Sediment Management for the Tidal Elbe
- between the poles of science and politics -

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Introduction: As for most tidal seaports, an effective sediment management is of the essence. This is particularly the case for the Port of Hamburg at the upper tidal Elbe, Europe's third largest Port, as it faces strikingly increased sedimentation and dredging necessities after almost a decade of well below average headwater discharges. In addition, options for an efficient discharge of excessive sediments are limited, leading to an increasing level of sediment inventory within the port and the fairway.

Developments: The overall principles for an effective and sustainable sediment management for the tidal Elbe and the Port of Hamburg that could indeed face the current challenges are scientifically founded. For almost two decades now, experts have agreed on three basic objectives: 1) minimizing dredging cycles by sufficient discharge of excessive fine sediments, 2) dissipating tidal energy by river engineering and 3) reducing pollutant levels in the sediment by effective remediation of old industrial sites and targeted removal of contaminated sediment depots.

In practice, however, these undisputed objectives are facing a tremendous number of challenges.

1. Regulatory requirements for new disposal sites have increased substantially and even when all requirements are technically fully met, many politically or perceptively motivated resistances persevere. Latest example is a scientifically proved suitable disposal site near the island of Scharhörn where no societal and political agreement on its actual use could be obtained and even juridical measures were threatened on the highest political level with the effect, that Hamburg refrained from its highly needed (significant reductions of the navigable depths had already been proclaimed) use up to today.
2. Effective river engineering measures are very costly and require large areas to be remodeled. Thus, the political motivation is relatively low (costs) and the local opposition high ("not in my backyard!") resulting in even lower political motivation. So far, only the Hamburg Port Authority has built a new shallow water area, 30 hectares at the Norderelbe at the costs of 80 million Euros. Other potential sites for more "room to the river" are strongly opposed locally, lack financing, and are thus procrastinated.
3. Cleaning up the sediments can only be done effectively at the sources, before significant dilution occurred along the course of the river. Unfortunately, the negative effects of the contamination are most severe for the handling of sediments far downstream, especially for Hamburg, where 30 million Euros annually are spent on land treatment and disposal of contaminated sediments. Substantial offers from Hamburg to help with remediation upstream have so far been mostly rejected by the responsible authorities.

These challenges are also related to a profound level of mistrust in institutions and science as a new comparative study shows [1].

Prospect: As the principal objectives of the sediment management still stand, the Hamburg Port Authority is continuing its course of technical elaboration and societal discourse towards a more sustainable and need-orientated handling of sediments. Exchange and compromise-finding with the other responsible actors along the Elbe will be crucial as will be transparency and public education to improve trust in the responsible authorities and scientific institutions [2]. After all, keeping the Port of Hamburg fully accessible is of overriding importance for the prosperity and the supply, not only of the Hamburg region, but for Germany in total and beyond.

References: [1] Schaffrin et.al (2021): Analysis of public confidence in scientific results related to northern European estuaries. [2] www.tideelbe.info