

The **WATERLOSS** Project follows the EU Water Framework Directive to develop an integrated and sustainable water management policy and to implement appropriate measures, ensuring the conservation of water resources of sufficient quality.

The Project, focuses on the integration of water loss reduction principles in the management plans of drinking water authorities, with particular attention on Mediterranean countries, where water scarcity and low quality have become major issues over the last years.

Six Mediterranean countries (Greece, France, Cyprus, Slovenia, Spain and Italy) participated in the Project.

The main objective of the WATERLOSS Project was to study how to reduce water losses in water supply networks, and thus enhance the network performance for citizens. To do so, ten pilot areas, from different partner countries, were selected, to gather the data required to implement the Project and monitor its results.

These pilot areas were:

- ~ The entire water distribution network of the city of Kozani, (Municipal Enterprise for water supply and sewerage of Kozani, Greece)
- ~ The cities of Baho, Argelès-sur mer and Thuir, (Department of Pyrénées Orientales, France)
- ~ The city of Lodeve (Department of Hérault, France)
- ~ The pilot area DMA20, and a sub zone of area DMA15 (Water Board of Nicosia, Cyprus)
- ~ The city of Velenje (Regional Development Centre, Slovenia)
- ~ Castellbisbal (Àrea Metropolitana de Barcelona, Spain)
- ~ Melito di Napoli (River Basin Authority of Liri-Garigliano and Volturno Rivers, Italy).

A computer program called DSS (Decision Support System) was developed, in order to decide which actions to carry out to reduce the different losses and with which priority. Once the features (data) of the water supply systems are entered in the system, the DSS makes it possible to obtain a series of measures aimed at reducing water losses.



To implement the DSS, it was first necessary to collect a series of previous data. Each stage of the process was led by a partner responsible for collecting and analysing the information.

The following steps were followed:

1. Water balance. The aim was to calculate the water balance in order to characterise the water flow of each supply network in the various pilot municipalities. The concept of water loss emerged here for the first time.

- ~ Physical losses: volume of water lost through leaks and bursts in pipes and water tanks
- ~ Apparent losses: consist of illegal use, improper functioning, and inaccuracies in meter readings
- ~ Unbilled losses: include tank or pipe cleaning and fire fighting

2. Management indicators for the drinking water supply network in the pilot municipalities were assessed. Water losses were quantified for each one of the pilot municipalities.

3. Measures aimed at reducing water losses. The goal was to build a database of measures and the hierarchical tree, basis of the DSS tool.

4. Decision Support System. A computer tool was developed based on water balances, management indicators and the measures to reduce water losses. This tool, referred to as DSS (Decision Support System), provides guidance on which measures are best suited to implement in the pilot municipalities to reduce water losses based on the features of the water supply network.

5. Demonstration of the Decision Support System tool. Based on the previous steps, the use of the tool was explained using two specific pilot municipalities - Kozani and Velenje.

Throughout the Waterloss Project, all the pilot areas collected information, calculated the water

balances of the supply networks, quantified the indicators, and used the DSS to obtain measures to be implemented in order to reduce water losses in their networks to make them more efficient.

Joint and simultaneous cooperation by the participants enabled comparisons to be made between the various networks and hence between the water losses of the various pilot areas. These comparisons showed that some of them are more efficient than others, a fact that should encourage the exchange and technical cooperation between the six partners, and on a wider basis, between each partner and their local water supply authorities.

