



Deliverable D7.2

Stakeholder workshops report



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Abstract	This document sets out the report of the three stakeholder workshops organized in the framework of DEMOWARE project: “Water Reuse Conference” held on 13 and 14 June 2016 in Barcelona; “Benefits and opportunities of water reuse in agriculture in Puglia”, held on 13th September 2016 in Bari and “The DEMOWARE project and water reuse in agriculture in Puglia” held on 20th September 2016, in Stonarella (FG).

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Executive Summary

This document sets out the report of the three stakeholder workshops organized in the framework of DEMOWARE project: “Water Reuse Conference” held on 13 and 14 June 2016 in Barcelona; “Benefits and opportunities of water reuse in agriculture in Puglia” held on 13th September 2016 in Bari and “The DEMOWARE project and water reuse in agriculture in Puglia” held on 20th September 2016, in Stornarella (FG).

In the context of DEMOWARE dissemination activities, workshops were planned to be organised as general dissemination actions in order to share project activities and results with end-users, stakeholders and the general public. The list of all events planned to be organised by DEMOWARE and considered by the Dissemination Strategy (D7.1) included, among others, several stakeholder workshops to reach industry target group with the participation of relevant stakeholders from public sector at national, regional and municipal level (Subtasks 72.1 and 72.2 of the project DOW).

The “Water Reuse Conference” aimed at gathering international representation and embracing different aspects regarding water reuse; in this sense, the workshop was structured in two parts: technical approach and its implementation (day 1) and policy constraints, advances and business opportunities (day 2).

On the other side, the main objective of both workshops organized in Puglia was to promote the opportunities deriving from treated wastewater reuse in agriculture through the presentation of the main results of the Demoware project, the characteristics of the Capitanata demo-site and European and regional policies on the subject.

1 Introduction

The overall objective of WP7 Dissemination is to ensure a high impact and knowledge of the project outputs to promote a wider understanding and awareness of water reuse practices among public administrations and end-users in order to increase utilisation of reclaimed water and include water reuse in an integrated water management.

The specific objectives are to:

- Promote the inclusion of water reuse practices on water related policies at EU level.
- Promote the science-policy dialogue and debate across Europe on water reuse.
- Increase the public awareness for and understanding of water reuse.

Regarding the third objective, dissemination to end-users and other relevant stakeholders involves sharing project activities and results with end-users, stakeholders and the general public by working with actors from the public sector at national, regional and municipal level (e.g. the Council of European Municipalities and Regions, Committee of the Regions, ARLEM, WssTP, the ERRIN Network) through a series of targeted events and workshops with region-wise and country-wise to encourage their involvement and knowledge uptake.

In this context, a stakeholder workshop to reach industry (end users) with the participation of relevant stakeholders from public sector at national, regional and municipal level was planned in the Dissemination Strategy (D7.1) in compliance with the Subtasks 72.1 and 72.2 of the project DOW with the main general objective to foster the uptake of the DEMOWARE outputs. Additionally, the two workshops organized in Puglia reached relevant stakeholders and end users with the aim to promote the opportunities deriving from treated wastewater reuse in agriculture based on the main results of the Demoware project.

2 Title: “Water Reuse Conference. Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector”

2.1 Workshop objectives, target audience and method

The workshop was titled “Water Reuse Conference. Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector” and intended to offer a place to exchange experiences in water reuse projects from governance aspects to legal constraints and including all technical related aspects with the ultimate goal of also increase business opportunities. In this sense, a “showcase” of water reuse technologies was opened to all attendants to explain their projects to the conference audience.

Therefore, the conference target audiences were both researchers, water utilities and companies.

The workshop was held in Barcelona as one of the most stressed areas of Mediterranean where water reuse is bringing a new alternative to water uses.

Based on the target audience and objectives, the workshops was split into two thematic parts/days:

1. Technical approach and its implementation (day 1)

A DEMOWARE project overview and main results were presented along with the presentation, from the technical perspective, of other projects involving water reuse in different sectors and locations. Governance of water reuse was also introduced.

2. Policy constraints, advances and business opportunities (day 2)

Water reuse initiatives at EU and Catalonia level were introduced. The state of the art and potential impacts and risks of water reuse were presented. Knowledge exchange on water reuse, the Water reuse Association and business models preceded the showcase of water reuse technologies.

Speakers were selected based on the criteria of bringing together international representatives related to the various aspects of water reuse, in particular those experts contributing with technical, policy and business approaches.

2.2 Promotion of the workshop

A brochure was elaborated for the promotion of the workshop through the different media channels, as shown in Figure 1 and available through demoware website (<http://demoware.eu/en/events/water-reuse-conference-barcelona-13-14-june-2016>):

THE VENUE

Hotel Vincci Marítimo 4*
C/ Llull, 340 | 08019 Barcelona.
Tel.: +34 933 56 26 00



 Metro Selva de Mar (L4)
TRAM Selva de Mar (T4)

REGISTRATION

To register fill the form in:
http://amphos21.com/vistas/demoware_registration.php

Accommodation special rates are available for attendants. Contact:
reservas.maritimo@vincihoteles.com

If you want to present your product or your technology in the Water Reuse Showcase, please indicate it in the registration form.

Deadline for registration is 8th of June.

Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector

MAKING RE AL THE WATER USE

 info@demoware.eu
[@DemowareFP7](https://twitter.com/DemowareFP7)

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DEMOWARE



WATER REUSE CONFERENCE
Innovation for a competitive water reuse sector

13-14 June 2016
Barcelona
2nd circular

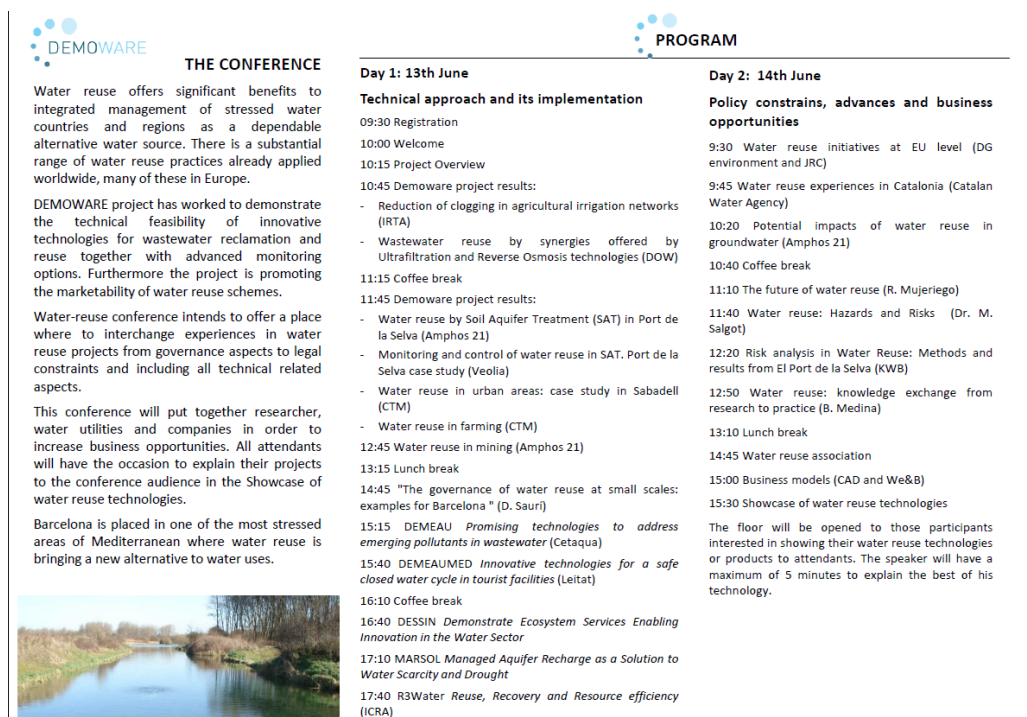


Figure 1 Brochure for dissemination of the "Water Reuse Conference.

Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector" held on 13 and 14 June 2016 in Barcelona in the framework of DEMOWARE project.

The workshop was disseminated both at EU, national and local level through different communication channels. Dissemination channels were chosen for a greater impact on the success and effectiveness of the workshop promotion. The following communication channels were used:

1. Project website
2. Social media: Twitter and LinkedIn
3. Professional networks:
 - Water Reuse Europe
 - Asociación Española de Reutilización Sostenible del Agua
 - AGUASRESIDUALES.INFO
 - IAGUA
 - ADECAGUA
 - Catalan Water Partnership

2.3 Programme and presentations

The complete agenda of the Water Reuse Conference is as follows:

Day 1: 13th June - Technical approach and its implementation

09:30 Registration

10:00 Welcome

Miquel Rovira, Fundació CTM Centre Tecnològic

10:15 Project Overview

Xavier Martínez, Fundació CTM Centre Tecnològic

10:45 Demoware project results:

- Reduction of clogging in agricultural irrigation networks
 - *Carme Biel, IRTA*
- Wastewater reuse by synergies offered by Ultrafiltration and Reverse Osmosis technologies
 - *Claudia Niewersch, DOW Water and process solutions*

11:15 Coffee break

11:45 Demoware project results:

- Water reuse by Soil Aquifer Treatment (SAT) in Port de la Selva
 - *Martí Bayer, Amphos 21*
- Monitoring and control of water reuse in SAT. Port de la Selva case study.
 - *Elisenda Taberna, Veolia*
- Water reuse in urban areas: case study in Sabadell
 - *Irene Jubany, Fundació CTM Centre Tecnològic*
- Water reuse in farming
 - *Carme Bosch, Fundació CTM Centre Tecnològic*

12:45 Water reuse in mining

David Arcos, Amphos 21

13:15 Lunch break

14:45 "The governance of water reuse at small scales: examples for Barcelona "

David Saurí, Universitat Autònoma de barcelona

15:15 DEMAU Promising technologies to address emerging pollutants in wastewater (Cetaqua)

Marta Hernández, Cetaqua

15:40 DEMAUMED Innovative technologies for a safe closed water cycle in tourist facilities

Ignasi Rodriguez-Roda, ICRA

16:10 Coffee break

16:40 DESSIN Demonstrate Ecosystem Services Enabling Innovation in the Water Sector

Tsoukalas Ioannis, National Technical University of Athens

17:10 R3Water Reuse, Recovery and Resource efficiency

Ernest Mejías, TEQMA

Day 2: 14th June - Policy constrains, advances and business opportunities

9:30 Water reuse initiatives at EU level

Thomas Petitguyot, DG environment

9:45 Water reuse experiences in Catalonia

Jordi Molist Gazapo, Catalan Water Agency

10:20 Potential impacts of water reuse in groundwater

Jordi Guimerà, Amphos 21

10:40 Coffee break

11:10 The future of water reuse

Rafael Mujeriego, Universitat Politècnica de Catalunya

11:40 Water reuse: Hazards and Risks

Miquel Salgot, Universitat de Barcelona

12:20 Risk analysis in Water Reuse: Methods and results from El Port de la Selva

Wolfgang Seis, Kompetenzzentrum Wasser Berlin gGmbH

12:50 Water reuse: knowledge exchange from research to practice

Beatriz Medina, WE&B

13:10 Lunch break

14:45 Water Reuse Europe: The industry association for the water reuse sector

Video Cranfield Water Science Institute

15:00 Inclusive Business Models - Promoting SMEs in the water sector

Fernando Casado, GlobalCAD

15:30 Showcase of water reuse technologies

- U.S. Municipal Wastewater Reuse: Perspectives, Opportunities, Market Update 2016. Bluefield Research. Keith Hays
- Forward Osmosis as a robust pre-treatment for water reuse. ICRA. Marcos Sauchelli Toran
- AquaBio: online monitoring of E.coli for reclaimed water. ADASA Sistemas. Sergio De Campos.
- Doscontol® Combined disinfection of reclaimed water. Tegma. Ernest Mejías.
- Advanced treatment schemes for wastewater reclamation. Cetaqua. Olga Ferrer Mallén.

2.4 Summary of presentations

Presentations are available at the Demoware website (<http://demoware.eu/en/events/water-reuse-conference-barcelona-13-14-june-2016>). A brief summary of the main contents addressed by each presentation is developed below.

2.4.1 Day 1: Technical approach and its implementation

2.4.1.1 DEMOWARE project overview

Innovation Demonstration for a Competitive and Innovative European Water Reuse Sector: DEMOWARE (FP7 61940).

Presenter(s): Miquel Rovira and Xavier Martínez (CTM EURECAT)

An introduction to water reuse and DEMOWARE project in EU context is presented. The presentation shows the reasons for DEMOWARE and water reuse with regards circular economy, environmental issues and competitiveness.

