Global Water Partnership Mediterranean

THE ENERGY & WATER AGENCY

Regional Conference

10–11 May 2018, Malta

ADVANCING NON-CONVENTIONAL WATER RESOURCES MANAGEMENT IN MEDITERRANEAN ISLANDS AND COASTAL AREAS:

Local solutions
Employment opportunities
People engagement

NCWR NON CONVENTIONAL WATER RESOURCES - PROGRAMME IN THE MEDITERRANEAN -

THE Coca-Cola FOUNDATION

RBMP LIFE MALTA

Life

TESTIMONIALS BY PROGRAMME PARTNERS

Rainwater Harvesting Systems in School and the Experimental Farm of Gozo

Speaker
Mr. Anthony Zammit
Research Services
Ministry for Gozo

NCWR NON CONVENTIONAL WATER RESOURCES - PROGRAMME IN THE MEDITERRANEAN -

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THE Coca-Cola FOUNDATION

Alter Aqua in Gozo – synthesis

Investment of $ 1,240,000

- *$ 800,000 by the Coca-Cola Foundation*
- *$ 440,000 by ecoGozo (Ministry for Gozo)*

Duration – November 2011 – December 2013 (26 months)

Aims: *assist in rainwater harvesting effort undertaken by Gozo*
promote use of Non-Conventional Water Resources
expand the NCWR agenda in the Mediterranean

Alter Aqua in Gozo - synthesis

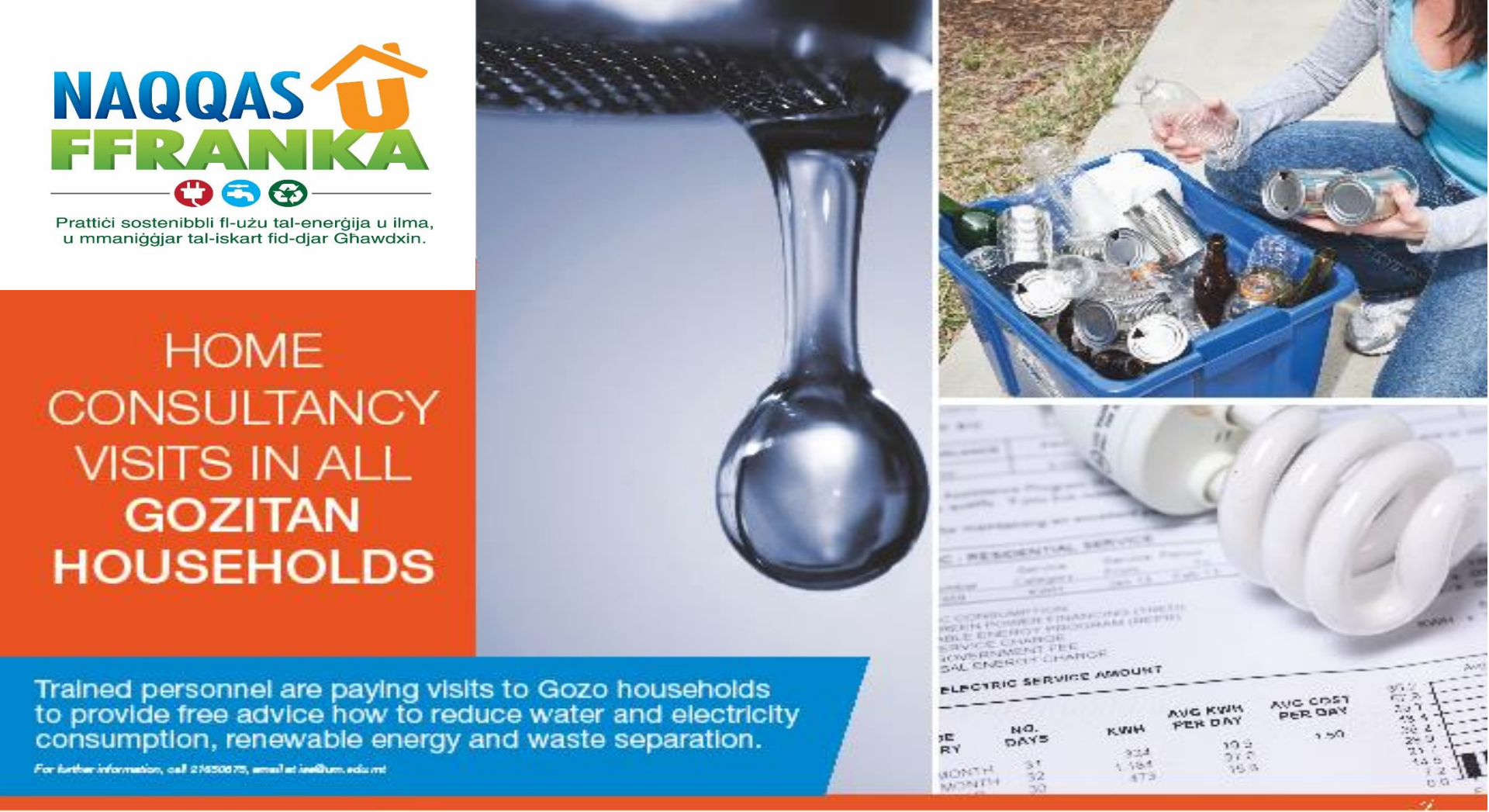
Project Objectives:

