

CYCLIC FLOODPLAIN REJUVENATION OF LOWLAND RIVERS: A NEW RIVER MANAGEMENT STRATEGY FOR BOTH FLOOD PROTECTION AND ECOLOGICAL REHABILITATION

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After the flooding problems along the rivers Rhine and Meuse in the Netherlands in the last decade, water management authorities emphasised on the need for new flood management strategies based on dealing with the dynamics of the river systems by providing room for rivers. Moreover, those strategies have to provide opportunities for ecological rehabilitation of the river floodplains and riparian wetlands as well. One of those strategies is the cyclic floodplain rejuvenation strategy: cyclic intervention in the morphological and ecological development of the river floodplains and secondary channels in order to maintain the flood protection levels and to mimic natural rejuvenation processes of a river by lowering the floodplains and reconstructing the lateral channels. However, there are still some questions on the sustainability of floodplain lowering and reconstruction of secondary channels, because the conditions will alter in time due to natural morphological and ecological processes. To answer this question a research project was carried out. The cyclic floodplain rejuvenation strategy was investigated for an 80 km stretch of the Waal branch of the river Rhine in the Netherlands. A complex of models and tools was applied, including hydraulic, morphologic, vegetation and habitat models and GIS, to analyse, at one hand the impact of morphological and ecological processes on the flooding risks and ecological quality of the floodplains in time and on the other hand to assess the impact of cyclic floodplain rejuvenation measures on the flooding risks and biodiversity (Duel et al., 2001; Baptist et al., 2004). This paper presents the approach of the project and main results of the modelling. Furthermore, this paper discusses the importance of the cyclic floodplain rejuvenation measures as flood risk management strategy and nature management strategy for rivers in the Netherlands. The implications of cyclic floodplain rejuvenation for river management are discussed as well.

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