

CHALLENGES

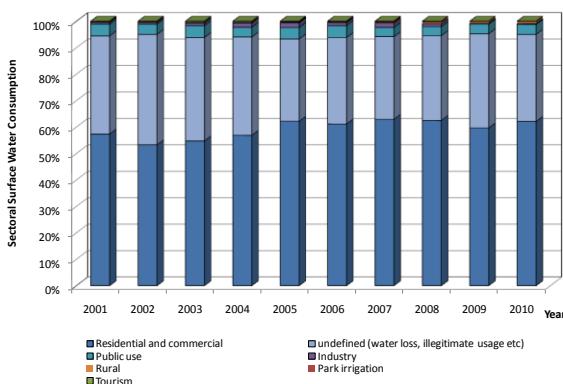
Alternative water resources to cope with rapid urbanisation and climate change impacts

Istanbul is among the fastest-growing, largest cities in Europe. It has a population of 13.6 million (2011 census) and expected to reach about 20 million in 2032. Istanbul houses major industrial sectors including textile, food, machinery, plastic, leather. Industry shows growing trend in the economic development. Almost 95% of its water is supplied from surface water through reservoirs which are fully exposed to the risks of climate change. Foreseen effects that seem to become more pronounced in the region are extreme events especially drought and also short but severe periods of rainfall leading to floods. Precipitation trends in Istanbul showed fluctuations between dry and wet years from 400 to 800 mm/m²

Most water resources are influenced by human activities. Considering the increasing trend in population and the industrial developments, effective strategies and adaptation plans have been developed including water saving campaigns; transfer of water from adjacent basins; precautions to reduce water losses; and re-use of treated wastewater in order to achieve efficient urban water management.

Sectoral water use

The residential/household use is the major part of the total water demand which varied between 60% and 80% between 2001 and 2010.



PARTNERS

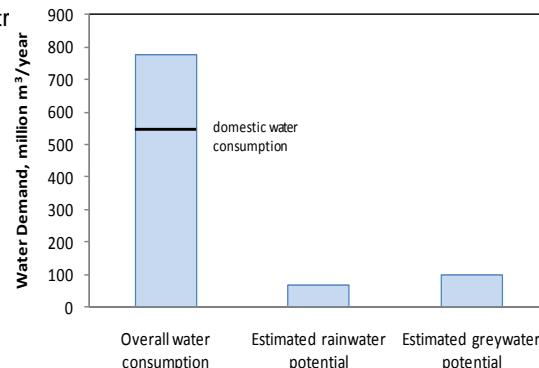


ISTANBUL'S DEMOS

Conceptual scheme for rainwater (RW) harvesting and groundwater (GW) management

Development of innovative water resources is needed to cope with population increase, economic advancement and the adverse impacts of climate change.

The activities are mainly based on the integrated urban water management concept. Investigation of innovative water resources for regions under water stress is emphasised. Rainwater (RW) harvesting and grey water (GW) management are regarded as alternative water resources for Istanbul and other regions under water str



Renewable water potential

It is essential to have diversification of water sources including RW and GW recovery and re-use. The comprehensive study conducted on assessment of the potential for RW and GW reuse showed that 67% of non-potable water demand for toilet flushing can be supplied by RW and treated GW in Istanbul. In this case, the RW and GW as a potential alternative water resource correspond to about 21% of overall water consumption.

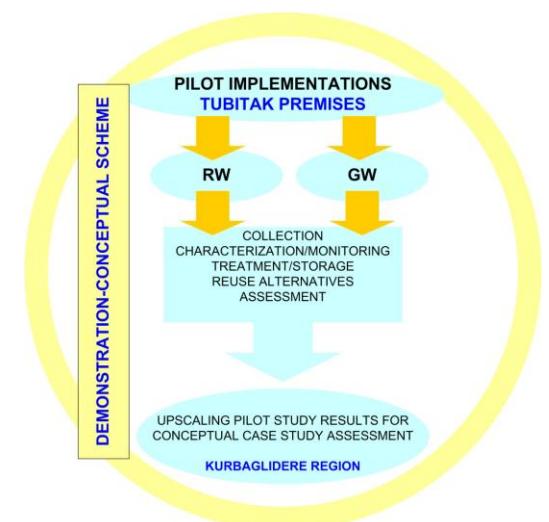


SUCCESS STORIES

Testing conceptual scheme for RW harvesting and GW management

Technology options for sustainable GW and RW utilisation are tested at the pilot implementation site for selected buildings (TUBITAK-MRC premises). The scope covers accomplishment of suitable systems for treatment, collection of data for GW, RW, treated effluents, technology assessment, sanitation, economical feasibility and LCA analysis for the proposed concept. The results obtained will also be conceptually tested in a selected case study area (Kurbaglidere region) in Istanbul. A mass balance model will be developed and an average collection factor depending on the RW storage volume, will be formed using the real time rainfall data for the case study area.

Conceptual scheme - GW/RW utilisation



GW - RW quality /quantity, technology assessment suitability for utilisation to mitigate climate change impacts in Istanbul

The technologies employed are: rotating biological contactor, multi-stage filtration, UV disinfection for GW and microfiltration, storage, sand-anthracite filtration, UV disinfection, cartridge filters for RW studies. The treated RW and GW are used for toilet flushing and irrigation. Stormwater samples from roads and paved areas are collected and analysed for parameters, including PAH and PCB within the selected case study area.

Constitution of sustainable example for regions

As result of the pilot and conceptual up-scaling practices a conceptual scheme for RW harvesting and GW reuse to mitigate water scarcity and quality change as an example for regions under water stress will be constituted. The produced knowledge, and results of R&D will comprise reference for other city utilities.