

WATERLOSS

MANAGEMENT OF WATER LOSSES IN A DRINKING WATER SUPPLY SYSTEM



Issue 5
March 2013



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Presentation of WATERLOSS Pilot Areas

WATERLOSS project aims to assist regional actors to face the emerging issues of water management and shortage.

Therefore, WATERLOSS will develop a decision support tool, aiming to a prioritized list of measures for controlling water losses adapted to regional conditions.

This DSS tool and the corresponding water loss reduction measures, will be then applied in the selected partners' areas, providing a critical evaluation of the results.

WATERLOSS project includes pilot areas from all participating countries; Greece, France, Cyprus, Spain, Slovenia, and Italy.

In this 5th newsletter the pilot areas of French partner Département of Hérault and the Italian partner Liri-Garigliano & Volturno Rivers Basin Authority will be presented.

Key info:

MED programme

Total budget:

1,846.788 €

ERDF contribution:

1,436.841 €

Project Duration

01.06.2010– 31.05.2013

Partnership

Aristotle University of Thessaloniki (Greece)

Conseil Général des Pyrénées Orientales (France)

Water Board of Nicosia (Cyprus)

Regional Development Centre (Slovenia)

Metropolitan Area of Barcelona (Spain)

Municipal Enterprise for Water Supply and Sewerage in Kozani (Greece)

Liri-Garigliano & Volturno Rivers Basin Authority (Italy)

University of Ljubljana (Slovenia)

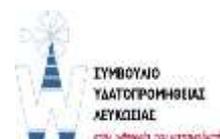
Département of Hérault (France)



gardenmandy.com



Àrea Metropolitana de Barcelona



www.waterloss-project.eu



Département of Hérault (DH)

The context of Hérault County

On a departmental level, the average output is relatively satisfactory (around 70%) but there are some major disparities depending on whether the communes are rural or urban and on whether they are managed by the State or by farming companies.

Via a decree dated on January 2012, the French State incited communes to do more to combat losses in drinking water networks. By penalising investment grants, the State hopes to improve output levels and encourage the asset management of the networks. However, this sustainable management first requires good knowledge of these assets. In order to help the communes in this respect, the Hérault County Council has decided to carry out an asset inventory of the condition of the County's water mains with the help of the Waterloss European fund. This study is set to lead to the comprehensive assessment of the networks, via indicators such as age, the materials used, lengths, people benefitting from the supply, annual volumes distributed, etc.

The County is also looking into water prices. This price has an impact on both the level of consumption (encouraging sensible consumption) and on the establishment of financial reserves for the self-financing of construction work for the maintenance and renewal of networks. For the application of the methods and tools developed within the framework of the Waterloss partnership, the County Council has chosen **two pilot sites**.

Selected Pilot Area(s):

Due to a lack of human resources, the *commune of Vias* had to be replaced as it was not possible to work without a contact person at this site. However, thanks to the dynamic of Waterloss, numerous studies and methodological approaches have been able to be tested, including, for example, an asset audit, a financial engineering project and the construction of a Geographic Information System.

The second pilot site, the *Syndicat Intercommunal des Eaux du Lodévois* (Intercommunal association for water of Lodéve), equally representative of local issues, is therefore still active. The approaches of components 3 and 4 are also being applied to this site. If the tools developed within the framework of component 5 prove efficient in the management of losses in drinking water networks, then these same tools will be able to be deployed for other territorial collectivities.

France is a country where large farming companies have for a long time been working alongside public authorities in order to ensure the provision of a high-quality public water utility service. For a number of years, they have been developing a range of decision-making tools for public authorities managing drinking water: software, expertise, etc.

The Hérault County Council wanted to get a clearer overview of all of these tools which are already on the market. It also hoped to receive assistance in making decisions regarding future applications of these tools on its own territory. It therefore called upon the consulting services of a research establishment, IRSTEA Bordeaux, which has recognised experience in France with regard to combatting losses in networks.



Département of Hérault (DH)

The management of drinking water losses by the *Syndicat Intercommunal des Eaux du Lodévois*

The **SIEL** provides the public water utility service for the association's 5 member communes, for a network of mains measuring a total length of 110 km. From conveyance to invoicing, the SIEL employs a staff of 4 to ensure that it provides the highest quality of service at the right price. The SIEL manages the production of 1.415 million m³ of water per year. Only 46% is actually consumed and billed.