In addition, data, objectives and structure of DEMOWARE project are introduced along with the description of the ten demonstration sites and their associated water reuse projects.

2.4.1.2 DEMOWARE project results

Reduction of clogging in agricultural irrigation networks

Presenter(s): Carmen Biel and Robert Savé (IRTA Torre Marimon), Montse Calderer and Gemma Serra (CTM EURECAT)

Biofilms are also commonly associated with irrigation systems where they can cause a variety of problems including clogging and corrosion. Emitter clogging is a bottleneck to restrain the application and popularization of reclaimed water drip irrigation technology, and it is tightly related to the formation of biofilms attached on drip irrigation pipes and emitters.

The presentation shows a research study that has as objective to test standard maintenance cleaning with mineral acids against a novel system based on the injection of CO₂ in the water irrigation distribution network. CO₂ injection acidifies water and increases pressure generating a decrease in salts precipitation and biofilm formation.

The assay has been done at IRTA Torre Marimon (Caldes de Montbui, Barcelona, Spain) facilities. Reclaimed water from the Waste Water Treatment Plant (WWTP) of Caldes de Montbui was used for irrigation. Two maintenance treatments were tested, nitric acid diluted in the water and CO₂ injection. Reclaimed water without any chemical added was used as a control treatment, and underground water was used to compare biofouling appearance in normal water used for irrigation at IRTA facilities. Two types of irrigation drippers were tested: emitters and integral dripper line.

As preliminary results, it was observed that CO₂ and nitric injection decreased water pH at the same level and after eight months of water treatment emitters flow are the same all treatments. The study will continue during summer and autumn season to determine a possible season effect between maintenance methods.

Successful demonstration of wastewater reuse by synergies offered by Ultrafiltration and Reverse Osmosis technologies enabling the reuse of municipal wastewater

Presenter(s): Claudia Niewersch (The Dow Chemical Company)

The Tarragona site is located in the south of Catalonia (Spain). It is a fully integrated Water Reclamation Unit (WRU) utilising the secondary effluent from two municipal wastewater plants (Vila-Seca and Tarragona), including its treatment and distribution to the end-user. The Camp de Tarragona Water Reclamation Plant was put on stream by the end of 2012 and was subsidized by European Structural Funds.

The world-class Dow' Global Water Application Development Centre, built and put in operation in 2011, and that was subsidized by both the Spanish and Catalanian Administrations will be a key supporting innovation enabler to guarantee the success of the associated tasks related to this demo site.

The Tarragona area is highly water stressed and granted water rights to users hinder further growth in the region. Water reuse in the industrial park (petrochemical complex) will free up existing raw water rights to meet future local (municipal and tourism) demand. The final target is to serve 90% of the water demand of the industrial park with reclaimed water produced by Camp de Tarragona Reclamation Plant

In DEMOWARE this case is to demonstrate how water stress in a European region can be mitigated by fostering industrial water reuse. It will exemplify better allocation of water resources in the region by demonstrating technical feasibility and affordability of industrial reuse. It will thereby address questions of water reuse in industry, which might be similar in other European cases.

Water quality is key in industrial reuse of wastewater as different water composition can have quite negative effects on distribution and at the end-use application, e.g. corrosion or stronger biogrowth in cooling tower system due to higher ammonia levels. The issues to be addressed are thus primarily technical:

- Optimisation of pre-treatment and membrane performance to reduce chemicals and energy use.
- Failure Mode and Effect Analysis in RO systems.
- Demonstrate the feasibility of using urban reclaimed wastewater for high sensitive industrial applications
- Test new fouling resistant UF and RO membranes

This presentation shows the results from one year of operation of a demonstration industrial plant. The set up includes ultrafiltration pretreatment and reverse osmosis that treats secondary municipal wastewater treatment plant effluent. The plant is operated in continuous mode with two DOWTM Ultrafiltration modules in parallel showing improved performance of the new generation DOWTM Ultrafiltration SFP-2880XP. Ultrafiltration filtrate is treated with two parallel lines containing 4-inch DOW reverse osmosis elements. Fouling resistance of reverse osmosis elements and the effectiveness of cleaning strategies both for ultrafiltration and reverse osmosis are highlighted.

Water reuse by Soil Aquifer Treatment (SAT) in El Port de la Selva

Presenter(s): Martí Bayer (Amphos 21)

El Port de la Selva site is located in the very north-eastern part of Catalonia (Spain) at the Mediterranean coast. The plant is operated by the mixed enterprise Aigues de la Costa Brava. The municipal WWTP has a capacity of 10500 p.e. and has received European Structural Funds of its refurbishment in 1997.

Water is reused for urban and recreational applications and envisaged to be extended to indirect potable reuse via aquifer recharge;

High seasonal variation in demand due to tourism puts a pressure on conventional drinking water resources. Whilst in summer reclaimed water can be used directly for urban uses and golf course irrigation, the effluent is supposed to recharge the local aquifer that is used for potable supply and further uses during winter.

In DEMOWARE, the site is the first demonstration in Europe targeting indirect potable reuse and aquifer recharge without expensive double membrane systems. Instead, a hybrid and low cost / low energy filtration/disinfection reuse scheme for aquifer recharge will be established and thoroughly tested.

In El Port de la Selva site, Soil Aquifer Treatment (SAT) has been demonstrated as an innovative hybrid and low cost/low energy filtration/disinfection reuse scheme including seasonal storage and additional benefits like seawater intrusion control and increased availability of groundwater for potable use.

The methodology to optimise the design of Soil Aquifer Treatment (SAT) of reclaimed water using numerical simulations of groundwater flow through the aquifer is described. Key variables in the design of SAT systems are the travel time from infiltration ponds to water supply wells and dilution factors of reclaimed water in pumping wells used for water supply. Using a flow and transport model, the migration of the plume of reclaimed water through the aquifer to analyse the sensitivity of travel times and dilution factors to parameters such as rainfall, infiltration rates, pumping schemes in water supply wells, aquifer porosity and hydraulic conductivity are simulated.

Monitoring and control of water reuse in SAT. El Port de la Selva case study.

Presenter(s): Elisenda Taberna (Veolia)

The presentation focuses on the monitoring and control of the aquifer recharge by SAT with reclaimed water in El Port de la Selva site. In particular, the presentation shows the location of the sampling points along the aquifer recharge site, the parameters that have been selected for monitoring, taking into account the Spanish water reuse regulation for aquifer recharge with reclaimed water. The parameters include chemical compounds and microorganisms. Analysis of trace organic chemicals are also performed. The implemented countermeasures are presented. Actions in progress are also described.

Water reuse in urban areas: case study in Sabadell

Presenter(s): Irene Jubany (CTM EURECAT)

The Sabadell demo-site is located inside the metropolitan area of Barcelona (Catalonia, Spain) and is associated to the Riu Sec wastewater treatment plant (WWTP), which was partially funded through European Structural Funds.

Regenerated wastewater is currently used for urban purposes in Sabadell, mainly street cleaning and public parks and gardens irrigation but an ambitious wastewater reuse program is planned in the zone. The scheme is to serve various urban uses in the city, commercial areas and golf courses in the region. Authorization for private garden irrigation is under review by the Catalan Water Agency. A separate distribution network has already been constructed.

The tertiary treatment plant has a design capacity of 2500 m³/h (21.9 hm³/yr) and features flat-sheet membrane bioreactors and a disinfection post-step based on UV irradiation and hypochlorite dosing.

Sabadell site will be a demonstration site to show that the reuse scheme is not a threat to public health and environment, and to increase the confidence, mainly of authorities but also of the general public in water reuse. Thus, the following main urban water reuse barriers will be addressed:

- Human health risk management
- Network maintenance
- Environmental sustainability
- Public perception
- Governance issues in the urban sector.

The presentation describes the production of reclaimed water from the Riu Sec WWTP and the methodologies applied to perform a life cycle assessment and a human health risk assessment in order to establish the risks associated to human health from the use of reclaimed water. Maintenance strategies in distribution networks for urban applications are also described.

Water reuse in farming

Presenter(s): Carme Bosch (CTM EURECAT), Marta Terré (IRTA)

Torre Marimon, located next to the municipal Wastewater Treatment Plant (WWTP) from Caldes de Montbui (Catalonia, Spain), constitutes an excellent site for the water reuse activities since it presents experimental fields and greenhouses where different types of vegetables can be grown and nutrients and contaminants can be followed through the crop-soil-water system. Besides, in Torre Marimon there are also specific facilities for doing specific research in livestock production, in particular with ruminant livestock.

The applications for reuse will include, on the one side various applications in farms (such as cleaning, cooling etc.) and, on the other side, non-restricted irrigation, which is an urgent requirement due to water shortage. The water reuse schemes used in the site will be:

Secondary treated effluent from the WWTP Caldes de Montbui plus different low cost disinfection treatments (1 m³/d) for several uses in farms.

Anaerobic Membrane Bioreactor for unrestricted irrigation applications (50 L/d).

Within DEMOWARE, Torre Marimon will address the following main issues related to water reuse:

- Demonstrate the feasibility of anaerobic membrane bioreactor for integrated water reuse and waste management in rural zones.
- Explore the feasibility of water reuse in farms.
- Demonstrate the feasibility of innovative clogging reduction methodologies in agricultural irrigation networks.
- Public perception and acceptability.
- Governance issues in the agricultural sector.

The presentation describes the application of reclaimed water for livestock drinking water. The regulatory requirements are exposed, considering that this use is established in other countries like Australia with specific water quality requirements recommended. The project uses the reclaimed water from the Caldes de Montbui WWTP for livestock drinking water. The experimental site is placed at Torre Marimon. There is a selection of the treatment technologies (ultrafiltration and UV radiation) according to the reclaimed water characteristics and the performance of the technologies is assessed. There is an establishment of a monitoring programme to evaluate the water quality and a monitoring program to assess animal health. The preliminary results of water quality, animal health are shown, jointly with other foreseen demonstration studies.

2.4.1.3 Water reuse in mining

Water reuse in the mining industry

Presenter(s): David Arcos (Amphos 21)

Water consumption in mining is a significant environmental aspect. Water is consumed at various stages of a mine's life cycle: exploration and planning, development and expansion, operation and closure.

The mineral processing and the dust suppression are the two processes where the water consumption is higher. Dust is a huge problem in mines, especially in arid environments, due to mining truck circulation, so there is a need of continuous irrigation of haul roads.

Water consumption associated to mineral processing (mineral concentrates and hydrometallurgy) is significant so the first step in water reuse is saving water by:

- Hydrometallurgy: Irrigation optimization
- Sulphide concentration: Optimization in the floatation process

Water reuse from tailings is possible by paste thickening and water recovery from the tailing deposit (run-off and infiltrated water), which also reduces the potential impact of dam failure.

2.4.1.4 The governance of water reuse at small scales: examples for Barcelona

The governance of water reuse at small scales: examples for Barcelona

Presenter(s): David Saurí (Universitat Autònoma de Barcelona)

Governance comprises the complex mechanisms, processes, and institutions through which citizens and groups articulate their interests, mediate their differences, and exercise their legal rights and obligations (UNDP 1997). Three models for water governance are considered:

1. Command and control model led by a hierarchical centralized State system: top-down supply-driven approach based on technical expertise and a few corporate interests all in the name of the “common good”.
2. Market-led model led by private management and the logic of profit.
3. Bottom-up model, combining the experience, knowledge and understanding of a variety of individuals, groups and organizations with common interests. Initiatives regarding greywater reuse in the Barcelona area.

The example of greywater reuse in Sant Cugat del Vallès shows the problems faced during the experience and the factors that determined the social acceptability of greywater systems in comparison with alternative water systems such as rain water and groundwater. Challenges on technical, institutional and social perspectives are identified.

2.4.1.5 DEMAU: promising technologies to address emerging pollutants in waste water

Promising technologies to address emerging pollutants in wastewater: lessons learned and results available from DEMAU project

Presenter(s): Marta Hernández (Cetaqua)

The water and waste water sector is facing tremendous challenges to assure safe, cost-effective and sustainable water supply and sanitation services. DEMAU promotes the uptake of knowledge, prototypes and practices from previous EU research enabling the water cycle sector to face emerging pollutants and thus securing water and waste water services and public health. The project exploits four groups of promising technologies from previous EU research:

- Managed Aquifer Recharge (MAR),
- Hybrid ceramic membrane filtration,
- Hybrid advanced oxidation processes,
- Bioassays.

