



SIMFEROPOL'S DEMOS

Optimal use of limited local surface water resources and management of water quality and quantity under competitive demands

According to the agro-climatologic zoning, Crimea belongs to the territories with limited water resources. The total balance of surface water of the peninsula territory consists of local flows (average local flow - 0,91 km³ per year) and additional water resources from the Dnieper river (the North Crimean Canal can supply circa 3,0 km³ per year). The Falkenmark Water Stress Indicator for Crimea is below the boundary level and shows a strong scarcity of water resources. This makes it obvious that Crimea and Simferopol are dependent on external water sources, especially during drought periods.

Within PREPARED, a decision support system (DSS) for the optimal use of limited water resources will be tested to better balance availability and demands. Hydrological forecasts will assist the water utility and the regional water management organisations to select the best scenario for water usage, especially in water scarcity period, on the base of dynamic priorities.

During the demonstration workshop on Water Cycle Safety Planning (WCSP), the water cycle hazard database and the database for risk reduction options were tested and evaluated to address water quantity and quality problems in Simferopol. As a result of the demonstration activities, stakeholders now support the Water Cycle Safety Plan development for Simferopol.

Instrument for risk evaluation and prediction under conditions of climatic change

Within PREPARED, GIS tools are used to demonstrate different scenarios and options for stakeholders as well as for decision makers based on mutual understanding and for development of a common vision for a PREPARED system for the city and surroundings inter-connected with the urban water cycle.

As an instrument for risk evaluation and prediction, the Soil and Water Assessment Tool (MWSWAT), based of GNU license, has been adapted to estimate the reservoirs water flow and future scenario simulations. This instrument has been demonstrated for Simferopol (Salgir river) and Partizanskoe (Alma river) reservoirs.

The following climate scenarios will be tested:

1. Scenario A1B with higher air temperature and less precipitations
2. Scenario A2 with the highest air temperature and less precipitations
3. Scenario, based on A1B and A2 trends, and population increase.

This approach is also planned to be used by the Crimean Basin Department of Water Management in preparation of their annual plans for the allocation of surface water and decisions during the drought periods. These tools will lead to higher cost efficiency in the allocation of local resources; and savings on the electricity costs incurred to pump water to the Mezghornoe reservoir and back to the city (elevation approximately 290 m).



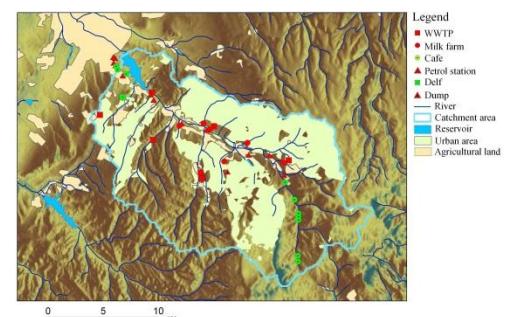
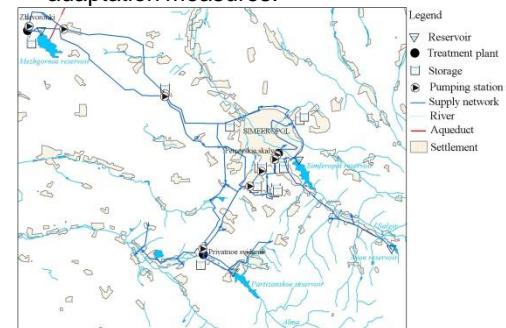
SUCCESS STORIES

Improving reliability of water supply during drought periods

Implementation of the climate adaptation solutions into "Water of Crimea" strategic programme will improve the security of the water supply not only for citizens of Simferopol, but also for more than **20 thousand inhabitants** of the settlements and villages in the Simferopol urban water cycle zone.

Saving money and increasing water efficiency

The results of the climate change scenarios analysis for the modernisation and rehabilitation of the Simferopol water infrastructure will be implemented. This approach will take into account drinking water supply priorities and interests of other branches of Crimean economy (including irrigation). This makes it possible to save near **€ 1,5 million** per year (to save electricity costs) by introducing integrated solutions and adaptation measures.



CHALLENGES

Water scarcity

Due to the increase in average daily temperature especially in the summer period (Accelerates, 2004), water quality will change significantly in all reservoirs and especially in the Mezghornoe reservoir where the incoming water is transported through approximately 300 km of open canals. The longer periods of drought and the increase in evaporation will adversely affect catchment areas and decrease the flows in Crimean rivers. This will lead to higher water demands for non-potable purposes and will significantly change the balance between local and external water resources and the priority setting in water allocation policies.

Extreme rain events:

The expected increase in extreme rainfall events (EEA, 2004) requires special attention for any risks associated with more pressure on drinking water treatment facilities as a result of flooding in the areas without centralised sewerage systems. The presence of vulnerable local sanitation installations can lead to contamination of water sources with dangerous substances.

PARTNERS