The association's output is not very great and the price of water is still relatively low. The main source of losses is on the level of water conveyance, due to a reservoir overflow pipe located downstream from an 8km-long water main. This water main is subject to considerable pressure constraints. Replacing this water main should enable losses to be reduced significantly: in the order of 43 on 15%.

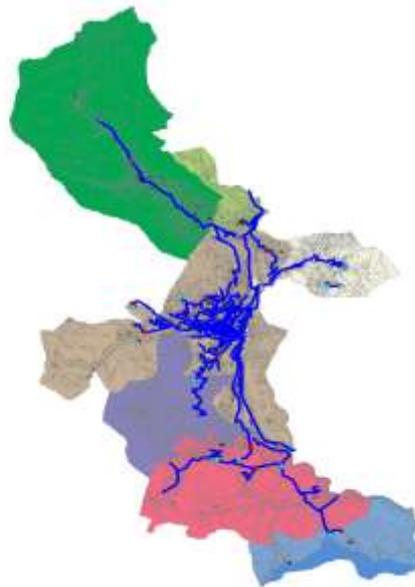
Further diffuse losses have been reduced by actively searching for leaks: pre-location and acoustic detection. Eventually, these leaks in the distribution system will be able to be reduced even further by regularly monitoring output. The restoration of connections will also be accelerated. On the whole, the repair of the main conveyance pipe and the numerous repair efforts should allow for the significant reduction of losses.



Map "Requirements/resources balance by the year 2015": numerous areas in a deficit situation



The SIEL source of supply



SIEL drinking water network

Project team

DH's project team is currently formed by:

Caroline Muller

Engineer in water management

Jean François Achard

Engineer in water management

Gérard Wolff

Project manager



Liri-Garigliano & Volturno Rivers Basin Authority (LG)

Selected Pilot Area(s):

Melito di Napoli is a city located in Province of Naples, about 40 km from Naples. The total population is about 34,500 inhabitants and the total area covered is 3.72 km². The Water Supply System is provided by Acquedotti S.c.p.a. since 2005, a utility established between some municipalities in the province of Naples and a private company, Ottogas srl.

In brief, the main features of the Water Supply System are:

- An average altitude of 93m and an average operating pressure of 1.5-2.0 bars
- A total pipes' length of 95 km, consisting of steel pipes with diameters 40-350mm
- Cast iron pipes with diameters 50-100mm
- HDPE pipes with diameters 40-100mm
- The pipe's average age is about 40 years
- The service connections are 11,700
- There are 7 DMAs covering 100% of the pipes' length
- DMAS covered 10,341 inhabitants as domestic users (88.4%) and 1,359 as non domestic users (11.6%) in 2010.

The service rate is another important aspect for network management. In fact, the utility charges customers every 2 months, with a minimum contractual consumption, and twice a year each account is cleared based on the registered consumption.

The Water Balance defined within project WATERLOSS, showed that total water losses can be estimated about the 35% of system input volume, about 1,40 Million of m³. The management of the network has been strongly improved in the period 2005-2010, reducing system input volume from up to 6 Million of m³ to 4,2 Million of m³ per year.

These reduction has been obtained by:

- A program for leakage detection;
- The control and management of pressure level;
- The optimization of water resources allocation in the network.

For water losses management main criticalities affecting Water Supply System seem to be the un-authorized consumption and leakage due to pipes aging and to the effect of the pressure transient.

Next targets for the management of Water Supply System will be:

- The reduction of unauthorized consumption;
- The reduction of pipes "age";
- The reduction of un-metered consumption;
- The improvement of pressure level control.



Liri-Garigliano & Volturno Rivers Basin Authority (LG)

Project team

LG's project team has been created within the Water Resources Group, charged of the WFD Implementation in Southern Appennines River Basin District and is currently formed by:

Vera Corbelli

Geologist, General Secretary & Team coordinator:

Pasquale Coccaro

Project responsible , Engineer; Technical responsible for water exploitation licenses