Exploitation takes place through action research with universities, research institutions, innovative SME's, launching water utilities and policy makers. Essential in the DEMAU approach is the cooperation with water utilities that have committed to act as launching customer for the selected technologies. Existing and improved performance assessment methodologies will be used to benchmark the novel technologies against existing ones. This is to demonstrate the suitability and cost-effectiveness of the demonstrated technologies. Demonstration sites at launching utilities act as transfer points for the technologies and will generate market opportunities for the SME's involved. To foster a broader impact and market penetration of the technologies, DEMAU seeks cooperation with relevant policy makers, regulators and standardization bodies on Member State and European level in order to address barriers and promoters for the implementation. A considerable percentage (39%) of the total requested EC contribution is allocated to SME's.

The relevant application area for managed aquifer recharge systems with enhanced micropollutant removal by the introduction of an organic layer is groundwater recharge for aquifer replenishment in quality and quantity, to finally enhance available resources for production of drinking water or irrigation purposes.

2.4.1.6 DEMAUMED: Innovative technologies for a safe closed water cycle in tourist facilities

demEAUMed: Innovative technologies for a safe closed water cycle in tourist facilities

Presenter(s): Ignasi Rodriguez-Roda (ICRA)

demEAUMed is a European project co-funded by the European Union under the 7th Framework Program, and it started officially on January 1st, 2014 for over 42 months(2014-2017). Seven countries are establishing this project: Austria, Belgium, France, Germany, Italy, Netherlands, and Spain.

The aim of demEAUMed project is the involvement of industry representatives, stakeholders, policy-makers and diverse technical and scientific experts in demonstrating and promoting innovative technologies, for an optimal and safe closed water cycle in the Euro-Mediterranean tourist facilities, leading to their eventual market uptake. As well as, the reduction of fresh water consumption in hotel installations, green and recreational areas, etc.

This will be achieved by using alternative water sources, such as treated groundwater, treated rainwater or the reuse of treated grey waters and/or wastewaters within the resort.

DemEAUMed strategy, technologies and expected results were presented.

The Demo site of demEAUMed is Hotel Samba; a 3* hotel chain situated in Lloret de Mar and Blanes. It is a large resort with 441 air conditioned rooms, green areas and exterior pools, conference rooms, bar and restaurant. It is certified by EMAS and ISO 14001.

The proposed demEAUMed solution integrates innovative water treatment technologies, TICs and water management tools. Different proven water treatment technologies at pre-marketable level are being properly combined to treat and adapt the different water flows to the necessities of the different areas in the resort, while saving fresh water consumption and reducing environmental and socio-economic impact in a safe way.

The water cycle of Hotel Samba is analyzed in terms of quantity and quality and different treatment strategies are considered.

2.4.1.7 DESSIN Demonstrate Ecosystem Services Enabling Innovation in the Water Sector

Athens case (Greece). Sewer Mining for Urban Re-use enabled by Advanced Monitoring Infrastructure (AMI)

Presenter(s): C. Makropoulos (NTUA), I. Tsoukalas (NTUA)

The European water research project DESSIN demonstrates and promotes innovative solutions for water scarcity and water quality related challenges & demonstrates a methodology for the valuation of ecosystem services (ESS). DESSIN is centred around five demonstration sites with special focus on urban areas across Europe, where solutions are being tested and validated. All information and products resulting from the project will be introduced on this website.

DESSIN is centered around the following five carefully selected demonstration sites across Europe, that are representing the global major water challenges.

The city of Athens has suffered rapid (uncontrolled) urbanization resulting in few urban green spaces which coupled with a series of peri-urban forest fires in the last decade have resulted in a severe degradation of its environment and the quality of life of its inhabitants. The public good approach to quality of life, offered

by urban and peri-urban green spaces is all the more important due to a more general quality of life degradation, which is the result of an ongoing financial crisis. What is seen as priority is the deployment of innovative management options and technologies for reuse needed to irrigate (primarily) green urban areas.

In Athens, demonstration will look into sewer mining, as a novel concept for distributed reuse within the urban environment, exploiting state-of-art Information and Communication Technology solutions for distributed monitoring and management of these multiple sites combined with small packaged plants. The demo site will also be used as a test bed for testing reused water characteristics on the soil, irrigating onsite peri-urban green. Finally, the demo site will examine a major component of ecosystem services (ESS) specifically relevant for arid regions: the mitigation of heat island effects due to irrigation of urban green.

All this presents a unique opportunity for (a) drastically increasing reuse within the highly constrained urban environment (b) improving urban quality of life through improved ecosystem services and (c) creating a new market for small and medium-sized enterprises (SMEs) that can provide this service to, e.g local municipalities, using the existing centralised sewerage network of the water company as a resource to be tapped into.

2.4.1.8 R3Water Reuse, recovery and Resource efficiency

R3Water: Demonstration of innovative solutions for Reuse of water, Recovery of valuables and Resource efficiency in urban wastewater treatment

Presenter(s): Ernest Mejías (TEQMA)

The R3Water project is funded by the European Commission under the Framework Programme 7. It has started in January 2014 and will run 42 months with a budget of 7.8 M€ co-funded by the European Commission. The consortium, coordinated by IVL Swedish Environmental Research Institute, unites 12 technological partners from seven European countries with involvement of SME's and RTD centres amongst others.

So far, wastewater treatment plants are usually regarded as facilities to avoid emissions from wastewater. Current research and development shows that these plants can be converted and upgraded into production units to provide energy, nutrients, water for re-use and possibly other valuables. This is achieved by improved resource efficiency in the plant as well as new technologies and business models that allow the re-use of resources from the incoming water.

The main objective of the project is to demonstrate solutions that support the transition from a treatment plant for urban wastewater to a production unit of different valuables.

The project aims to:

- Demonstrate new technologies and solutions for increased resource efficiency in existing UWWTP performance thanks to innovative monitoring, advanced control strategies and management measures.
- Demonstrate innovative wastewater technologies that enable reuse of water, recovery of valuables such as nutrients.
- Facilitate market uptake for the demonstrated solutions for the European and global market by demonstrating solutions in different geographical context and reaching relevant stakeholders.
- Within the field of these topics, new and innovative technologies will be tested and demonstrated. For demonstration, 3 sites are involved in Belgium, Spain, and Sweden.

The Girona – Costa Brava is a coastal region of northeastern Spain. Demonstration will mainly be performed in the Consorci Costa Brava (CCB) facilities, a water agency in Spain that is in charge of 18 municipal WWTPs,

operated by the Empresa Mixta d'Aigües Costa Brava (EMACB). The WWTP Girona, operated by Tractament de Residus i Aigües Residuals de Girona, SA (TRARGISA), will also be involved in demonstration activities.

2.4.2 Day 2: Policy constraints, advances and business opportunities

2.4.2.1 European initiative on water reuse

Presenter: Thomas Petitguyot (DG ENV-EC)

The presentation first describes the EU initiative on Water Reuse from the policy perspective, and the synergies with other policies:

- Policy background: water scarcity, water reuse as a strategic option that provides with environmental, social and economic benefits with an untapped potential.
- Water reuse in the 2012 Blueprint to safeguard water resources.
- Water reuse in UN Sustainable Development Goals to ensure access to water and sanitation for all.
- Water reuse in circular economy: boosting the market for water reuse.

Then, progress and next steps on EU initiative on water reuse are presented:

1. Reuse in integrated water planning and management: CIS Guidelines on Integrating Water Reuse into Water Planning and Management in the context of the Water Framework Directive
2. Minimum quality requirements for water reuse in irrigation and aquifer recharge: addressing the lack of a coherent and comprehensive legislative framework within the EU.
3. Water reuse in industrial activities: further integration of water reuse in the development and review of BREFs.
4. Support to research an innovation.
5. EU funds for investments in water reuse.

2.4.2.2 Water reuse experiences in Catalonia

Presenter: Jordi Molist Gazapo (Catalan Water Agency)

The background on water use, rainfall and reservoirs storage in Catalonia is presented and the water supply diversification strategy, including water conservation, water reuse, seawater desalination and groundwater recovery is introduced.

In Catalonia, there are 42 reclamation plants for water reuse, most of them working only during drought periods. The biggest plants are located in Barcelona and Tarragona

The design of Barcelona water reclamation plant consists of a hydraulic barrier for groundwater replenishment. Tarragona reclamation plant is designed for industrial reuse in the petrochemical industry.

2.4.2.3 Potential impacts of water reuse in groundwater

Presenter: Jordi Guimerà (Amphos 21)

The presentation introduces the background on water reuse and main questions and reasons for it: what, why, what for and how. A review on regulatory frameworks, the state of the art of water reuse and main challenges and opportunities are described. Potential impacts of water reuse on groundwater are identified to be as follows:

- Most of the impacts of water reuse in groundwater are of chemical nature
- Originate at the different redox state and pH of effluents
- May generate anoxic conditions, presence of metals and solubilize metals present in solid state.

Finally, some case studies on water reuse and their affectation to groundwater are studied and analysed and main conclusions extracted:

- Water reuse for activities that affect aquifer recharge must follow strict protocols in order to avoid any undesirable effect in groundwater quality, especially when in/direct potable reuse is an option.
- As long as the composition of the treated water and the geochemistry of the vadose zone are known and under control, the impact of water reuse in groundwater can only be beneficial.
- Opportunities can only grow in countries where water scarcity prevails and it should be seriously considered as an alternative source of water.

2.4.2.4 The future of water reuse

Presenter: Rafael Mujeriego (Universitat Politècnica de Catalunya)

The presentation shows the experiences in water reuse along the years of implementation of water reuse projects, the objectives accomplished and the future challenges.

The five main points developed are:

- The importance of water reuse for the water supply feasibility and the environmental protection.
- The contexts that allowed the two forms of water reuse: non-potable reuse and potable reuse.
- The trends in water reuse projects
- The progress of water reuse in Spain, and worldwide.
- The main challenges and opportunities that water reuse presents.

2.4.2.5 Water reuse: hazards and risks

Presenter: Miquel Salgot (Universitat de Barcelona)

The presentation describes the microbiological and chemical hazards and risks associated to water reuse projects and the necessity of applying risk management plans to manage the health and environmental risks of reclaimed water uses.

A risk management approach involves identifying and managing risks in a proactive way. In applying this approach to water reuse, the first step is to develop a risk assessment, from which to identify those hazards that represent significant risks for the proposed end use. The next step is to identify preventive measures to control such hazards, and to establish monitoring programs, to ensure that the preventive measures operate effectively. The final step is to verify that the management system consistently provides reclaimed water of a quality that is fit for the intended use. The risk assessment includes the following steps:

1. Hazard/risk identification: Hazard identification establishes whether exposure to a chemical or microbiological agent can cause harm and is generally based on primary data from human epidemiological studies and animal toxicological studies.
2. Dose response assessment and risk modelling, quantification and measurement: Characterises the relationship between the dose of a hazardous agent and incidence of an adverse effect in the exposed population.
3. Exposure assessment and risk evaluation: Measures or estimates the intensity, frequency and duration of human contact with a hazardous agent.
4. Risk characterization and risk acceptance and avoidance: Provides an indication of the incidence of the health effect under the conditions of the exposure assessment and the dose-response relationship described above.

2.4.2.6 Risk analysis in water reuse: methods and results from El Port de la Selva

Presenter: Wolfgang Seis (Kompetenzzentrum Wasser Berlin gGmbH)

The presentation presented the description of the risk assessment analysis for microbiological and chemical hazards related to the aquifer recharge with reclaimed water at El Port de la Selva site for indirect potable reuse.

The methodology employed to develop the risk analysis and the results obtained were presented, including:

- Quantitative Microbial Risk Assessment (QMRA)
- Quantitative chemical risk assessment
- Health and environmental guidance values

2.4.2.7 Water reuse: knowledge exchange from research to practice

Presenter: Beatriz Medina (WE&B)

The presentation is structured into three main sections: the context for knowledge exchange, the role of social sciences and the knowledge exchange in water reuse.

Social attitudes, public resistance to water reuse, and opinions on barriers to water reuse are first presented.

The role of social sciences is gaining understanding on the reasoning and current stakeholder's attitudes, main factors contributing to the degree of public understanding of water reuse are identified.

Factors explaining behaviours on water sources understanding are summarized: knowledge and information, past experiences, health concerns, perception of good water quality, perception of risk and trust in authorities associated with water reuse.

Keys for better knowledge exchange processes in water reuses are concluded: build your own Communication strategy and build a demonstration strategy

Finally, the role of media and challenges for Water Reuse community are described.

2.4.2.8 Water Reuse Europe: the industry association for the water reuse sector

Presenter: Video from Cranfield Water Science Institute

The industry association for the water reuse sector in Europe, created in the framework of WP8 of DEMOWARE project is presented.

Water reuse is playing an increasingly important role in the pursuit of sustainable water resources management and there is strong growth in industrial, agricultural, and municipal reuse schemes across Europe.