-To promote RWH as a cost effective sustainable practice for water availability in the water scarce Island of Gozo
-To support the Ministry for Gozo in its Sustainable Development goals related to Water, aligned with its ecoGozo Action Plan
-To enhance the capacity of the local authorities to manage NCWR
-Train local technicians on the application of modern NCWR systems and materials;
-To educate students and teachers on NCWR and sustainable water use
-To raise awareness on NCWR and sustainable water use
-Promote multi-stakeholder partnership for local NCWR initiatives

Alter Aqua in Gozo - synthesis

General Results:

4 RWH systems installed
6 RWH systems reinstated
1 Greywater reuse system installed
1 Stormwater management application
3201 Students educated
255 Teachers trained
48 Technicians trained
18 stakeholders took part in Capacity Building Workshop for local stakeholders
30,000 Beneficiaries
Total installed capacity **9.665 m^3**



Alter Aqua – the context

Alter Aqua – the context

Alter Aqua – the context

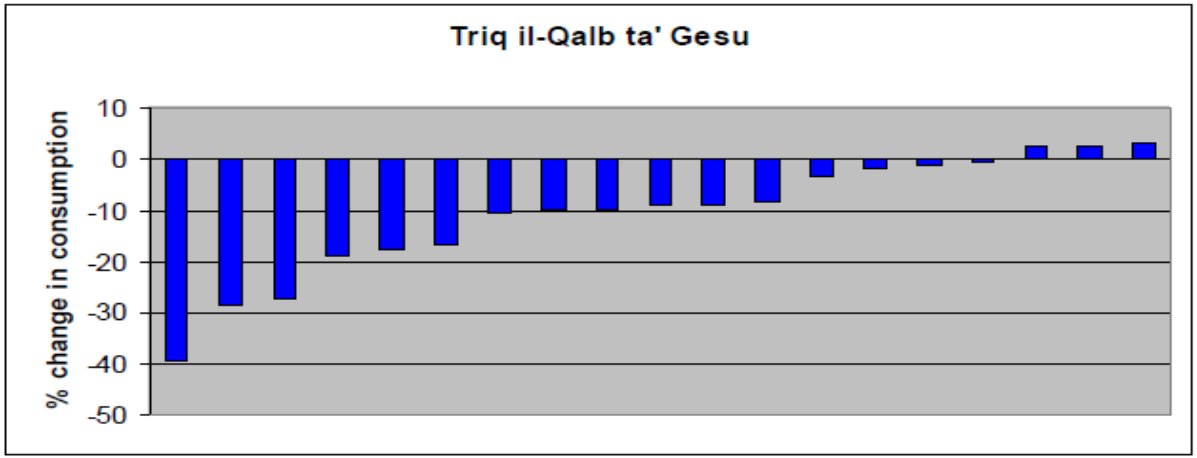
SWMED

Initial Trial Results – One road at Fontana Local Council

Based on 379 meter readings:

Total Consumption in April 2012 - 1,666,456 litres
Total Consumption in April 2013 - 1,540,022 litres

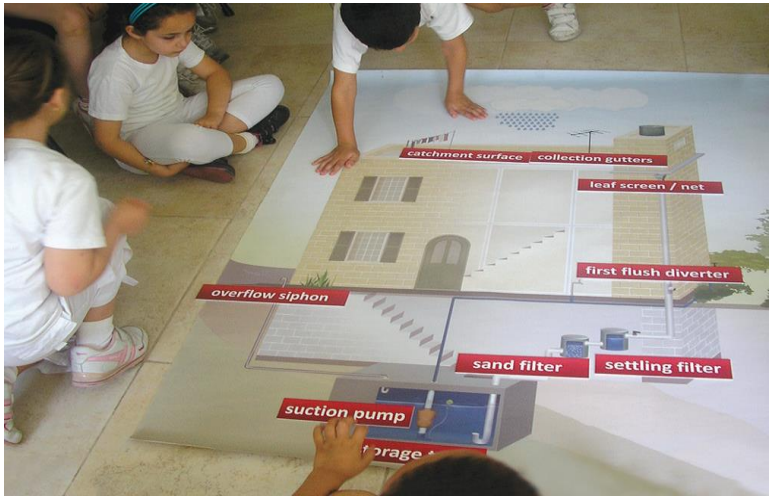
A reduction of 126,434 litres or 7.6% of water consumption

