

Transboundary water resources management and livelihoods: interactions in the Senegal river

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In Sub-Saharan Africa, 90 % of wetlands provide ecosystem services to societies, especially for agriculture and fishing. However, tropical rivers are increasingly regulated to provide hydroelectricity and irrigated agriculture. Modifications of flows create new hydrological conditions that affect floodplains ecology and peoples' livelihoods. In the Senegal river valley, large dams were built during the 1980's to secure water resources after a decade of water scarcity in the 1970's: Manantali in the upper basin with a reservoir of 12km³ and Diama close to estuary to avoid saltwater intrusion during dry season. Senegal river water resources are known under the supervision of Senegal River Basin Development Organization (OMVS), which defines water allocation between different goals (electricity, irrigation, traditional activities).

This study, based on the concept of socio-hydrology, analyses socio-ecological changes following thirty years of dam management. The work enlightens adaptation mechanisms of livelihoods from people living along the river floodplain and feedback on water resources. The study uses a mixed method approach, combining hydrological analyses, literature review and data collection from surveys on stakeholders and key informants level in the middle Senegal valley.

Our results suggest that in all the Senegal river valley, socio-ecological changes are driven by new hydrological conditions. If dam management benefit for peoples with electrification and development of an irrigated agriculture, it has also emphasized the floodplain degradation. Flooded area has decline and are more irregular, causing an erosion of floodplain supporting services (traditional activities as fishing, grazing and flood-recession agriculture). These conditions reduce peoples' livelihood possibilities and irrigation is the only regular activity. As a feedback, irrigated agriculture increases withdrawals in the river and, recently, in aquifers posing a new uncertainty on water resource.