Water Reuse Europe (WRE) is the trade association for organizations involved in the European water reuse sector. WRE's mission is to create a collective identity for the European water reuse sector and promote an innovative and dynamic water reuse industry. The specific objectives are:

- to raise public awareness and understanding of water reuse practices;
- to facilitate knowledge exchange amongst public and private entities involved in water reuse;
- to promote European expertise and services in water reuse to a global audience;
- to support European companies (particularly SMEs) in their efforts to commercialize water reuse solutions;
- to promote research and innovation on water reuse.

The website will contain:

- General information on how and why water is recycled and reused?
- Announcements for coming events on water reuse, including conferences and workshops;
- Latest news on research and innovation, including access to publications and research papers in the area;
- Industry news, including latest project developments in Europe.

Water Reuse Europe will provide stimulating opportunities for knowledge exchange, advocacy, and education and we welcome membership applications from companies and organizations active in the European water reuse field. Member benefits include discounts for attendance at WRE and other events, opportunities to shape our advocacy initiatives, exposure on the WRE website, as well as access to:

- Our members director
- The WRE database of existing water reuse schemes
- Information on water reuse tools and techniques;
- WRE's publications library
- Discussion forums.

2.4.2.9 Inclusive models-promoting SMEs in the water sector

Presenter: Fernando Casado (GlobalCAD)

The presentation describes the reasons for innovation on water reuse business models and the potential schemes for financing and cost recovery in the framework of the following objectives of DEMOWARE:

- Market Access and business development for SMEs in the water sector.
- To Design and deliver an online tool to support SMEs in the development and exploitation plans.

A significant barrier to the promotion of water reuse across Europe is the no clear vision of its economic feasibility. In part, this is due to the difficulty to assess economic feasibility of water reuse schemes itself, since it involves identify and quantify internal and external economic impacts. While internal impact may be easily translated into monetary units, external effects (or externalities) are not considered by the market, thus requiring economic valuation methods for their quantification.

The methodological approach for the business models developed in the framework of DEMOWARE, recommendations and current business models that can be adapted are presented. In this context, main tools for SMEs for business promotion are introduced:

Tool 1: area prioritization

Tool 2: idea selection

Tool 3: product/service viability

2.4.2.10 Showcase of water reuse technologies

During the last part of the conference, there was a showcase with the following innovations on water reuse presented:

- U.S. Municipal Wastewater Reuse: Perspectives, Opportunities, Market Update 2016. Bluefield Research. Keith Hays
- Forward Osmosis as a robust pre-treatment for water reuse. ICRA. Marcos Sauchelli Toran
- AquaBio: online monitoring of E.coli for reclaimed water. ADASA Sistemas. Sergio De Campos.
- Doscontol® Combined disinfection of reclaimed water. Teqma. Ernest Mejías.
- Advanced treatment schemes for wastewater reclamation. Cetaqua. Olga Ferrer Mallén.

2.5 Participants

There were 73 attendants coming from 38 different organisms. Figure 2 shows the distribution of attendances by sectors: universities and technological institutes (R&D), private companies, public administrations and end users.

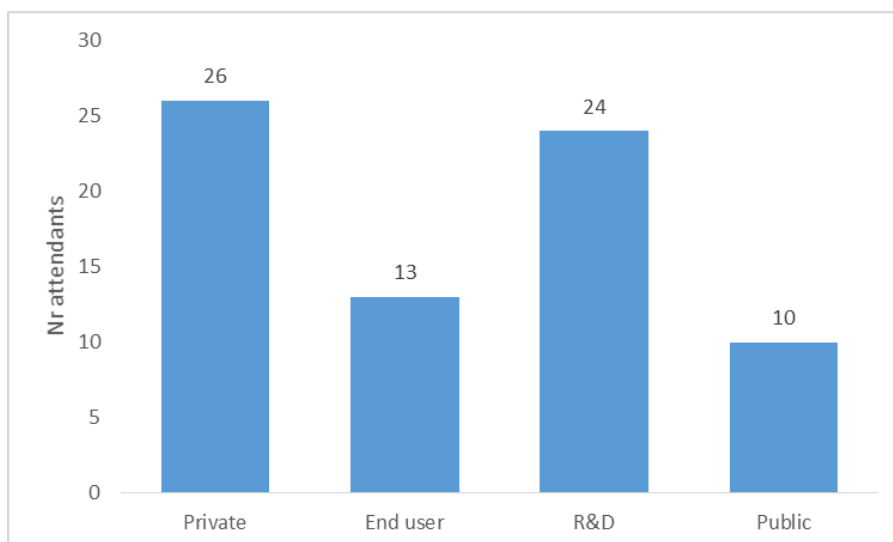


Figure 2 Distribution of attendants by sector



Figure 3 Participants attending the conference.

2.6 Evaluation of the workshop

The participants expressed high satisfaction from both the technical and policy approaches of the activity. Evaluations were made by participants at the end of the conference. The results of the evaluations are analyzed as follows:

A. Organization

As depicted in the chart below, a set of 5 criteria; A1-A5 (See table below) were assessed by the participants, using a scoring scale from 1 to 5, with 1= "very dissatisfied or the lowest, most negative impression and 5="very satisfied", or the highest, most positive impression.

Table 1 Evaluated criteria on organization of the workshop

Organization	
A1	Dissemination and preliminary information received (brochure) of the Conference
A2	Registration process
A3	Room conditions
A4	Schedule
A5	Material provided

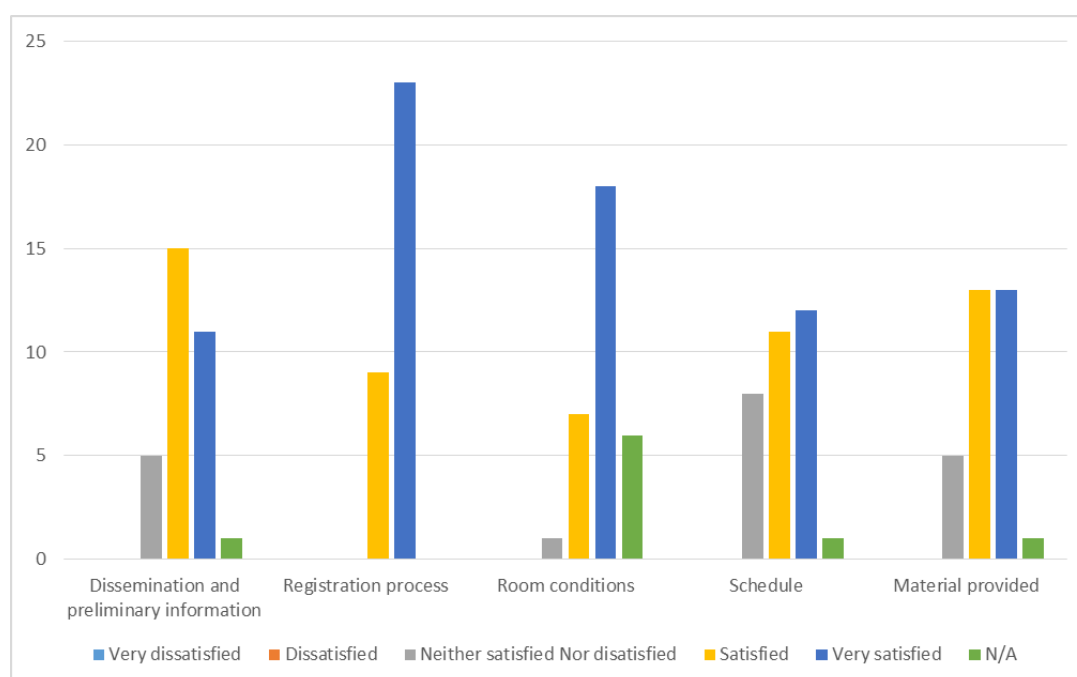


Figure 4 Feedback from participants on organization criteria

B. Contents

As depicted in the chart below, a set of 5 criteria; B1-B5 (See table below) were assessed by the participants, using a scoring scale from 1 to 5, with 1= "very dissatisfied or the lowest, most negative impression and 5="very satisfied", or the highest, most positive impression.

Table 2 Evaluated criteria on contents of the workshop

Contents	
B1	The content of the conference has met your expectations
B2	The conference has contributed to increase your knowledge on water reuse
B3	The conference has facilitated networking
B4	Overall rating of the conference: day 1
B5	Overall rating of the conference: day 2

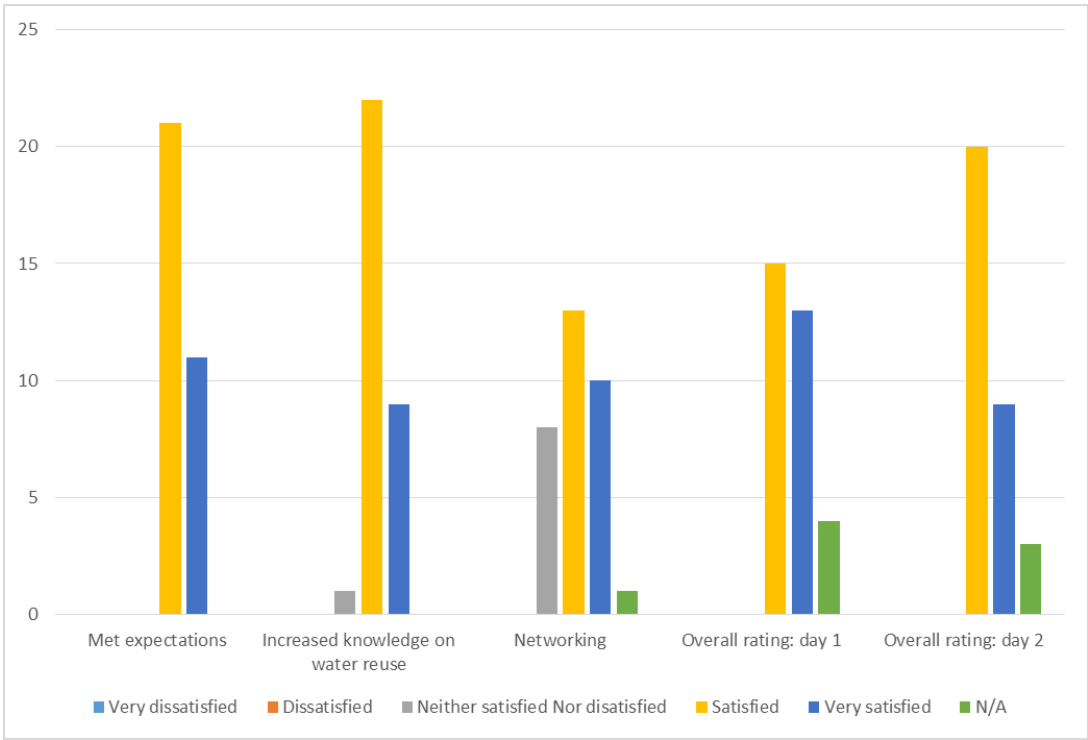


Figure 5 Feedback from participants on contents criteria

A. Other criteria and additional comments

As additional feedback, two specific questions were addressed to local participants (coming from Catalonia) and participants from the private sector, in particular:

- Local participants were asked whether the conference had been useful for the implementation of water reuse schemes in Catalonia.

- Private sector participants were asked whether the conference had contributed to the market penetration of their products/services.

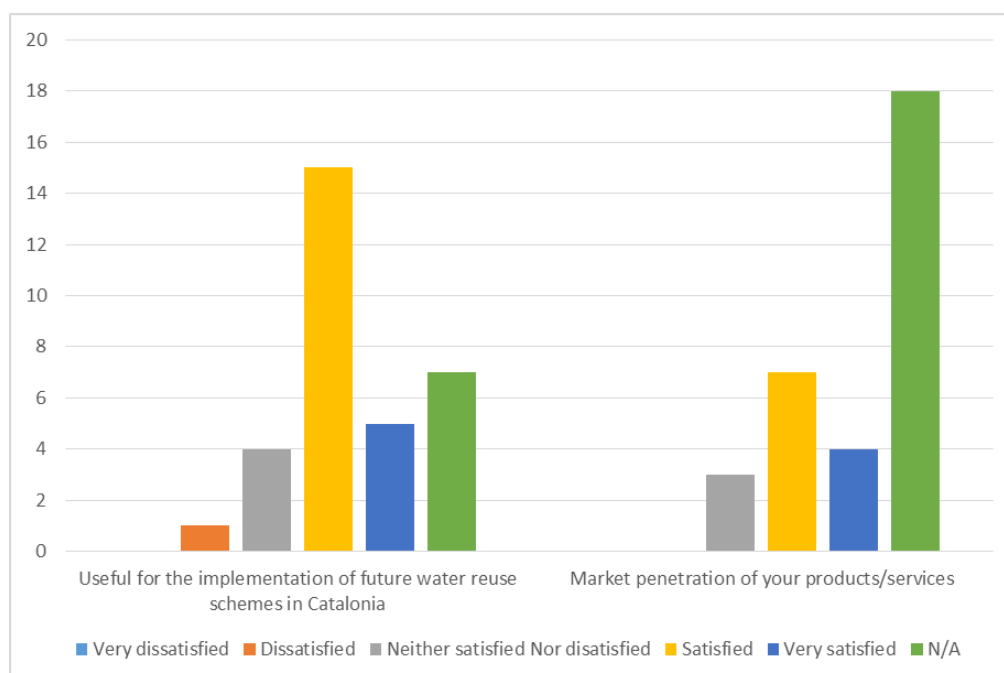


Figure 6 Feedback from participants on other criteria

Finally, participants contributed with few additional or explanatory comments, which are summarized as follows:

- Some local participants showed their disagreement on English language being used during the workshop without simultaneous translation.
- It is necessary to follow the program timing, preventing delays.
- Contents pretty well organised, the possibility of accessing the presentation later is very good.

