OPTIMISED MANAGEMENT FOR THE FLOODPLAIN LOBAU BASED ON A MULTI CRITERIA DECISION SUPPORT SYSTEM: INTEGRATING CONSERVATION, ECOLOGY AND SOCIO-ECONOMICS

Hein T., Blaschke A. P., Hohensinner S., Kucera-Hirzinger V., Preiner S., Reckendorfer W., Schuh B., Zsuffa I.

Riparian zones, floodplains, and river-marginal wetlands like the Lobau are key landscapes of strategic importance. They provide a wide range of ecological and socio-economic goods and services, including flood retention capacity, groundwater recharge, bioproduction, and aesthetic and recreational values. Nowadays, however, these ecosystems are highly degraded throughout Europe, and they are among the most endangered freshwater systems worldwide. The Lobau within the city limits of Vienna for example have undergone severe changes by mainly altered ground- and surface water connectivity in the last 20 to 100 years which result in a complete change of habitat structure, distribution and vegetation cover. Without sustainable rehabilitation measures, a threshold towards lower biocomplexity will be passed. The Lobau also play a central role in the regional water balance and for the socio-economy of the area. An urgent, innovative ecosystem management scheme needs to optimally balance between conservation and restoration objectives and to harmonize the partly contradicting ecologic and socio-economic requirements for the future.

Therefore, we developed a project based on a multi-criteria Decision Support System (DSS) that assists multiple stakeholders in finding coherent and realistic management scenarios, by linking all the interested issues in a transparent and reproducible way. The strength and novel approach of such an interdisciplinary strategy will be to involve technical, natural and economic sciences to identify an optimized indicator set, the predictive state-of-the-art modeling and the combination of two multi-criteria decision analysis (MCDA) approaches. The complex nature of the multiple management objectives urgently requires an integrative approach to solve the following central questions:

(i) What are the long-term effects of the hydrogeomorphic alterations in the Lobau and what future development can be predicted for the complex habitat mosaic?

(ii) To what extent is the current successional development of the Lobau reversible? How can an increased hydrologic connectivity contribute to floodplain restoration/conservation and how do different rehabilitation measures interact?

(iii) Which strategies can be applied to combine ecosystem functions with socio-economic services for a sustainable, long-term integrated human and nature development in the Lobau?

We present the project outline and the basic structure of the research project.