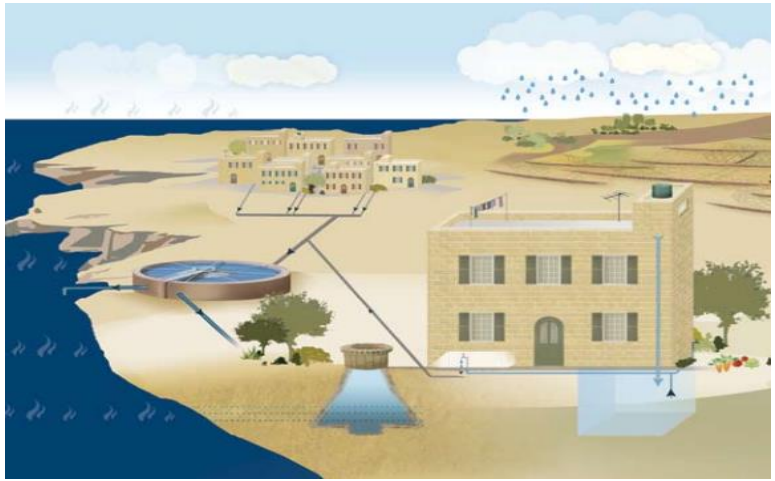


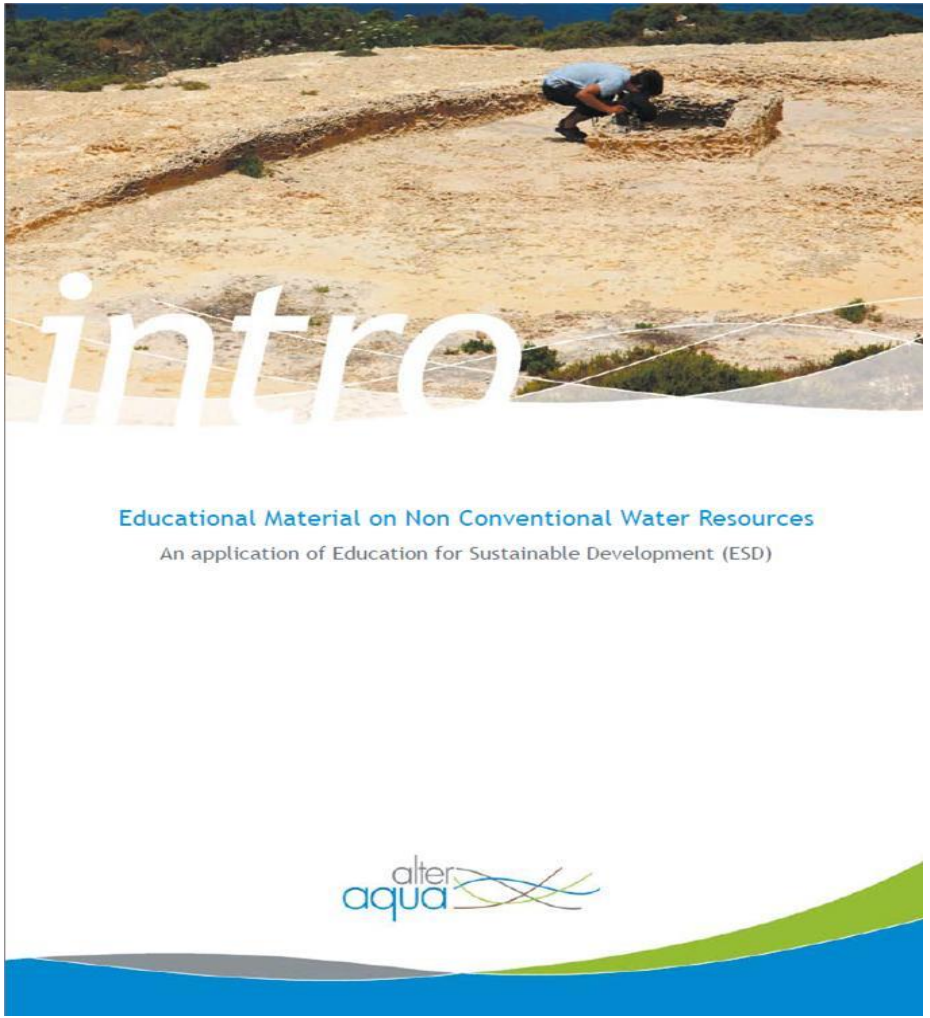
swmed
a better future through smarter water usage.