Sebastiano Pesce

Project co-responsible , Engineer; works on program of measures

Antonietta Ruocchio

Geologist; coordinates activities for water transfers regulation Campania-Apulia

Ciro Alleanza

Chemist; coordinates activities for water exploitation licenses

Daniela Giuliano

Environmental scientist; works on water quality monitoring

Giuseppe Luongo

Geologist; works on surface water bodies identification

Giuseppe Russo

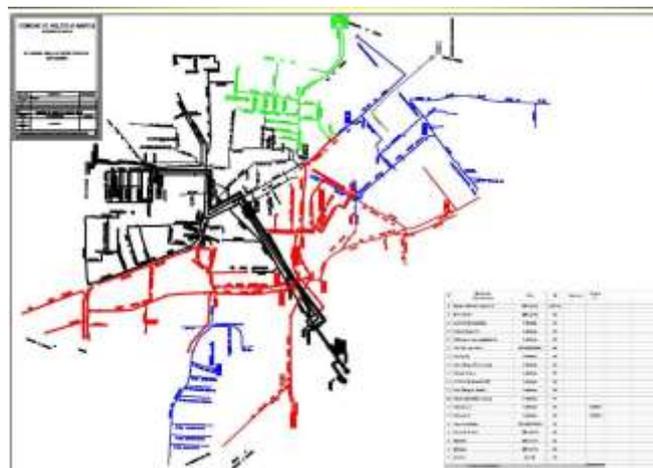
Surveyor; works on Flood Directive

Lorenzo Ferri

Economist; responsible of contract office

Paolo Pisciotta

Administrative employee; coordinator of the General Secretariat.



Melito di Napoli Network layout



Meetings and Events

6th SC Meeting, Nicosia, Cyprus

The 6th Steering Committee meeting of WATERLOSS project was held in Nicosia, Cyprus on 17-19 October 2012. The meeting was organized by the Water Board of Nicosia. The main topic was the assessment of the progress of work and a workshop for establishing guidelines to complete the project requirements was held.

The meeting was opened by **Mr. Nikos Zambakides**, Director of the Water Board of Nicosia, who welcomed the participants to Nicosia.

The first day of the meeting was dedicated to both project management structures and activities as well as to the discussion of technical issues. The second day was fully dedicated to technical issues and the technical workshop. On the third day, a technical visit took place at Kouris Dam – Drought climates' effect on environment and Water resource management, which is approximately 25 minutes' drive north-west of town Limassol.

Kouris dam is the largest of a network of 107 dams in Cyprus. It lies at an altitude of 250m and collects the water delivered by the rivers Kouris, Limnatis and Kryos. Furthermore, water from Diarizos River is diverted to Kouris dam via a 14.5 km long connecting tunnel. It has an overall catchment area of 300 km². The dam is located 15 km northwest of the city of Limassol and 6 km west of the village of Ypsonas. The dam has a central clay core zoned earth fill embankment with a height of 110 meters and a crest length of approximately 550 meters providing a water storage volume of 115 million cubic meters. The construction of the dam was first proposed by the Cyprus Water Development board in 1968. Following several feasibility studies the detailed design was completed in 1981. The construction cost amounted to CYP £29,000,000. Part of the funding came from the European Investment Bank. Construction was completed in September 1988. It was officially inaugurated by the then president, George Vassiliou, on 22 April 1989. Since its construction it has overflowed twice, on March 4, 2004 and on April 6, 2012.

Finally, a visit to the Water Park Museum of WBN took place and partners had the opportunity to see how



6th SC meeting in Nicosia, 17-19 October 2012

people in Cyprus were fulfilling their needs for water as for example wind mills, wells, water tanks, water channels, water towers etc. giving the message for the significance of minimizing the water losses.

After the visit partners returned for the final technical and administrative close up of the meeting. The consortium decided the next and final meeting to be held in Kozani, Greece according to the work plan. The fixed date is 8-10 April 2013.



Dissemination Activities

Dissemination plays a key role from the very start of the project and throughout the project's implementation. WATERLOSS partners have been very active on disseminating the project's actions in order to raise awareness on the importance of water loss reduction. Below you can see examples of dissemination activities performed by the WATERLOSS partners:

September 2012: DEYAK produced a project brochure presenting the organization and its role in WATERLOSS project. The brochure was prepared in both Greek and English for dissemination purposes.



11-13 October 2012: Aristotle University participated in the 2nd Joint Conference of the Hellenic Hydrotechnical Association & the Greek Committee for Water Resources Management organized in Patras, Greece during 11-13 October 2012, presenting project WATERLOSS and the scientific paper entitled:

"Integrated approach for the reduction of non revenue water in water supply systems".



24-25 October 2012: Aristotle University, Conseil Général des Pyrénées-Orientales and Water Board of Nicosia participated in the Joint Conference of the ETC MED and ENPI CBC MED Programmes, in Nicosia, Cyprus. Partners presented project WATERLOSS and exchanged ideas for possible future cooperation.