3 Title: “Benefits and opportunities of water reuse in agriculture in Puglia”

3.1 Workshop objectives, target audience and method

ARTI - Puglia Regional Agency for Technology and Innovation, in collaboration with IRSA CNR and Fiordelisi, organized the workshop “Benefits and opportunities of water reuse in agriculture in Puglia” on 13th September 2016, in Bari.

The objective of the workshop was to promote the opportunities deriving from treated wastewater reuse in agriculture in Puglia, through the presentation of the main results of the Demoware project and European and regional policies on the subject.

The event was addressed to stakeholders (representatives of agro-industrial companies, public authorities, regulatory agencies, public utility companies, businesses and research communities), potentially interested in the theme of using treated wastewater. The workshop has been included among training initiative of the Order of Agronomists of the Province of Bari and the Order of Geologists of Puglia.

The event was hosted within the “Fiera del Levante”, a multi-sector trade fair and one of the main events in Puglia. During the event, questionnaires and information brochures produced by the project were distributed to participants.

The event was structured into four different sessions:

1. **SESSION I – “Welcome and introductory remarks”** by the apulian policymakers Leonardo Di Gioia, Puglia Region, Regional Minister for Agriculture and Agri-Resources and Vito Albino, Special Commissioner, ARTI – Apulian Regional Agency for Technology and Innovation
2. **SESSION II – “The DEMOWARE project in Puglia”**, devoted to the short introduction of DEMOWARE project activities and results and the presentation of the technologies used within the Capitanata demo-site, by Carlo Gadaleta Caldarola, ARTI Puglia, Alfieri Pollice, IRSA CNR and Giovanni Fiordelisi, Fiordelisi Srl
3. **SESSION III – “Water reuse in Puglia and European and regional opportunities”** – This session tackled the regional policies supporting water reuse in agriculture in Puglia, the role of Puglia Region in European networks related to water resources and some european and national funds for water reuse, by Luca Limongelli, Water resources Department Director of Puglia Region, Paolo Casalino, Head of the Bruxelles Office of Puglia Region and Manlio Cassandro, Studio Cassandro
4. **SESSION IV – “Questions and answers”** - The concluding fourth session gathered relevant regional stakeholders discussing the opportunities and perspectives for water reuse has been coordinated by Umberto Fratino, Polytechnic of Bari.

3.2 Programme and presentations

The complete agenda of the Water Reuse Conference is listed below.

Programme	
15.00 - 15.30	Participants registration and welcome coffee
15.30 - 16.00	Welcome and introductory remarks <i>Leonardo Di Gioia, Puglia Region, Regional Minister for Agriculture and Agri-Resources</i> <i>Vito Albino, Special Commissioner, ARTI - Apulian Regional Agency for Technology and Innovation</i>
16.00 - 16.30	The DEMOWARE project in Puglia Short introduction of the project partners working in Puglia <i>Carlo Gadaleta Caldarola, ARTI Project manager</i> <i>Alfieri Pollice, IRSA CNR</i> <i>Giovanni Fiordelisi, Fiordelisi Srl</i>
16.30 - 17.30	Water reuse in Puglia and European and regional opportunities <i>Luca Limongelli, Puglia region, Director water resources Department</i> <i>Paolo Casalino, Puglia Region, Head of the Bruxelles Office</i> <i>Manlio Cassandro, Studio Cassandro</i>
17.30 - 18.00	Questions and answers Open session
Chair: <i>Umberto Fratino, Polytechnic of Bari</i>	

A brief summary of the main contents addressed by each presentation is developed below.

3.3 Summary of presentations

Presentations are available at the Demoware website (<http://demoware.eu/en/events/demoware-regional-workshop-13-september-2016-bari/presentations/>). A brief summary of the main contents addressed by each presentation is developed below.

“ARTI and the Demoware project”

Presenter: Carlo Gadaleta Caldarola (ARTI)

A presentation of the ARTI’s involvement in international projects, a short introduction of DEMOWARE project, partnership, activities and results, the activities carried on by ARTI within the DEMOWARE and an overall picture of water reuse practices and policies in Puglia.

“IRSA experimental activities at Fiordelisi company in Stornarella”

Presenter: Alfieri Pollice (IRSA CNR)

Presentation of the experimental activities carried on by IRSA CNR at Capitanata demosite of Fiordelisi company in Stornarella (FG). Description of company activities and the deriving characteristics of agro-industrial wastewater; description of the tertiary treatment, field trials, characteristics of water used for irrigation and soil and plants microbiology. Experiment results in the demo-site in Capitanata showed that it is possible to use treated industrial wastewater for irrigation, respecting law indications and without causing damages or plants and products microbiological contamination.

“Funding for companies and public that reuse wastewater”

Presenter: Manlio Cassandro (Studio Cassandro)

A short presentation of funds for companies and public entities that reuse wastewater: European Regional Development Fund that finance the use of wastewater for agricultural purposes; funds promoted by the Italian Agriculture Ministry, which funds projects realized among different companies; the measure 6.4 of the ERDF financing institutional players as Puglia Region and water reclamation authorities for the maintenance and improvement of water bodies.

3.4 Main aspects raised during the discussion

During the workshop, water reuse was highlighted to be a competitive key aspect for agriculture in Puglia Region. In this context, Puglia Region is supporting policies regarding wastewater reuse in agriculture and has planned many investments in treated wastewater and strengthening composting plants. The Region has also a relevant role in European networks in water theme within EIN Water, Finnowater and through Demoware e WaterPipp projects. Demoware project results, in particular, can be considered as a part of this overall effort of Puglia Region on water reuse.

The general discussion concluded that water reuse is a key innovation theme and a main aspect of circular economy, as well as an advantage in terms of company image towards foreign customers; however, some barriers related to water reuse economic sustainability, social acceptance, distribution networks and rigid standards were identified.

3.5 Participants

10 speakers took part to the event. Online registered participants were **124** and registered participants in situ were **79**. Figure 7 shows the distribution of participants by sectors: universities and technological institutes (R&D), private companies, public administrations. N.p. stands for „Not Provided“.

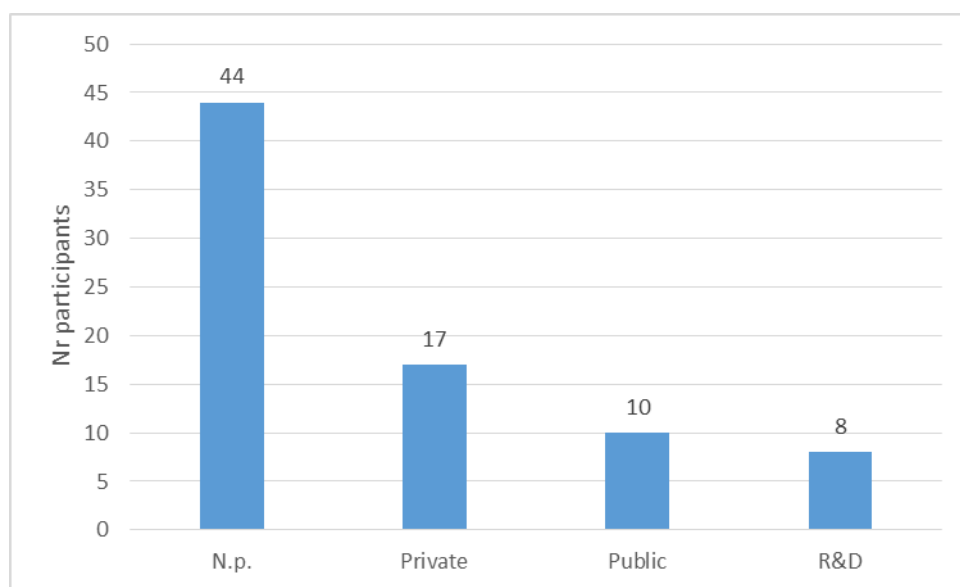


Figure 7 Distribution of participants by sector

3.6 Communication and promotional activities

The promotional activities related to the workshop started by sending a Save the date (in July) and the invitation (in September) to a wide database of potential interested people and the publication of some news related to the event within the ARTI website and the ARTINews (ARTI's weekly newsletter), which has almost 3.000 readers.

A leaflet was elaborated for the promotion of the workshop through the different media channels, as shown in Figure 8 and a roll up was produced to indicate the event at the venue, as shown in Figure 9 .



Figure 8 Leaflet for dissemination of the “Benefits and opportunities of water reuse in agriculture in Puglia” Workshop held on 13 September 2016 in Bari in the framework of DEMOWARE project.



Figure 9 Rollup for dissemination of the “Benefits and opportunities of water reuse in agriculture in Puglia”
Workshop held on 13 September 2016 in Bari in the framework of DEMOWARE project.

The visibility of the DEMOWARE project has been guaranteed throughout all the activities carried out for the event. All the graphical items (leaflet, rollup, registration sheets, folders, e-card) displayed the project logo.

Moreover, 2 brochures were produced and distributed during the event, as shown in Figure 10 and Figure 11. The brochures addressed to 2 different targets: on the one hand, general public, and, on the other hand, technicians, industry and administrators. They are both available at Demoware website (<http://demoware.eu/en/events/demoware-regional-workshop-13-september-2016-bari/presentations/>).



Figure 10 Educational brochure “Water reuse in agriculture in Puglia” distributed the “Benefits and opportunities of water reuse in agriculture in Puglia”
Workshop held on 13 September 2016 in Bari in the framework of DEMOWARE project.



Figure 11 Informational brochure “Water reuse in agriculture in Puglia – Technologies, the demosite and stakeholders opinion” distributed the “Benefits and opportunities of water reuse in agriculture in Puglia”
Workshop held on 13 September 2016 in Bari in the framework of DEMOWARE project.

The workshop was disseminated at a regional level through different communication channels. Dissemination channels were chosen for a greater impact on the success and effectiveness of the workshop promotion. The following communication channels were used:

1. Project website

2. ARTINews (ARTI's weekly newsletter)
3. Professional networks and stakeholders mailing list
4. Press
5. Social media: Twitter and LinkedIn

In order to guarantee an adequate media coverage, several actions have been planned and accomplished:

- A news about the event has been published on ARTI website before and after the event
- A press release has been sent to ARTI media list before the event
A press release has been sent to ARTI media list after the event
- Social network updating before, during, after the event
- Pictures during the initiative

Following the launching and the conclusion of the event, 14 articles concerning DEMOWARE workshop have been published local press, websites and tv.