ENPI CBCMED
CROSS-BORDER COOPERATION IN THE MEDITERRANEAN

Alter Aqua – the context







Alter Aqua - Schools

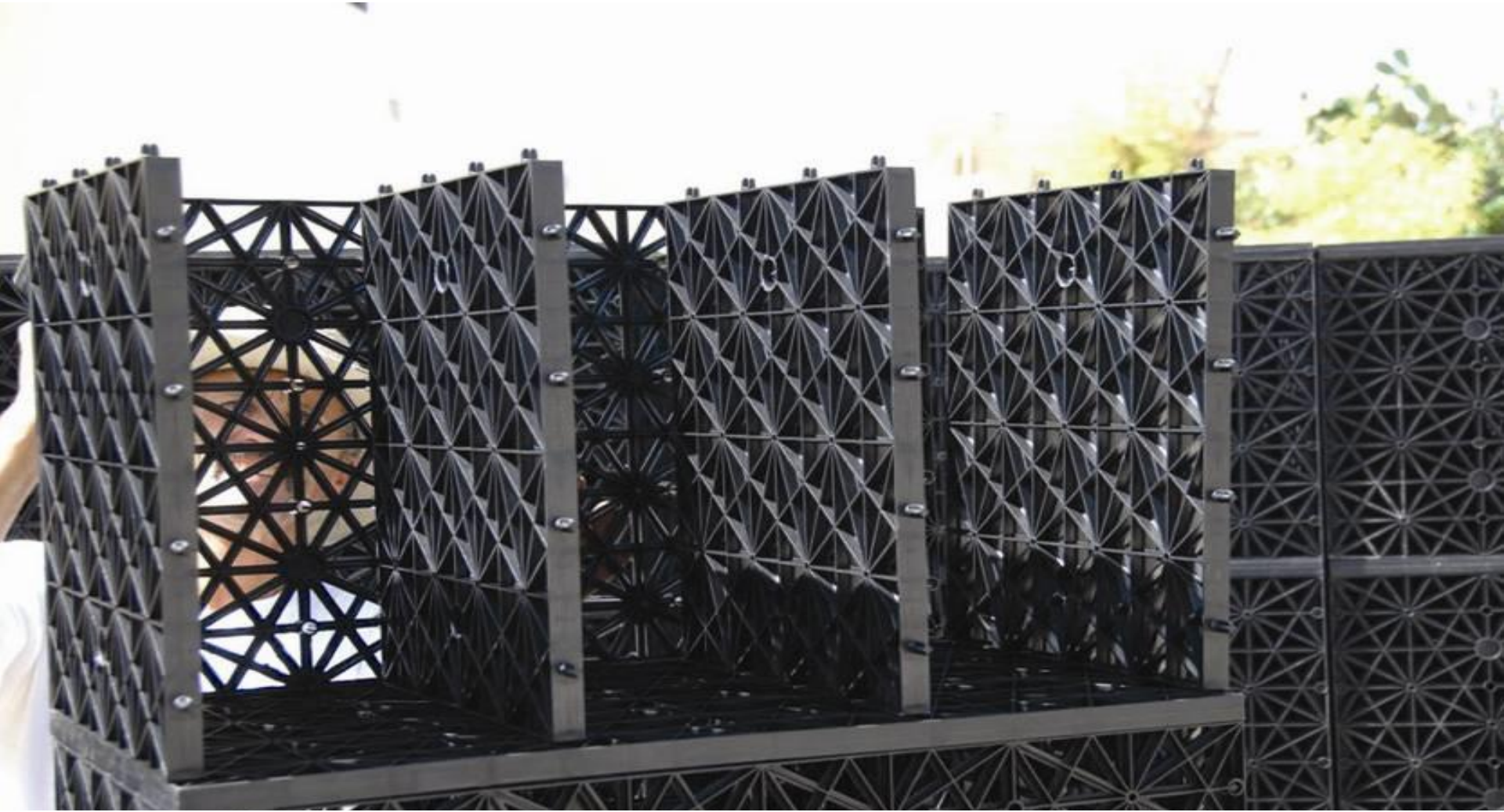
Alter Aqua – large-scale rainwater harvesting

