

## Textile Tube Dewatering, a Contribution to solve Contaminated Sediment Problems in Poland

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### ABSTRACT

In this paper we will explore the suitability of textile tube dewatering for the situation in Poland, using recent cases in other countries and highlight examples of good practice in respect of dredging, dewatering and re-use of contaminated sediments.

After a general introduction of the situation of Polish waters, we will briefly discuss of the tube dewatering technology recent examples.

Contaminated sediments present a major environmental risk because of their harmful effects on human, animal and plant life, and their ability to remain in the sediments over long periods of time. Further, when absorbed by plants and ingested by aquatic life, they act as a major source of contamination within the animal and human food chain.

The study of water sediments in rivers, lakes and canals is performed within the national environment monitoring system. It includes identifying the content of heavy metals and selected hazardous organic compounds in the sediments in rivers and lakes in the country.

In the study, Polish Institute of Geology indicates the real problem of contaminated sediments in Poland. For example, of the 275 rivers points checked in 2012 in respect of heavy metal content 46% was slightly contaminated, 6,5 % was contaminated and 3,6 %- highly contaminated. Given that some of the contaminated lakes and rivers could serve as a tourist and recreation attraction there is a clear interest to address this issue. Turawskie Big Lake, for example is the biggest tourist attraction of the municipality Turawa. However as long as the issue of heavy metal contamination bottom sediments remains unsolved, it will be difficult to exploit the large surface area of the lake for water sports and fishing.

This case is representative for the general approach in Poland. Despite a debate going on for several years, little action is taken until now.

In other countries as well the safe disposal of dredged contaminated sediments presents a major environmental problem. Safe onshore disposal involves dewatering of the dredged contaminated sediments. Textile tube dewatering of dredged contaminated sediments changes the consistency of the material from a slurry into a (semi-)solid form along with a major decrease in volume. Also, during dewatering process the vast majority of contaminants remain contained within the textile tubes by adhesion to fine grained material. Since typically well over

98% of all original particles are trapped the effluent flowing from the bags contains indeed hardly any of those contaminants likely to be bound by adhesion during the filling process. The remaining often solved contaminants can be treated more easily in a secondary step immediately following the dewatering.

Cost, spatial and social factors impacting disposal of contaminated sediments have led more recently to the development of ways to beneficially reuse contaminated sediments for non-structural and structural. In this paper several cases will be presented where the double use of textile tubes, as a dewatering device and a geotechnical structure. The effects on the economical feasibility, on social acceptance and on ecology will be examined for projects like Tianjin Eco-city, China and Embraport in Brasil., and smaller scale projects in Europe, like Port la Foret in France

Finally we will look at the situation in Poland and discuss the necessary conditions that could help decision makers to identify when this technology could be beneficial and when not.