Websites

- In Capitanata un dimostratore d'avanguardia per il riuso delle acque in agricoltura Puglialive.net – 12/09/2016
- Depurazione delle acque per l'agricoltura, l'eccellenza è in Capitanata. Spicca Stornarella Immediato.net – 13/09/2016
- Bari Fiera del Levante: il riuso delle acque in agricoltura in puglia Trcb.it – 13/09/2016
- Il riuso delle acque in agricoltura in Puglia Sistema.puglia.it – 13/09/2016
- FDL80. Il riuso delle acque in agricoltura in Puglia Press regione – 13/09/2016
- A Stornarella "Demoware", Di Gioia: "Opportunità per il riuso delle acque" Teleradioerre.it – 13/09/2016
- FDL80. Il riuso delle acque in agricoltura in Puglia Regioni.it – 13/09/2016
- Il riuso delle acque in agricoltura in Puglia Sudnews.it – 14/09/2016
- Fiera del Levante – Di Gioia sul riuso delle acque in agricoltura 99tv.it – 14/09/2016
- FDL80. Il riuso delle acque in agricoltura. Di Gioia. Arti Newsimedia.net – 15/09/2016
- Riuso, Puglia: indicazioni da progetto Demoware Staffettaonline.com – 16/09/2016

Local TV

- Service on TGNorba, NorbaTV - 13/09/2016
- Service on Television Programme "Our earth colours", NorbaTV - 18/09/2016

Local Press

- Article on "L'attacco" – 15/09/2016

IMPRESE & MERCATI

GIOVEDÌ 15 SETTEMBRE 2016 | L'Attacco | 15

Protagonisti



Giovanni Fiordelisi
I problemi riguardano il quadro normativo attuale e le infrastrutture idriche presenti



Cristian Casili
In questo modo gli agricoltori potrebbero avere l'acqua a 0,24 centesimi anziché a 0,40



Vito Albino-Arti
Stimolare l'innovazione lungo questa direttrice aiuta le imprese a ragionare sul futuro



Workshop
Organizzato dall'Arti alla Fiera del Levante, per discutere dei tanti benefici

Le acque reflue per irrigare i campi: il "piano Stornarella"

NEGLI STAND DELLA FIERA DEL LEVANTE, L'ARTI HA PRESENTATO IL PROGETTO DEMOWARE CHE COINVOLGE ANCHE L'AZIENDA AGRICOLA FIORDELI

FRANCESCO GABBARDI
Poco sono state le opportunità per colmare le risorse idriche e non è caso sia trovato un importante campo di sperimentazione in un territorio a forte vocazione agricola come quello del Gargano. Nel workshop tenutosi nella giornata del 13 settembre presso la Fiera del Levante, organizzato da ARTI Puglia, si è parlato del progetto "Demoware" incentrato sulle sfide del riutilizzo delle acque reflue. L'obiettivo è stato dichiarato da Umberto Frattini, direttore di costruzioni idriche e reflue dell'azienda di Bari, che ha sottolineato l'importanza del progetto "Demoware" nel contesto del riutilizzo delle acque reflue. L'azienda si occupa di produzione e conservazione di pomodori secchi e semi secchi.

La distribuzione delle risorse idriche naturali ha aperto la riflessione sul sovaccamento delle risorse che solitamente vengono gettate a mare. Tra i vantaggi della sperimentazione ci sono: la riduzione dei costi di depurazione, la possibilità di utilizzare le acque reflue per la produzione di energia, la riduzione dei costi di trasporto delle acque reflue, la possibilità di utilizzare le acque reflue per la produzione di energia, la riduzione dei costi di trasporto delle acque reflue.

emmeno che non ci sono ricominciati negli ultimi anni. Il piano è un progetto che si basa sulla tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.) e sulla tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.). Ma l'obiettivo è di implementare la tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.) e sulla tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.).

sono, in questo settore, può permettere. Lo sviluppo è la sperimentazione: sono queste nuove tecnologie che dovranno portare all'attuazione del progetto. Il progetto è stato presentato alla Fiera del Levante, per discutere dei tanti benefici del riutilizzo delle acque reflue. Il progetto è stato presentato alla Fiera del Levante, per discutere dei tanti benefici del riutilizzo delle acque reflue.

REAZIONI
L'agricoltura è il settore produttivo che richiede maggiori risorse idriche e che pratica attività irrigue con tanti sprechi

Di Gioia: "Un'opportunità fondamentale"
Secondo quanto mostrato durante il workshop, in Puglia i numeri della depurazione dell'acqua negli ultimi anni sono in forte crescita. Il progetto "Demoware" è un progetto che si basa sulla tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.) e sulla tecnologia di depurazione delle acque reflue (a fine agricole, industriali, urbane, ecc.).

Il riutilizzo irriguo non sarà comunque sufficiente ad evitare lo scarico in mare in virtù del ciclo di utilizzo culturale

Figure 12 Article on "L'attacco" on 15 September 2016 about the regional workshop "Benefits and opportunities of water reuse in agriculture in Puglia"
Held on 13 September 2016 in Bari in the framework of DEMOWARE project.

Social networks

Before, during and after the event a social media management activity has been carried out on the ARTI Facebook fanpage and Twitter account. In detail:

Social network	N. of post/tweet	N. of retweet/share	N. of likes
Facebook	8	12	30
Twitter	7	1	0
Total	15	13	30





Figure 13 Speakers and participants attending the workshop.

4 Title: “The DEMOWARE project and water reuse in agriculture in Puglia”

4.1 Workshop objectives, target audience and method

ARTI - Puglia Regional Agency for Technology and Innovation, in collaboration with IRSA CNR and Fiordelisi, organized the workshop “The DEMOWARE project and water reuse in agriculture in Puglia” on 20th September 2016, in Stornarella (FG) at the Fiordelisi Srl premises.

The objectives of the workshop were to present the Demoware project, to explain the characteristics of the Capitanata demo-site, and to show the potential of treated wastewater reuse in agriculture in Puglia.

The event was addressed to a selected audience of about 30 participants, including some international representatives of the Demoware project (the Joint Research Centre of the European Commission and KWR Watercycle Research Institute), project partners working in Puglia (ARTI, IRSA CNR and Fiordelisi), regional policy makers, water reclamation authorities representatives, academia representatives, professionals.

The event has been hosted by Fiordelisi Srl premises, where the DEMOWARE Capitanata demo-site is located. The scientific representatives of the demonstrator project illustrated how the Capitanata demo-site works and the company representatives showed the production plant area.

The workshop includes an interactive phase with the participants, aiming to bring out good practices for Capitanata.

A transfer service with a minibus to and from Bari to the event location and an Italian/English translation service for speakers were available. Promotional materials and questionnaires produced within the project were distributed to participants.

The event was structured into four different sessions:

5. **SESSION I – “Introductory remarks and presentation of the DEMOWARE project in Puglia”** by
 - Laura **Alcalde Sanz**, European Commission Joint Research Centre (*via Conference call), Carlo **Gadaleta Caldarola**, ARTI, Giovanni **Fiordelisi**, Fiordelisi Srl and “Presentation of Fiordelisi company production process” by Antonio **Romano**, Fiordelisi Srl, devoted to the introduction of the European Commission policies on water reuse, the introduction of DEMOWARE project activities in Puglia and the experience of the Capitanata demo-site and the production process of the company
6. **SESSION II – “Visit to the Fiordelisi production area and the Capitanata demo-site”** devoted to the illustration of the Fiordelisi production process and the visit to the production area by Giovanni **Fiordelisi**, Fiordelisi Srl owner and the visit to the Capitanata demo-site and the presentation of its operating principles and the experimentation carried on, by Pompilio **Vergine**, IRSA CNR
7. **SESSION III – “Good practices in water reuse governance”**, by Stijn **Brouwer**, that presented KWR WATER Demoware governance research results on public engagement
8. **SESSION IV – “Workshop on good practices for Puglia / debate among stakeholders”**, devoted to a stickers exercise to bring out good practices for Capitanata and a debate open to all participants and coordinated by Umberto **Fratino**, Polytechnic of Bari.

4.2 Programme and presentations

The complete agenda of the workshop is listed below.

Programme

08.00	Departure from Bari to Stornarella (FG)
10.00	Arrival to the venue
10.00 - 10.30	Participants registration and welcome coffee
10.00 - 10.30	Introductory remarks and presentation of the DEMOWARE project in Puglia Laura Alcalde Sanz, European Commission Joint Research Centre (*via Conference call) Carlo Gadaleta Caldarola, ARTI Giovanni Fiordelisi, Fiordelisi Srl
10.30 – 10.45	Presentation of Fiordelisi company production process Antonio Romano, Fiordelisi Srl
10.45 – 11.45	Visit to the Fiordelisi production area and the Capitanata demo-site Giovanni Fiordelisi, Fiordelisi Srl Pompilio Vergine, IRSA CNR
11.45 - 12.15	Good practices in water reuse governance Stijn Brouwer, KWR WATER
12.15 - 13.30	Workshop on good practices for Puglia / debate among stakeholders Open debate among participants Chair: Umberto Frattino, Polytechnic of Bari
13.30 - 14.00	Lunch break with traditional local products
14.00	Departure from (FG) to Bari
16.00	Arrival to Bari

4.3 Summary of good practices for Puglia

Presentation on good practices for Puglia is available at the Demoware website (<http://demoware.eu/en/events/demoware-regional-workshop-13-september-2016-bari/presentations/>). A brief summary of the main contents is as follows.

“Good practices in water reuse governance” and “Workshop on good practices for Puglia”

Presenter: Stijn Brouwer, KWR WATER

A presentation of DEMOWARE governance research results on public engagement. An international review showed that public acceptance is key for the success and/or failure of water reuse schemes. Public acceptance is among others related to the trust in water reuse organisations.

Governance baseline assessment Capitanata regards policy and regulations, financing and pricing and stakeholder/public participation.

The key governance issues that need to be addressed for water reuse regard:

- setting a legal framework with realistic quality standards and operating requirements, with a fit-for-purpose monitoring system
- helping the economic viability of reuse schemes, through facilitating access to capital financing and competitive tariffs
- gaining public acceptance and trust through stakeholder involvement and public communication.

The Demoware governance research identified key governance challenges that need to be addressed for water reuse. In total, six good practices are derived:

1. Clear and realistic quality standards and operating requirements
2. A 'fit-for-purpose' monitoring system
3. Facilitate access to capital financing
4. Set competitive recycled water tariffs
5. Promote stakeholder and public collaboration and involvement
6. Inform, raise awareness and educate

In the workshop, the input and reflection of the participants on these good practices were gathered. Three questions were posed:

- 1) In view of the EU ambition to realise the widespread implementation of water reuse schemes, which good practices do you consider most important for this region in the coming five years?
- 2) For the successful adoption of which good practices, is most EU support required?
- 3) In relation to the successful adoption of which good practice can your organisation make the biggest contribution?

For the first two questions, the participants were asked to place three stickers on one good practice, or divide them up between the different good practices. The result of the stickers and the outcome of the discussion is presented below:

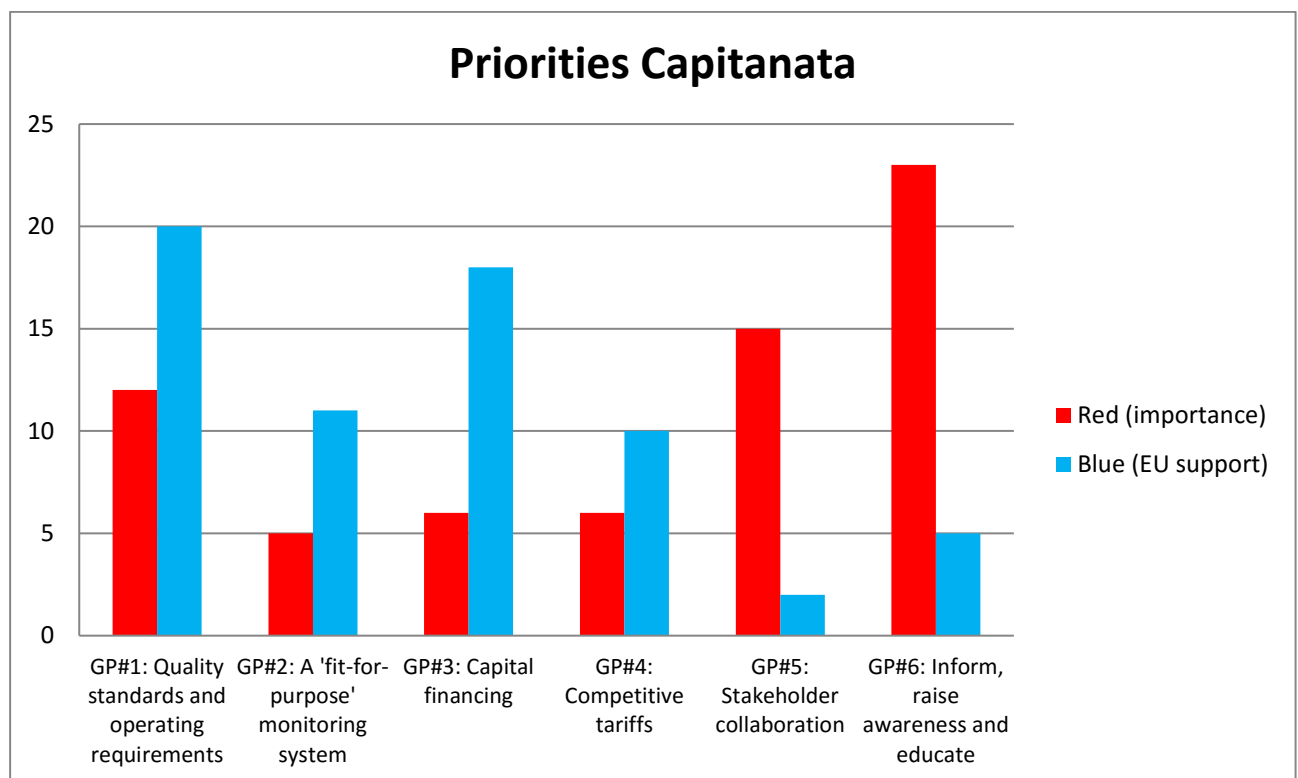


Figure 14 Participant reflections on good practices and outcome of the discussion.

