

# ZARAGOZA: WATER DEMAND MANAGEMENT



## SWITCH WP 3.1

The overall objective of WP3.1 is to provide holistic demand management (DM) tools for conserving water both in the service providers' water distribution networks and in customers' premises. Demonstration and research activities under WP3.1 are being undertaken in the City of Zaragoza, located in the central area of Aragon region, in North-Eastern Spain (see geographical location in Figure 1 below).



Figure 1: Location of Zaragoza

## ZARAGOZA KEY FACTS & FIGURES

- Mean elevation: 199m a.s.l.
- Climate: Continental/Med
- Mean rainfall: 314 mm p.a
- Evapotranspiration: 795mm
- Population: 682,300 (2008)
- Household size: 2.72
- Water Services Provider: AYTO, the City Council of Zaragoza
- Raw Water Source: Ebro River, via the Aragon Imperial Canal.
- Water produced: 64.1 Mm3 (2006)
- % Non-revenue Water: 32% (2006)

## PRE-SWITCH DM ACTIVITIES

Since 1996, AYTO and Fundación Ecología y Desarrollo, a local environmental NGO, have worked in partnerships with other organisations and households in Zaragoza to improve water use efficiency in consumers' premises, through the following activities:

- Promotion of behavioural change;
- Provision of information, education, training and advisory services for efficient water use;
- Replacement of old equipment with new water-saving devices;
- Acquisition of new water-saving sanitary fittings and household appliances
- Other actions that would save water, such as timely repair of leaks in the premises.

These activities led to an overall reduction in water use in Zaragoza, notwithstanding the population increase, as shown in Figure 2.

Owing to these achievements, Zaragoza was honoured to host the international Expo2008 between 14 June to 14 September on 'Water and Sustainable Development', in which these achievements were showcased. Figure 3 shows the EXP02008 exhibition grounds.

## SCOPE OF SWITCH ACTIVITIES

Using Zaragoza as a case study:

- Assess cost-effectiveness of current techniques of detecting and repairing physical losses at the system level;
- Research innovative cost-effective methodologies of reducing unaccounted for water, encompassing both physical losses and commercial losses