Dissemination Activities

12th November 2012: *The Metropolitan Area of Barcelona distributed WATERLOSS brochures at the Conference “Mediterranean White Paper on Water” in Madrid, Spain.*

30th November 2012: *Aristotle University and DEYAK attended as speakers the hydroMEDON Workshop “Improving Water Use Efficiency” in Volos, Greece.*

Assist. Prof. Vasilis Kanakoudis, representing AUTH gave a speech entitled: “Increase of water use efficiency and the role of non revenue water”

Mr. Charis Kouziakis, representing DEYAK gave a speech entitled: “Measures for the increase of efficiency of the use of water in the network of DEYAK—the experience from WATERLOSS project”



December 2012: *In December 2012 DEYAK produced a customers’ satisfaction questionnaire for research purposes. 2.026 inhabitants within the Municipality of Kozani were contacted by phone, providing answers in questions concerning the quality of water and water supply, water pricing and ways of payment, water conservation etc. The vast majority of the surveyed (85%) use tap water for drinking, either exclusively (67%) or in combination with bottled water (18%). 60% of the surveyed characterized the water tariff as “expensive”, 31% considered it “reasonable” and 5% considered it “cheap.” Moreover, 80% believe that water should be exclusively a public good.*

DEYAK also initiated an advertising campaign for disseminating WATERLOSS actions and results to local media which includes the preparation of a radio and TV spot as well as press releases in local newspapers, magazines and websites.

5th December 2012: *The University of Ljubljana sent to the Annual Water Conference “Misicev vodarski dan” which is organized by Vodnogospodarsko podjetje Ptuj and Vodnogospodarski biro Maribor the scientific paper entitled:*

“Analysis of water losses from water supply systems in the Republic of Slovenia and tools for optimization of water loss reduction measures”.

The paper was published and presented by the host.

10th January 2013: *Mr. George Demetriou, representative of WBN, participated in the seminar “Facing climatic change – Infrastructure and transportation”, organized by the department for the Environment of the Ministry of Agriculture, Natural Resources and Environment of Cyprus, within the framework of the European Program Life-Cypadart. He gave a presentation informing the audience about the importance of water loss saving and the consequences on energy savings and environment protection, as well as how “Waterloss” can help to minimize the water losses and how the implementation of measures can be assessed for further benefits.*

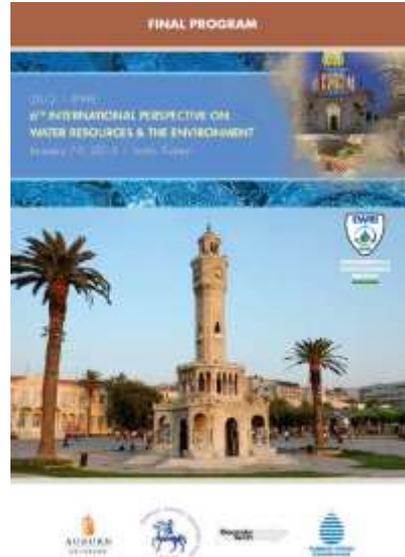


Dissemination Activities

7-9 January 2013: Aristotle University attended the 6th International Perspective on Water Resources & the Environment (IPWE 2013) of the Environmental & Water Resources Institute of the American Society of Civil Engineers (ASCE-EWRI), in Izmir, Turkey, presenting the following scientific papers:

-“Urban Water Distribution Networks performance assessment: comparing eight cases from Cyprus, Greece, Italy, France and Spain, located within the EU Mediterranean Basin”

-“Developing a DSS tool to merge the gap between a water pipe network's NRW level assessment and the prioritization of the potential healing measures”



18-20 January 2013: Aristotle University participated in the Exhibition: “AUTH in Noesis, meeting innovation, education and Culture”, in Thessaloniki, Greece. During the exhibition a WATERLOSS roll up was displayed and the project was presented to all participants.



February 2013: The University of Ljubljana produced a project brochure presenting the organization and its role in WATERLOSS project. The brochure was prepared in Slovenian for dissemination purposes.

The brochure is titled "PRIMERI DOBRE PRAKSE" (Examples of Good Practice) and "ZMANJŠAJTE DELEŽ NEPROBANO VODE" (Reduce the share of unaccounted-for water). It features a table of partners, a bar chart showing water loss statistics, and a circular diagram of the WATERLOSS project. The text is in Slovenian and describes the project's goals and the role of the University of Ljubljana.