The most important good practice for Capitanata/Puglia region is “inform, raise awareness and educate”, because the general public (including the farmers) are largely unaware of: the advantages of reused water, the quality and safety of reused water (lack of trust), the environmental need to search for alternative sources of water.

EU support is expected for the successful adoption of quality standards and operating requirements because there are various national and regional policy to regulate the use of recycled water and current quality standards are considered too strict and too rigid.

4.4 Main aspects raised during the discussion

Laura **Alcalde Sanz**, European Commission Joint Research Centre: the results of the Demoware project will be used to draw up the next European Commission guidelines on water reuse, that will try to standardize actual regulations and establish also minimum quality standards for treated wastewater.

Carlo **Gadaleta Caldarola**, ARTI: water reuse is a very important step towards circular economy. Summarizes the project activities in Puglia and the results of the Demoware Workshop of Fiera del Levante.

Giovanni **Fiordelisi**, Fiordelisi Srl: the company challenge is that of combining tradition and innovation, also testing water reuse for irrigation, even if it is a big effort because water reuse national and regional parameters are too strict and too rigid. Moreover, costs are too high so it is expected a bigger public institutions collaboration to overcome lack of infrastructures and information.

Pompilio **Vergine**, IRSA CNR, showed the operation mode of the wastewater treatment plant, constituted by a traditional sludge process followed by an ultrafiltration, which produces treated water for irrigation in experimental test fields: experiment results in the demo-site in Capitanata showed that it is possible to use treated industrial wastewater for irrigation, respecting law indications and without causing damages or plants and products microbiological contamination.

Umberto **Fratino**, Polytechnic of Bari, who coordinated the open debate stressed how the environmental issue of water management requires awareness and governance processes at various levels (local, national and European), with a specific focus on control and monitoring.

4.5 Participants

7 speakers took part to the event. Registered participants in situ were 35. Figure 15 shows the distribution of participants by sectors: universities and technological institutes (R&D), private companies and public administrations. N.p. stands for „Not Provided“.

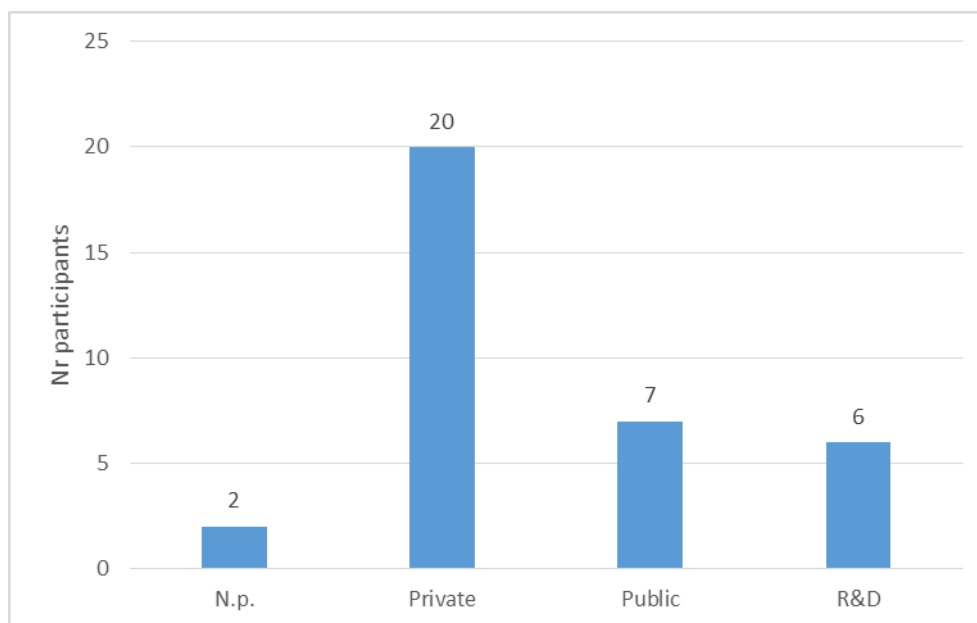


Figure 15 Distribution of participants by sector

4.6 Communication and promotional activities

The promotional activities related to the workshop started by sending a Save the date and the invitation (both in September) to a database of selected potential interested people and the publication of some news related to the event within the ARTI website and the ARTINews (ARTI's weekly newsletter), which has almost 3.000 readers.

A flyer and an e-card were elaborated for the promotion of the workshop through the different media channels, as shown in Figure 16 and Figure 17 and a roll up was produced to indicate the event at the venue, as shown in Figure 18.



INVITO

WORKSHOP

IL PROGETTO DEMOWARE E IL RIUSO DELLE ACQUE IN AGRICOLTURA IN PUGLIA

MARTEDÌ | 20 SETTEMBRE 2016 | ORE 10.00 - 14.00
PRESSO LA SEDE DELLA FIORELISI SRL - STORNARELLA (FG)
VIA ASCOLI SATRIANO KM 0,800

In Europa si registra uno squilibrio preoccupante fra la domanda di acqua dolce, sempre crescente, e la sua disponibilità. Tra i settori produttivi che richiedono maggiori risorse idriche, l'agricoltura è il principale e in alcune zone utilizza oltre l'80% dell'acqua disponibile: un più ampio ricorso alle acque reflue trattate potrebbe soddisfare le esigenze in agricoltura.

Un esempio di riuso delle acque a fini agroindustriali avviene in Puglia, a Stornarella (FG), in cui viene effettuata la depurazione delle acque a fini irrigui per la produzione agroalimentare, attraverso uno dei 10 siti dimostratori del progetto DEMOWARE, gestito dalla società Fiorelisi e dell'IRSA CNR, sede di Bari.

Del progetto, dei vantaggi derivanti dal riutilizzo delle acque in agricoltura, delle caratteristiche dell'impianto per il trattamento e il riutilizzo a fini irrigui delle acque situato presso la sede dell'azienda Fiorelisi si discute nel workshop europeo "Il progetto DEMOWARE e il riuso delle acque in agricoltura in Puglia", che si terrà martedì 20 settembre (ore 10.00 - 14.00) presso la sede dell'azienda Fiorelisi, a Stornarella (FG).

L'incontro è organizzato da ARTI - Agenzia Regionale per la Tecnologia e l'Innovazione, in collaborazione con IRSA CNR e l'azienda Fiorelisi, nell'ambito del progetto europeo DEMOWARE, finanziato dall'Unione Europea attraverso il 7° PQ, che ha l'obiettivo di promuovere l'utilizzo delle acque reflue.

Il workshop si configura come un laboratorio, in cui insieme ai rappresentanti della Regione Puglia, dei partner pugliesi ed internazionali del progetto, gli stakeholders potranno confrontarsi dinamicamente sui benefici dell'uso delle acque reflue e le buone pratiche per la Puglia.



Il progetto DEMOWARE "European demonstration for a competitive and innovative European Water Reuse Sector" è cofinanziato dal 7° Programma Quadro dell'Unione Europea per la ricerca, sviluppo tecnologico e innovazione nell'ambito del contratto di ricerca.

PROGRAMMA

08.00
Partenza con il minibus da Bari verso Stornarella (FG)

09.45
Arrivo presso il luogo dell'evento (la sede dell'azienda Fiorelisi)

09.45 - 10.00
Registrazione dei partecipanti e welcome coffee

10.00 - 10.30
Saluti istituzionali
Laura Alcalde Sanz *, DG Joint Research Centre della Commissione Europea (*via Conference call)
Carlo Gadoleta Calderola, ARTI

10.30 - 11.30
Visita al dimostratore di Capitanata e allo stabilimento produttivo dell'impresa Fiorelisi
Giovanni Fiorelisi, Fiorelisi Srl

11.30 - 11.50
Il progetto DEMOWARE
Carlo Gadoleta Calderola, ARTI
Alfieri Pellica, IRSA CNR

11.50 - 12.20
Buone pratiche nella gestione del riuso delle acque
Stijn Brouwer, KWR Water

12.20 - 13.30
Gli stakeholders si confrontano su: "Le buone pratiche per la Puglia, i benefici e le barriere dell'uso delle acque reflue trattate"
Sessione interattiva con gli invitati

Moderi: Umberto Fretone - Politecnico di Bari

13.30 - 14.00
Lunch break con prodotti tipici locali

14.00
Partenza con il minibus da Stornarella (FG) verso Bari

15.45
Arrivo a Bari

Per informazioni
ARTI - Agenzia Regionale per la Tecnologia e l'Innovazione
Via Gallo Petroni, 15/T + 70134 Bari
info@arti.puglia.it - www.arti.puglia.it

Figure 16 Flyer for dissemination of the workshop "The DEMOWARE project and water reuse in agriculture in Puglia"
Held on 20 September 2016 in Stornarella (FG) in the framework of DEMOWARE project.



The e-card is a digital version of the flyer, featuring the same layout and content. It includes the DEMOWARE logo, the title of the workshop, the date and time (Tuesday, September 20, 2016, 10:00-14:00), the location (Fiorelisi Srl, Stornarella, FG), and a brief description of the event as a laboratory for stakeholders to discuss water reuse benefits and best practices in Puglia. It also mentions the project's funding by the European Union's 7th Framework Programme.

Figure 17 E-card for dissemination of the workshop "The DEMOWARE project and water reuse in agriculture in Puglia"
Held on 20 September 2016 in Stornarella (FG) in the framework of DEMOWARE project.



Figure 18 Rollup for dissemination of workshop “The DEMOWARE project and water reuse in agriculture in Puglia”
Held on 20 September 2016 in Stornarella (FG) in the framework of DEMOWARE project.

The visibility of the DEMOWARE project has been guaranteed throughout all the activities carried out for the event. All the graphical items (leaflet, rollup, registration sheets, folders, e-card) displayed the project logo.

Moreover, an informational brochure (Figure 19) addressed to technicians, industry and administrators was distributed during the event. The brochure is available at Demoware website (<http://demoware.eu/en/events/demoware-regional-workshop-13-september-2016-bari/presentations/>).



Figure 19 Informational brochure “Water reuse in agriculture in Puglia – Technologies, the demosite and stakeholders opinion”

Distributed during the workshop “The DEMOWARE project and water reuse in agriculture in Puglia” held on 20 September 2016 in Stornarella (FG) in the framework of DEMOWARE project.

The workshop was disseminated at a regional level through different communication channels. Dissemination channels were chosen for a greater impact on the success and effectiveness of the workshop promotion. The following communication channels were used:

1. Project website
2. ARTINews (ARTI’s weekly newsletter)
3. Professional networks and stakeholders mailing list
4. Press
5. Social media: Twitter and LinkedIn

In order to guarantee an adequate media coverage, several actions have been planned and accomplished:

- A news about the event has been published on ARTI website before and after the event
- A press release has been sent to ARTI media list before the event
A press release has been sent to ARTI media list after the event
- Social network updating before, during, after the event
- Pictures during the initiative

Following the launching and the conclusion of the event, 3 articles concerning DEMOWARE workshop have been published by local press and websites.

Websites

- Il workshop sul riuso delle acque reflue, tanti esperti attesi a Stornarella. Ilmegafono.eu – 19/09/2016
- Acque reflue, best practice a Stornarella. Ambienteambienti.com – 23/09/2016

Local Press

- Article on “L’attacco” – 20/09/2016 (Figure 5)

Stornarella

I TEMI



Produzione

In aumento la domanda dai mercati del nord Europa, soprattutto tra i paesi scandinavi, dalla Germania e dal Regno Unito



Semi-dried

Il prodotto innovativo semi-seccato nei forni, è un ibrido tra il classico essiccato e il pomodoro fresco. È molto richiesto soprattutto in Germania



Riuso

Le acque utilizzate per il lavaggio degli ortaggi, delle apparecchiature e per le fasi della produzione, vengono riusate per irrigare i campi

Workshop

L'Arti Puglia, in collaborazione con l'Irsa Cnr, ha organizzato un dibattito sul riuso delle acque in agricoltura, all'interno dell'azienda di Via Ascoli dedicata alla produzione del pomodoro secco. Un'occasione per conoscere la mission

“Dalla terra alla tavola” i progetti di Fiordelisi

FRANCESCO GASBARRO

È stata sicuramente un'ottima vetrina per l'azienda, oltre che un modo per far conoscere agli esperti del settore, i risultati di una decennale sperimentazione sulla depurazione delle acque reflue. Durante la giornata di ieri, l'azienda Fiordelisi srl di Stornarella, ha ospitato un importante workshop sui benefici di questa nuova frontiera dello sfruttamento delle risorse idriche. L'appuntamento, organizzato dall'Agraria regionale per la tecnologia e l'innovazione in collaborazione con l'Istituto di Ricerca sulle Acque del Cnr, ha fatto tappa nella virtuosa azienda di trasformazione del pomodoro, a seguito di quanto era stato discusso non molti giorni fa all'interno di un approfondimento tematico della Fiera del Levante.

