strategic master plan for managing water scarcity in Keritis River basin and Agia area".
- **Component 4 (Analysis and Assessment):**
  - identification of innovative best practices for managing water scarcity.
- **Component 5 (Pilot Projects):**
  - application of additional treatment systems to improve the quality of the effluent of the wastewater treatment plant, in order to be used for irrigation purposes .

# TUC

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- **Component 1 (Communication):**
  - Preparation of information material for dissemination of results in Crete
  - Participation in the collection of information for the project's web site
  - Presentation of the results in international conferences
  - Publication of the results in international technical journals
  - Organization of a workshop in Crete regarding the "Integration of treated Municipal wastewater into the management of water resources in islands"
- **Component 3 (Master Plans):**
  - Development of a data base regarding quantity and quality data of effluents from municipal wastewater treatment plans.
  - Identification of areas where water recycling could be implemented
  - With the use of ArcGIS, the optimal position of the water storage tanks supplying the irrigation network was estimated
- **Component 5 (Pilot Projects):**
  - The pilot project involves the transport of treated effluent from the Chania municipal wastewater treatment plant to the park for the irrigation.

# MRA

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- Reclaimed water from the Malta Sant'Antnin Wastewater Treatment Plant will be pumped to the test site (Bulebel) where it will undergo further treatment - namely ultrafiltration and desalination. The proposed pilot project will then involve the following four phases.
  - **Testing of the resulting effluent:** four indicator parameters will be identified through a pollution-risk analysis. Regular analysis will be undertaken on these parameters in conjunction with other basic chemical parameters.
  - **Artificial Recharge:** recharge volumes and rates will be determined through a pumping test of the recharge well.
  - **Monitoring:** Monitoring will be undertaken in three wells lying hydraulically downstream of the recharge well. This exercise will investigate both quantitative (water level) and qualitative (basic parameters) aspects.
  - **Analysis:** Analysis of the monitoring data will be undertaken in order to assess the aquifer response to the artificial recharge experiment

# WBL

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- Abstract of activities to develop on the project:
  - The Water Board of Lemesos is a semi-government organisation charged with the responsibility of providing potable water to the town and environs of Lemesos situated on the southern coast of the island of Cyprus. The main area of expertise of the Water Board is the Efficient Management of Urban Water Distribution Networks and the reduction of Leakage from the pipelines



# UB

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- Work will be developed in a wastewater treatment plants (WWTP) with the following conditions:
  - One pilot will be located in Hostalets de Pierola WWTP. At present, two constructed wetlands are operative in parallel, treating urban wastewater as secondary or tertiary equipment. Some minor amendments will be performed in the wetlands.
  - A second pilot set is located in the Montcada i Reixach WWTP. 6 small constructed wetlands' pilots are operative working as tertiary equipment. Minor amendments are also needed at present.
- The program of tasks will be as follows:
  1. Evaluation of the existing analytical work
  2. Pilots conditioning according to the previous effluent analysis.
  3. Monitoring of the pilots effluent
  4. Validation of the pilots.