



Evaluation of a harmonized land and water management concept in the Bodrogek region

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The area of the Bodrogek landscape region is divided into two parts by the Slovak-Hungarian boundary, but it has the same basic development concerning the geological-pedological structure and hydro-climatic characteristics. In the last century the largest part of the territory was drained, anti-flood constructions were built and large area was included into the cycles of intensive exploitation. Because of the human activity, restricting the seasonal water flooding and fluctuation in the region, completely reshaped the original dynamic natural river ecosystems, the riverbeds and flooded areas, including soils. The wetland-dryland transformation resulted changes in the soil forming processes and caused direct and indirect affect on the landscape development.

One of the most harmful consequences of the landscape changes was that this area lost his ancient flood-controlling role in the Upper Tisza Valley. Following a long spell of arid years, several dangerous flood waves have passed down the Tisza River between 1988 and 2002. The Hungarian Government has adopted the decision on the new Vásárhelyi Plan, which included the controlled diversion of peak flood flows enhancing flood safety in the Tisza Valley. The flood control together with the natural conservation and floodplain reactivation could be effective only on the basis of a joint, harmonized ecological and land use methodology for the soil-water regime, available for planning sustainable land use strategy in the Slovak-Hungarian trans-border region.

Experts of the RISSAC (Research Institute for Soil Sciences and Agricultural Chemistry of the Hungarian Academy of Sciences) made soil survey in 2006, timely in the autumn period. They observed the drained flooded soil complexes of the Bodrogek landscape region and explored 50 locations on representative scenes according to the RISSAC's soil survey method. In the course of the survey they examined physical, chemical and biological soil properties, the directions of the soil forming processes and classified the earlier and the actual soil properties data and separated soil property classes. Experts of the Institute of Hydrology of Slovak Academy of Sciences carried out field-measurements to characterize the hydrophysical soil properties. In order to describe soil degradation soil protection indicators were determined, which afford possibility to follow-up (spatial and temporal) the soil degradation processes.

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