Alter Aqua – large-scale rainwater harvesting

Alter Aqua – technology transfer

Alter Aqua – technology transfer

Alter Aqua – technology transfer



Alter Aqua – technology transfer

Alter Aqua – technology transfer

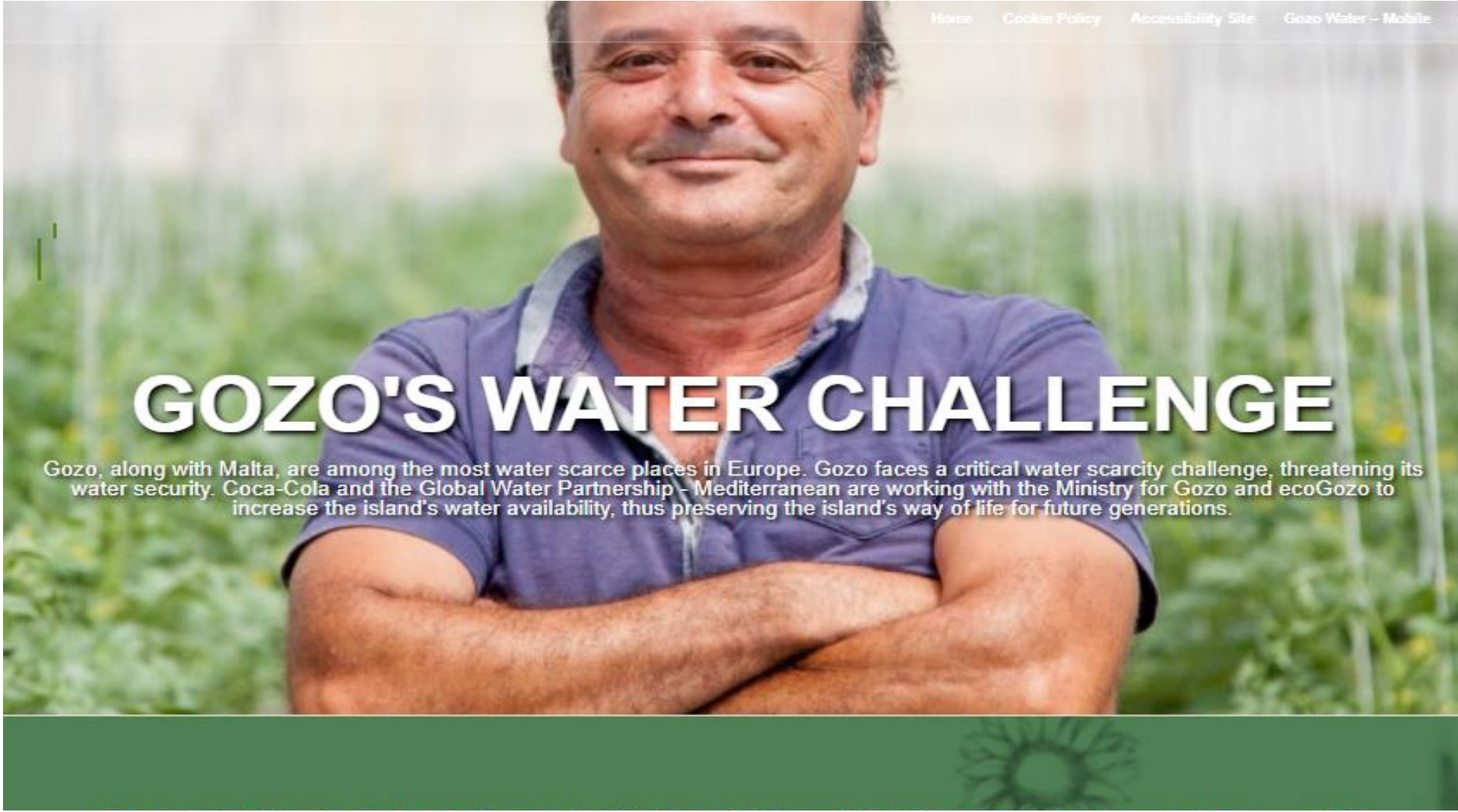
Alter Aqua – technology transfer

Alter Aqua – technology transfer

Alter Aqua Greywater recycling system

Alter Aqua – Educational Game

Alter Aqua – 20 new or restored reservoirs



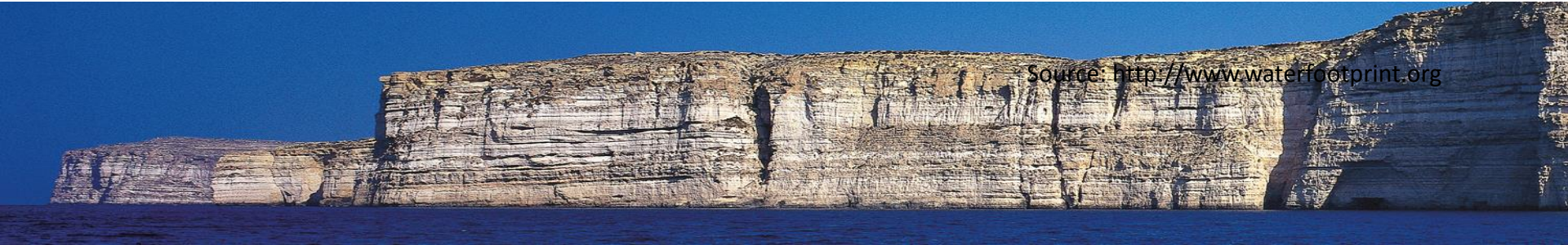
Alter Aqua – gozowater.com

Are we there yet?

Average water footprint of Malta:
2216 m³/yr per capita

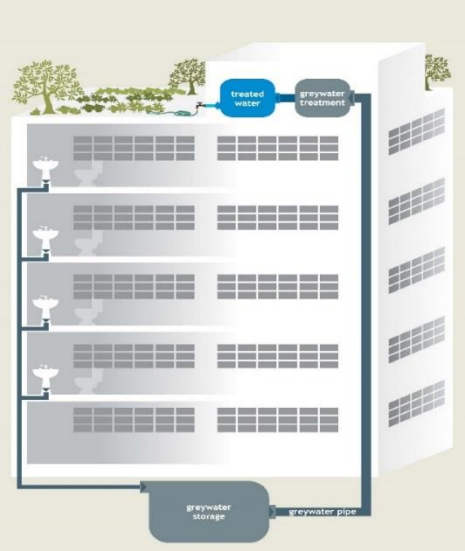
Part of footprint falling outside of the country:
91.7 %

Global average water footprint (for comparison):
1385 m³/yr per capita



Source: http://www.waterfootprint.org

The Greywater Recycling & Green Roof at the IAS – MCAST



Speaker
Mr. Juan José Bonello
Assistant Lecturer
Malta College of Arts Science and Technology, Institute of Applied Sciences

Promoting and Safeguarding the Environment

With population on the rise and industrial growth steady, the strain on our water resources is becoming more and more visible.

It is everyone's responsibility to make decisions today that consider the relationship we have with our environment, and the importance of ensuring that generations to come can enjoy the beauty of this planet.

Greywater recycling system

- ✓ Treats 2 m^3 greywater per day
- ✓ Increases water availability
- ✓ Treated greywater used for irrigation
- ✓ Decreases wastewater load of sewerage systems
- ✓ Reclamation of otherwise waste nutrients

Green roof

- ✓ Reduced air pollution and green house gas emissions
- ✓ Increase green on campus
- ✓ Improve the microclimate
- ✓ Improved human health and comfort
- ✓ Demonstration project for students of biology and chemistry
- ✓ Studying local indigenous plants

The greywater recycling system and the green roof as an educational tool for further research

The IAS is putting words into practice and giving the opportunity to our students to appreciate that even though we are exploiting our natural resources to the fullest, there are still things that we can do to mitigate the situation.

