



Conflict of spatial development and water supply under climate change in case of water dependent ecosystem of Ljubljana Moor

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Water resources are vulnerable to climate change and to many other socio-economic drivers of change. A key aspect of vulnerability is that it is spatially variable, reflecting variations of physical and socio-economic conditions. Given the real representation of vulnerability and a set of climate change adaptation options there is need to develop a common transnational strategy for vulnerability reduction. The latter is the goal of SEE CC-WARE project. Among others, ecosystem services, land use change, improving water use efficiency and economic incentives for water management have large potentials to decrease water resources vulnerability. Especially, forests, wetlands and grasslands are important ecosystems, which together with their management emerged as an important means for a sustainable future drinking water supply.

The Ljubljana Moor is one of the biggest and most important complexes of wet meadows in Slovenia, which have, due to land use high biodiversity. The Ljubljana Moor extends from the southern part of Ljubljana, the capital of Slovenia, where in the last two centuries extensive irrigation and river regulation projects were implemented to develop agricultural land. Biodiversity of the area is high due to large zones of wet meadows, some flood forest patches, bog areas, and open water courses habitats. The Ljubljana Moor is therefore protected as Natura 2000 site. The Ljubljana Moor is changing very fast and impacts are especially intense in the present years, mostly due to spreading of urbanization and monocultures.

In this area the water well field Brest has been designed as important future drinking water source for Ljubljana, pumping mainly water from confined aquifer. The pressure from urbanisation and agriculture and high subsidence that are noticed in the central and eastern part of the aquifer, those two phenomena pose high risk to stable drinking water supply and wetland habitats that are protected as NATURA 2000. Water protection areas with limitation of land use were delineated for protection of drinking water from Brest pumping station. A part of Ljubljana Moor area is also protected as Landscape Park. These legal acts are in conflict with existing agricultural practices, spatial development plans and further urbanisation processes (including new and larger roads, flood areas disconnections and destruction). No attention has been given yet to integrated water management and there is no consideration of long term hydrological and hydrogeological processes.