

Inzet van flexibele beheersmaatregelen

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Synopsis of
“Use of flexible measures for sediment management”
by
Erik Mosselman, Arnhem, 15 September 2016

The people of Porabari in Bangladesh were very worried, because the Elanjani River eroded the bank along their village at a rate of 5 to 6 m/year. They feared they would soon lose their houses and properties and be forced to move to the poverty of slums in the capital. They asked the Bangladesh Water Development Board, a kind of Rijkswaterstaat, to provide bank protection, but the Board could not satisfy their request due to limited funds. That is why an alternative approach was tried by which the fluvial attack of the riverbank would be reduced at least temporarily, allowing time for implementing a more permanent solution in later years. Bottom vanes mounted on the river bed under an angle of 15 to 20 degrees generate vortices that counteract the natural spiral flow in river bends. It is this spiral flow that is responsible for the deep outer-bank scour and high near-bank flow velocities causing bank erosion. We studied the performance of bottom vanes first experimentally in Dhaka in the framework of collaboration between Bangladesh University of Engineering and Technology and Delft University of Technology, also involving Deltares. Full-scale bottom vanes were then constructed in the Elanjani River at Porabari using cheap local materials such as bamboo and bullah. A monitoring programme was set up in order to be able to detect any reduction of bank erosion thanks to the bottom vanes. To everybody's surprise, however, the outer bank not only stopped eroding but even experienced accretion. This demonstrated the power of this kind of flexible measures for sediment management. Motivated by this success, we are now thinking about applying similar flexible measures for the maintenance of secondary channels in the floodplains of the Dutch Rhine branches. Surface screens rather than bottom vanes seem appropriate here, either floating or standing on poles. They would be environment-friendly, because the channel would be cleared by the river itself, without draglines or dredging vessels. We hope to carry out experiments within the SSRS experimentation space along the IJssel branch of the Rhine delta.