Research and further studies

Urban interventions in a water scarce insular state

Speaker
Ms. Konstantina Lortzie
Engineer / Energy Auditor / Smart City Strategy Coordinator
Nicosia Municipality

Nicosia Swimming Pool: Replacement of plumping devices and flush buttons in the toilets & changing rooms of the Municipal Swimming Pool and Cyprus Sports Organization Pool

- ✓ Swimming pool complex with 3 swimming pools for leisure & athleticism
- ✓ High water consumption & wasteful behaviour
- ✓ Water efficiency devices in toilets & showers
- ✓ Users: public (residents & visitors), as well as athletes
- ✓ High visibility intervention

Nicosia Swimming Pool: Awareness Raising Installations & National Radio Event

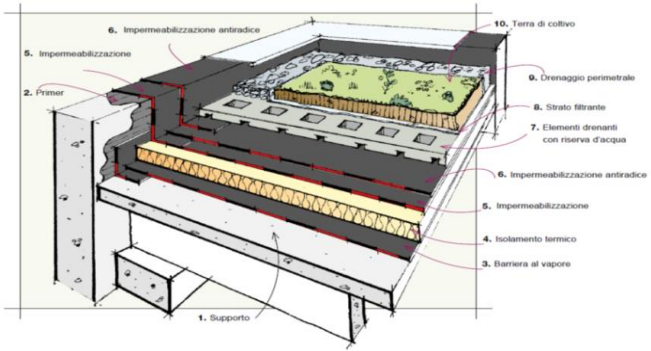
- ✓ Target a large audience
- ✓ Prevent wasteful behavior & promote water saving among users
- ✓ Give out water saving devices & engage users also to domestic water saving practices
- ✓ Increase awareness at national level

Famagusta Gate: Flooding water collection & reuse for irrigation of green areas

- ✓ Prevent flooding from groundwater & utilize a wasted water resource
- ✓ Offer an additional water source in a water scarce area
- ✓ Increase the green areas in the city & enhance urban wellbeing

Green roof with high visibility at an academic & research environment

ICT in Agriculture for Improved Water Efficiency



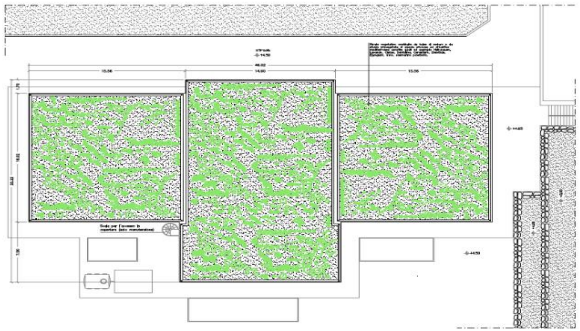
Speaker
Prof. Antonino Cancelliere
University of Catania

Green Roof: Installation at the new building of Civil & Architectural Engineering of the University of Catania

Context

- ✓ The city of Catania is prone to urban flooding
- ✓ Recently there has been an increased attention towards sustainable urban drainage structures
- ✓ New municipal building code introduces the concept of hydraulic invariance for new constructions
- ✓ The need arises to develop demonstration project to foster the adoption of good practices

Green Roof: Installation at the new building of Civil & Architectural Engineering of the University of Catania



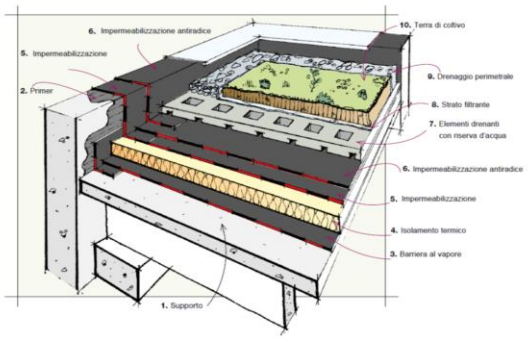
The university campus “La Cittadella” covers an area of about 25 ha with several buildings covered by impervious terrace roof.

A new one-storey building is currently under construction in the “Cittadella” campus of the University of Catania. The building has been designed to include a green roof on its terrace, of an estimated area of about 850m$^{2.}$

Expected positive impacts:

- ✓ increase the green on campus
- ✓ improve the microclimate
- ✓ decrease runoff production thus reducing urban flooding risk
- ✓ reduce the required energy consumption of the building by enhancing its thermal insulation

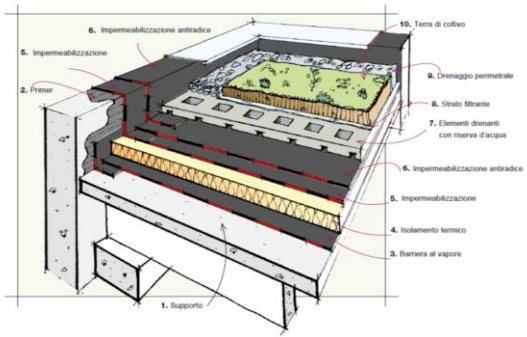
Green Roof: Installation at the new building of Civil & Architectural Engineering of the University of Catania



Added value:

