



Changes in agriculture, energy production and ecological structures in Bavarian landscapes over the last decades and the implications for hydrology and fine sediment budgets in riverine ecosystems

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Due to increasing ecological problems resulting from high loads of fine sediments and nutrients in rivers and brooks in Central Europe the Bavarian fisheries association is funding a study focusing on changes in land use and their implications for the fine sediment and nutrient situation in riverine ecosystems. Further interests are the impacts on inland fisheries and aquaculture in fish ponds.

The results of the first module indicate significant shifts in the agricultural structure due to rural planning measures and funding programs in the 1960s and 1970s. The parcel structure has changed fundamentally, as have the spatial distribution and the amount of ecologically and hydrologically relevant structures like hedges or small wetlands.

A further shift, especially in the preferred crops and the intensity of land use came with the biogas boom in the last twenty years.

These changes in the land use were analysed by digitalising aerial photos from different time steps. Associated hydrological impacts – like entry paths or combined interception of water, fine sediments and nutrients in the landscape – were investigated using various GIS-tools and statistical analyses.

The final aim of the study is the development of a catalogue of suitable and highly effective mitigation advices for agriculture and forestry management in order to improve the situation and avoid critical conditions. Such conditions occur especially under the threat of an accelerating climate change, coming along with more likely heavy precipitation events and summer low flow phases in rivers in parts of Central Europe.