Tanti studiosi e stakeholder provenienti dall'estero e dalle province del barese, hanno voluto visionare direttamente quanto proposto dal progetto Demoware di cui Giovanni Fiordelisi è uno tra i 10 sperimentatori in Europa con il suo dimostratore situato nell'azienda di Stornarella. All'interno dell'enorme complesso industriale di Via Ascoli, l'opening dell'appuntamento è stato affidato all'intervento in video conferenza di Laura Alcide Santuz, direttrice della Joint Research Centre della Commissione Europea, la quale ha sottolineato gli sforzi che le istituzioni comunitarie stanno facendo per rendere omogenee le normative e i parametri per il riuso delle risorse

Fiordelisi è uno tra i 10 sperimentatori europei del progetto Demoware per il riuso delle acque reflue in agricoltura

idriche. Poi è stata la volta del padrone di casa, Giovanni Fiordelisi, che ha spiegato, in breve la mission dell'azienda e il recente impegno sul fronte della sperimentazione: “Ci occupiamo essenzialmente di pomodori secchi e semiseccati - ha spiegato - fin dagli ultimi anni '70, quando insieme ai miei 3 fratelli abbiamo deciso di creare quella che oggi si chiamerebbe una “variety”.

“From field to fork”, questo il motto dell'azienda che ad oggi può contare sulla copertura dell'intera filiera e su una produzione media di 20.000 quintali di essiccato da immettere sul mercato, con il 50% del comparto dedicato al prodotto classico, il 40% all'innovazione del semisecco (semi-dried) e con un restante 10% dedicato alla lavorazione di altri vegetali, tra i quali olive carciofi e peperoni. All'esterno dei capannoni, una sterminata distesa di 7 ettari di banchi dove viene fatto seccare al sole il pomodoro; un vero e proprio “mare rosso” visibile da giugno ad agosto.

“A richiedere maggiormente i nostri prodotti - ha spiegato Fiordelisi - sono soprattutto i paesi del nord Europa che sicuramente hanno un clima molto meno idegiato del nostro e per questo difficilmente possono avere in loco queste specialità”. Mentre l'azienda comincia a sondare anche i mercati transatlantici, aumentano le richieste dai comparti di trasformazione industriale che ad oggi costituiscono il 60% del target aziendale. Un 25% della produzione è destinato invece al Food



A sinistra, Giovanni Fiordelisi e Carlo Gadaleta

Service e alle grandi catene della ristorazione che si trovano in ogni angolo d'Europa, mentre il restante 15% è costituito dalla vendita al dettaglio nei circuiti della grande distribuzione.

A conclusione della presentazione aziendale, i presenti si sono divisi in due gruppi per visitare sia la catena di produzione che il moderno impianto di depurazione delle acque.

“Per questo settore - ha spiegato il dottor Antonio Romano, technical manager della Fiordelisi - è importantissimo razionalizzare il consumo delle acque che si estraggono dalle attività di lavaggio, cottura e pastorizzazione degli ortaggi. A questi passaggi vanno aggiunti i consumi derivanti dal lavaggio dei macchinari e dall'utilizzo dei servizi igienici, con un carico totale di circa 10 metri cubi all'ora. Dopo la visita guidata, il dibattito è proseguito con gli interventi di Carlo Gadaleta Caldarella dell'ARPA, e Alberti Pulice dell'IRSA Cnr, i quali hanno spiegato gli sviluppi anticipati del progetto Demoware, cofinanziato dal 7° Programma Quadro dell'Unione Europea per la ricerca e lo sviluppo.

Le buone pratiche sulla gestione del riuso delle acque sono state poste in rassegna da Stijn Brouwer, rappresentante della KWI water, una società olandese diventata una vera e propria pietra miliare nel settore. A termine dell'intensa giornata di confronto, gli ospiti hanno dialogato tra di loro durante la sessione interattiva moderata dal professor Umberto Fratini, docente del Politecnico di Bari. Insomma hanno cercato di individuare le barriere e i fattori abilitanti dello sviluppo del riuso delle acque in Puglia, per quanto riguarda il settore dell'agroalimentare. “Ma la strada è ancora tutta in salita - ha commentato Fiordelisi al termine dell'iniziativa - in quanto le leggi regionali e nazionali prevedono ancora dei parametri troppo stringenti per il riuso. Inoltre, si tratta di interventi fin troppo costosi che ad oggi ne rendono impossibile la diffusione, visto che le fonti di approvvigionamento alternative hanno prezzi più convenienti. Per il futuro è auspicabile una maggiore partecipazione pubblica per evitare ad una carenza infrastrutturale e ad una totale mancanza di informazione su uno scenario importante”.

FOCUS

L'impianto che attende l'upgrade



L'impianto di microfiltraggio delle acque reflue dell'azienda Fiordelisi ha da scuola sin dai primi studi e dalle precedenti partnership con le Università di Bari e Foggia. Si tratta di un sistema meccanico di depurazione dedicato, costituito da un processo a fanghi attivi convenzionale, seguito da un affioramento. Quest'ultimo consiste in una filtrazione in pressione su mezzo granulare e un'ultrafiltrazione attraverso delle membrane polimeriche.

Il fine ultimo è quello di poter riutilizzare le acque, che altrimenti sarebbero destinate allo scarico, per irrigare i campi. A tal fine, gli esperti coinvolti nel progetto Demoware hanno analizzato le qualità chimico-fisiche delle acque filtrate sui suoi irrigati e sui vegetali prodotti, non riscontrando alcuna controindicazione. L'impianto di Stornarella, però, essendo stato predisposto circa 15 anni fa, oggi non regge la grossa immissione di acque reflue derivate dal comparto produttivo decisamente implementato negli ultimi anni. I tanti stakeholder che hanno preso parte alla visita guidata, infatti, non hanno potuto visionare il prodotto ultimo di tutto il processo, attualmente in stand-by. Per questo motivo si sta pensando di adeguare il ponte di raschiamento girevole e la vasca di ossidazione biologica, per poter trattare una quantità decisamente superiore di metri cubi all'ora. Nonostante ciò, i risultati scientifici e sperimentali ottenuti sul campo, hanno comunque permesso all'azienda di Stornarella di riaggiornare un ruolo di rilievo in un settore decisamente in fermento e di sicuro avvenire.

Figure 20. Article on “L'attacco” on 21 September 2016 about the workshop workshop “The DEMOWARE project and water reuse in agriculture in Puglia”

Held on 20 September 2016 in Stornarella (FG) in the framework of DEMOWARE project.

Social networks

Before, during and after the event a social media management activity has been carried out on the ARTI Facebook fanpage and Twitter account. In detail:

Social network	N. of post/tweet	N. of retweet/share	N. of likes
Facebook	3	0	8
Twitter	2	0	0
Total	5	0	8

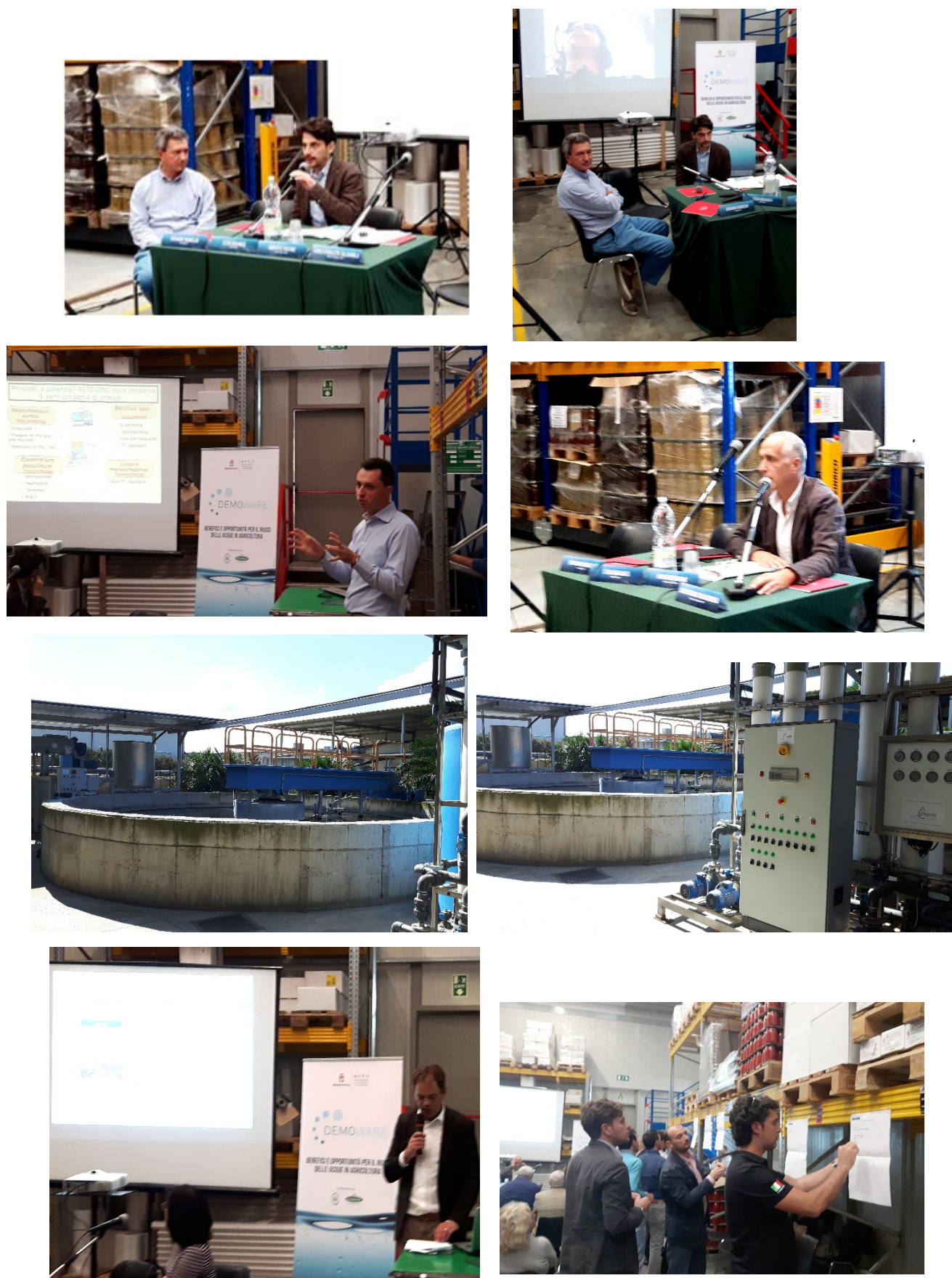


Figure 21 Speakers and participants attending the workshop.

5 Conclusions and challenges

The workshops organized were a useful tool to disseminate the DEMOWARE project results and water reuse practices to a broad audience, specifically end-users and public administrations. The content of the workshops was tailored to disseminate research and development projects related to water reuse, and to describe the actual benefits, barriers and challenges of water reuse at European level.

The general discussion concluded that water reuse is a key innovation theme and a main aspect of circular economy; however, some barriers related to water reuse economic sustainability, social acceptance, public institutions support, distribution networks and rigid standards were identified.

One of the main challenges identified was the definition of minimum quality requirements for water reuse in irrigation and aquifer recharge, in this sense, the results of the Demoware project will be used to draw up the European Commission guidelines on water reuse, which will standardize actual regulations and establish the minimum quality standards for treated wastewater.

Further awareness and governance processes at various levels (local, national and European), with a specific focus on control and monitoring, constitute also a future challenge along with greater support to research and innovations and related investments.

Finally, the participants rated the experiences as very positive, thus confirming that dissemination activities like these ones are of paramount importance to increase water reuse knowledge and public awareness and acceptance of water reuse practices.