- ✓ Demonstration project for engineering and architecture students (approx. , as well as professionals and technicians;
- ✓ High visibility
- ✓ Create future professionals that can promote green-blue infrastructure and modern technologies to improve the urban water cycle
- ✓ Sensors will also be installed in the building terrace in order to monitor the green roof and enable university research, thus increasing dissemination and visibility

Green Roof: Installation at the new building of Civil & Architectural Engineering of the University of Catania



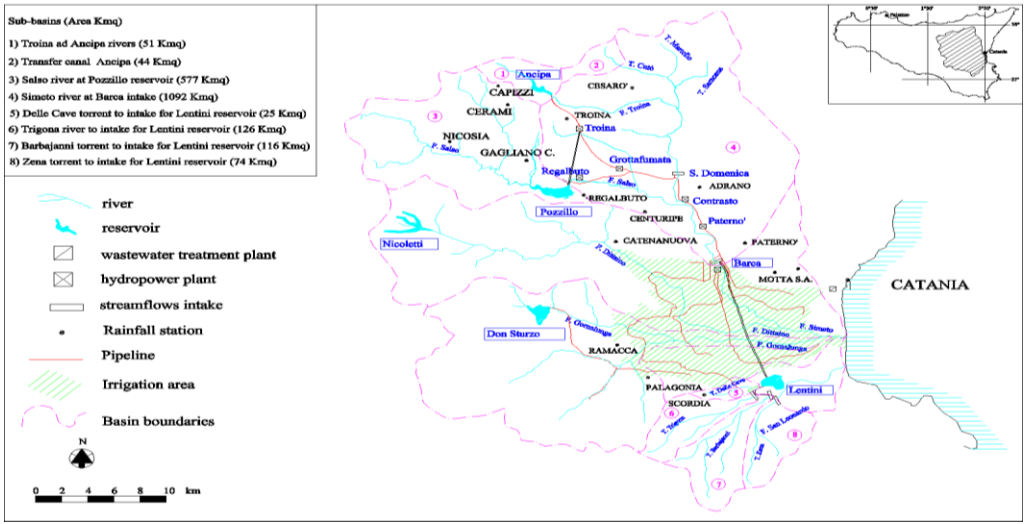
Side activities:

- ✓ Organization of a capacity building workshop on Green infrastructure and NCWR technologies for students in related science areas.
- ✓ Participation to the communication and dissemination activities

ICT technology for sustainable citrus fruit farming

Catania plain is one of the largest citrus production area in Sicily:

- Irrigated area about 18,000 ha
- Water sources:
  - Irrigation Consortia (complex multipurpose interconnected system, regulated capacity approx. 400x10^6 m^3
  - Private wells with high economic and environmental costs
- Drought prone area

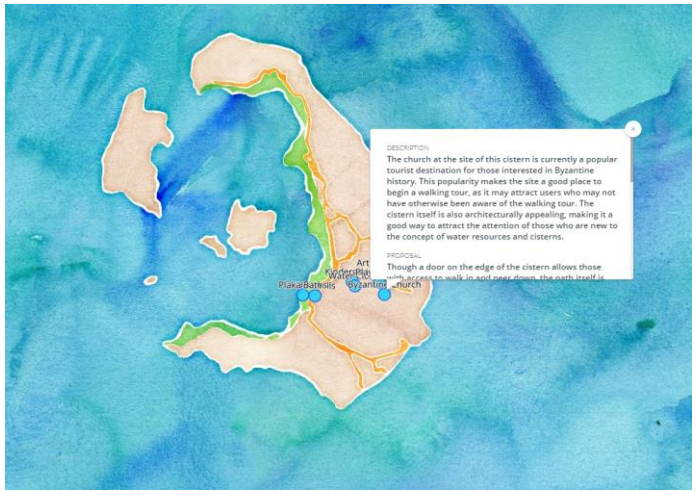


ICT technology for sustainable citrus fruit farming

The objective of this project is to apply an IoT based technology for optimal water resources use efficiency and maximization of productivity in citrus farming (i.e. more crop per drop) at small and medium scale.

- ✓ 20 citrus farms, will have a set of sensors installed in their land monitoring soil water moisture, applied water and related energy consumption.
- ✓ Data will be transmitted to an online platform
- ✓ Farmers will have individual access on a user-interface, creating a profile with their specific data (land, type of crops, number of trees, etc.)
- ✓ Farmers will increase their capacity on sustainable farming irrigation practices
- ✓ Create new job opportunities on sustainable farming

Reinstatement of a historic tank & Youth engagement



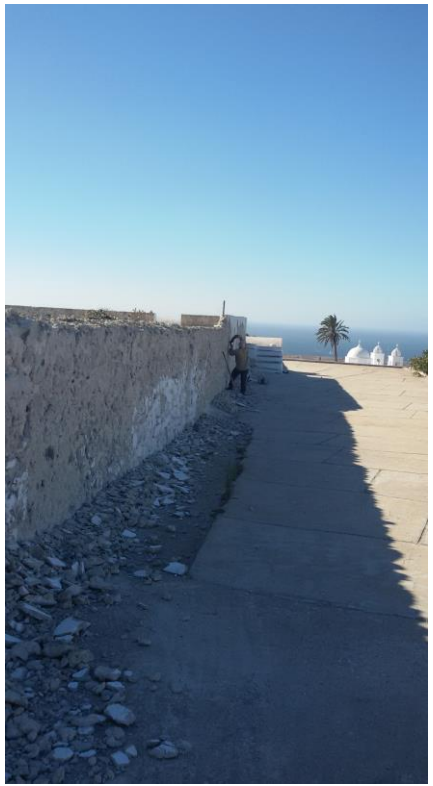
Speaker
Mr. Nikos Mainas
General Manager
Water Supply & Sanitation Corporation of Thira (Santorini)