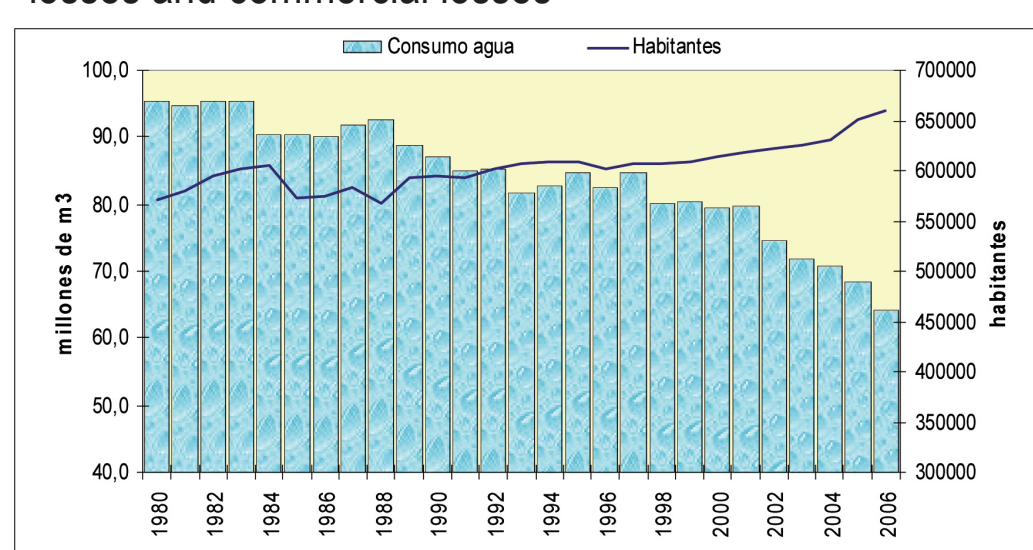


Figure 2: Reducing water usage in Zaragoza

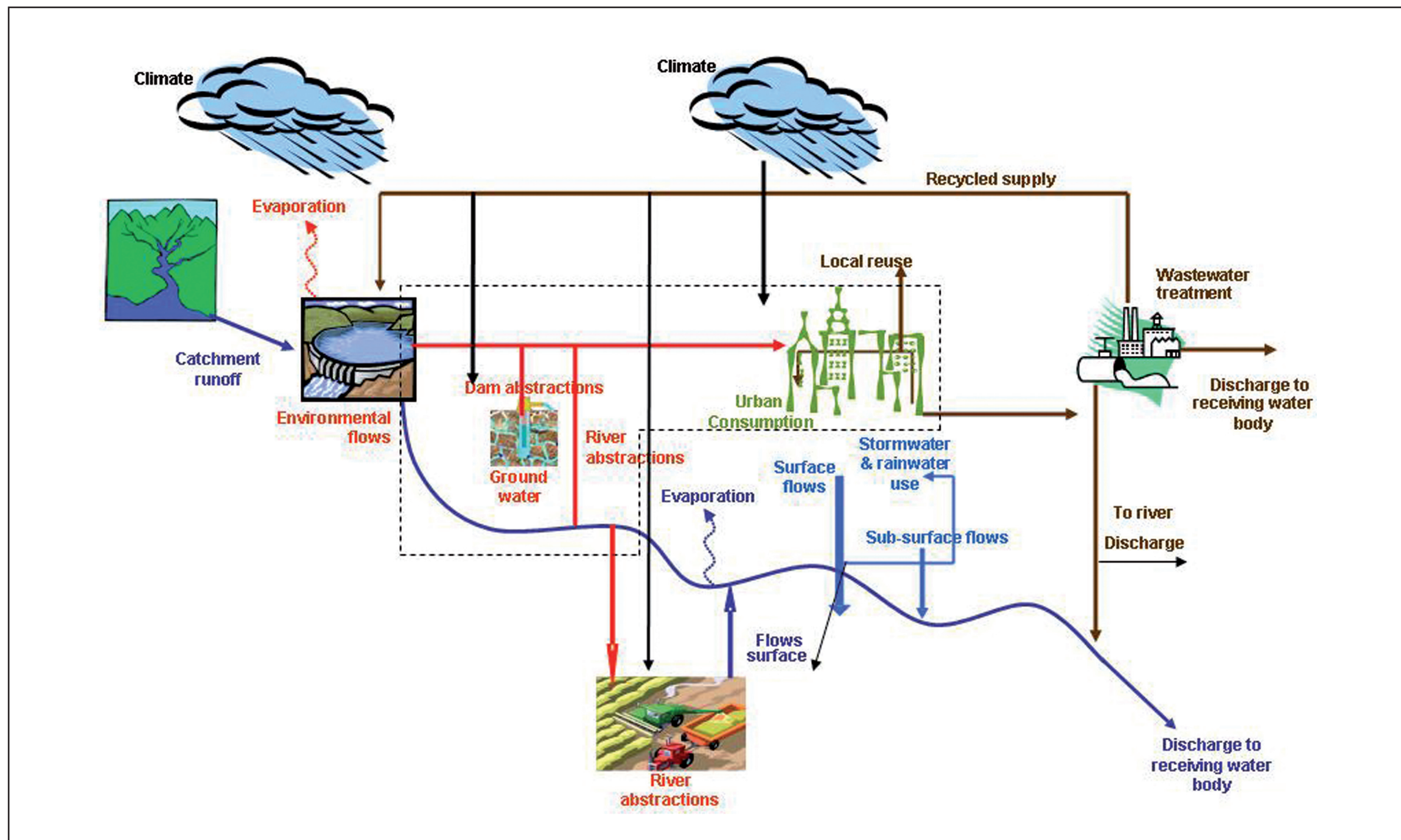


Figure 4: Part of the water cycle being addressed in WP3.1



Figure 3: EXPO2008 Grounds, Zaragoza

- Use Integrated Resource Planning (IRP) approach to:
  - mainstream DM within utility management
  - determine the most viable institutional & regulatory tools & instruments for DM
- Disseminate good practices of demand management including reduction of UFW in water supply systems

Activities under WP3.1 cover the part of the water cycle ranging from the raw water abstraction, water treatment, water distribution system and the customers' end uses, up to discharge into the wastewater sewerage system, as shown in figure 4.

## POTENTIAL KEY IMPACTS

- Reduction of energy use as a result of less water production, through:
  - More efficient water leakage management in the distribution network
  - More efficient use of water by the customers
- Involvement of key stakeholders in planning & adoption of more integrated urban water management concepts.
- Awareness creation of the importance and contribution of demand management to sustainable urban water management, through workshops, conferences, and academic papers.

## RESULTS TO DATE

- Extensive literature review conducted on DM, water loss management and integrated resource planning
- Collaborations set up with relevant International Water Association (IWA) task forces for sharing of data and application of methodologies
- Demonstration & research sites are currently being set up in Zaragoza
- Our research collaborators, the University of Zaragoza are piloting a draft questionnaire for collecting data for applying the IRP model
- Workshops have been convened in Alexandria and Accra on DM.

## EVIDENCE OF DEMAND

- Following the workshop the Accra LA has expressed demand to carry out DM programmes in Accra
- Similarly, key stakeholders in Egypt have expressed willingness to fund a proposal to scale up the IRP process that was piloted in Alexandria.

## KEY PARTNERS & LA MEMBERS

- The City Council of Zaragoza
- University of Zaragoza
- Fundación Ecología y Desarrollo.



Figure 5: Leakage control task force team (top) after installation of a noise logger (middle) DM through accurate and timely repair of bursts (bottom)

**3rd SCIENTIFIC MEETING  
BELO HORIZONTE BRAZIL  
DECEMBER 2008**