

ABSTRACT VOLUME  
*World Water Week in Stockholm*  
*September 1-6, 2013*

*Water Cooperation:  
Building Partnerships*

# Assessment of Land Use and Climate Change Impact on the Azov Sea Ecosystem



Author: Ms. Irina Gilfanova, Central European University, Hungary

Co-Author: Dr. Viktor Lagutov, Central European University, Hungary

Keywords: ecosystem goods and services, GIS, SWAT, environmental modelling, Azov Sea

## Introduction and objectives

Shared by Russia and Ukraine the basin of the Azov Sea is unique and important ecosystem providing regional population and national economies with numerous water-related ecosystem goods and services (EGS). However, unsustainable land use and water management practices decreased the capacity of the Azov ecosystem to maintain these goods and services. The assessment of the currently available water-related EGS and their future availability is required to incorporate ecosystem approach into policy-making process.

## Methodology approach

The Upper Don River sub-catchment has been chosen for analysis as a vital component of the Azov ecosystem generating water inflow for the Tsimlyansk reservoir, the largest freshwater body in the basin and major EGS provider. The SWAT model was developed for the study area and output data were used for assessing water-related EGS. Scenarios on land use and climate change developed by EnviroGRIDS project, using data for 2050 have been formulated and analyzed with SWAT model. Corresponding change of water inflow has been analyzed, recommendations for decision-makers have been developed.

## Analysis, results, conclusions and recommendation

Four scenarios of potential regional development including land use and climate changes have been formulated and analyzed with SWAT model. Results was used to assess the change of water-related EGS in the Upper Don River by 2050. It was found that according to all scenarios the annual water yield, baseflow and surface runoff in the Upper don River sub-catchment will decrease, and as a result the streamflow supplying the Tsimlyansk reservoir will be reduced by 28-36%. Based on the assessment the recommendations for researchers applying SWAT for EGS assessment and the Azov Sea basin decision-makers have been developed. The projected changes in the water supply to the reservoir compromise the EGS provision for the entire Azov basin that should be taken into account while developing regional development strategies. The model and associated datasets can be used as a platform for basin-scale decision-support tool bridging terrestrial and aquatic ecosystems, serving as an incentive for regional transboundary cross-sectoral cooperation.