Reinstatement of a RWH tank at Megalochori village, 1500m^3

Historical reference:

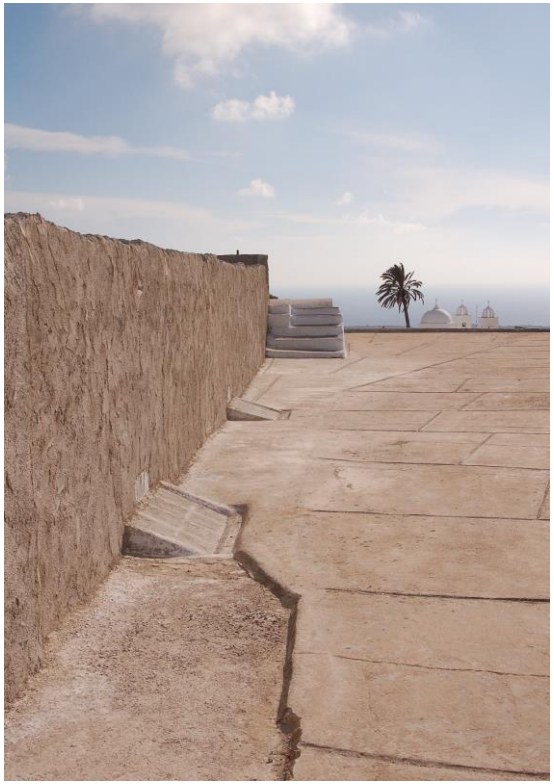
- ✓ Built in ~ 1910
- ✓ Traditional architectural landmark
- ✓ Biggest RWH tank of the island, 1500 m^3
- ✓ 1910 – 1925, cells for monks of the Mitropolis
- ✓ 1925 – 1940, socks industry
- ✓ 1954 – , water tank

Reinstatement of a RWH tank at Megalochori village – 1,500m^3



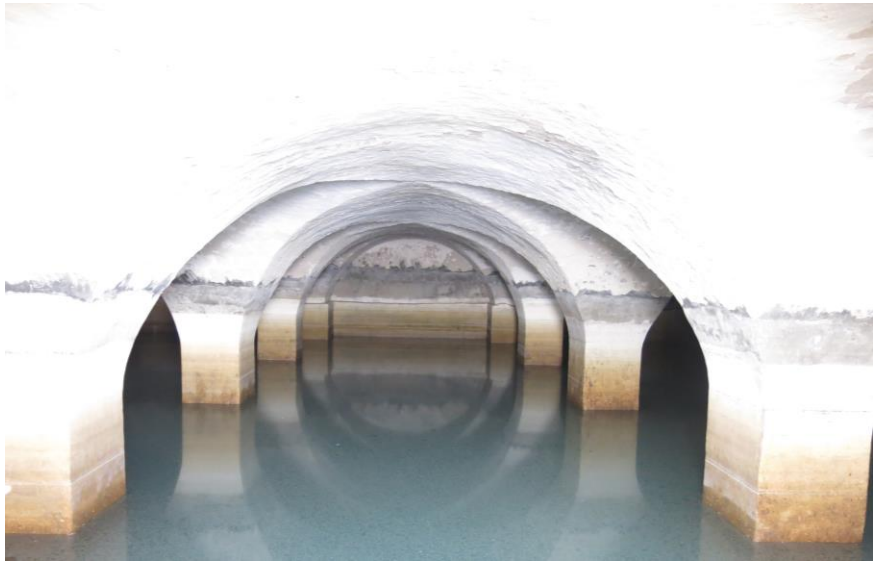
Current situation:

- ✓ The exterior surfaces were reinstated
- ✓ The interior surfaces will be concluded by June
- ✓ It will be connected to the main water supply system of the island and supply the village



Reinstatement of the exterior surfaces of the tank

Interior of the RWH tank at Megalochori village



Second RWH tank at Megalochori village

The Santorini Project: Research on Santorini's RWH cisterns

Objectives:

- ✓ Study the island's ancient heritage on water management including water tanks and hydraulics
- ✓ Create an awareness raising strategy to promote the benefits of rainwater harvesting

Outputs:

- ✓ Technical study of 5 underground water storage cisterns with the purpose of a) restoration of existing capacity and b) restoration combined with expansion of water storage capacity
- ✓ Creation of a water-related walking tour of the island
- ✓ Development of a virtual Water Museum to be included as the single Greek contribution to the Global Network of Water Museums under the auspices of UNESCO IHP
- ✓ https://cies.einaudi.cornell.edu/santorini-project

Studying the underground cisterns

Studying the underground cisterns

Installation of three reservoirs
&
an awareness raising campaign for residents and visitors

Video

Sikinos island

Installation of a rainwater harvesting system

Video

Global Water Partnership Mediterranean

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