

# Sediment: a Safe Building Material

## Examples of innovative solutions using TenCate Geotube® in river dredging

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Sedimentation in river beds and reservoirs can be dealt with in various ways. Flushing is not always allowed and has a limited positive contribution to restoring the dam's original capacity. The many negative side effects of flushing are known. Excavation is costly since it is slow and puts a dam out of operation for a long time. Balanced evacuation of sediment and its reintroduction downstream in the natural current is only possible as long as the load is low. If at all feasible, transporting wet sediments over the road is a dirty job in many ways: slippery roads, negative impact on the carbon footprint, social and environmental pressures.

This paper describes the evolution and boundaries of a innovative technology that today represents a valid, proven solution that reduces sludge volumes while the dam remains in full operation and without even lowering the water level.

This technology avoids transport costs, logistical hassle and actually creates economical and ecological value while properly dealing with the sedimentation problem.

Since the 1960's tubular TenCate Geotube® structures are used extensively in the maritime environment where the woven structures enable building with local sediments. Once they are filled hydraulically they form breakwaters, dune cores, jetties etc. The state-of-the-art know-how and understanding of the technology makes it possible today to safely create protection dams in water reservoirs, underwater break waters and current diversion structures. Recently, engineering guidelines have been developed and validated. This paper will introduce some of the work that has been done in this field, outlining which problems can be solved and what project criteria can be met with the technology.

Apart from the geotechnical knowledge, proper understanding of the behavior of organic slurries in a dewatering system as basic as a tube needed to be acquired to safely use sediments in a reservoir or a river as construction material that contributes to the functioning of the water body.

A selection of case studies will be presented to illustrate the progress made over decades.

The low carbon footprint characteristic of the dewatering technology as such is enhanced by the reduction or even absence of transport movements required to remove unwanted soil from a site. Data collected by independent institutions during full-scale projects underline the neutral effects of dredging activities in combination with tube dewatering on the ecosystem.

TenCate Geotube® once developed a simple bag, offers today a green environmental and innovative economical solution to overcome and prevent sedimentation problems in dams all over the world.

### **Keywords:**

Sedimentation – Ecology – Remediation – Geotube® – Reuse – Carbon Footprint

### **About the author:**

**Drs. Gerben van den Berg** has 26 years of experience holding management positions in various companies and industries. He joined TenCate six years ago and is a member of the companies globally operating Environmental Remediation Management Team. He is one of the leading experts in tubular dewatering concepts.