Reallocation of sediment within the harbor, part of a green port strategy

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Introduction: Ports needs nautical depth, which means that dredging and reallocation of dredged sediments is a part of the daily operational cycle. From a port management point of view the costs for dredging and reallocation has to be minimal to be competitive as a port. The most common strategy is to reallocate the sediment at sea at a location with a minimal return flow into the harbor. Some ports like Hamburg and Antwerpen are forces to look at other strategies since there distance to sea is too far away to be cost effective. Reallocation close by, or even in, the port can be an alternative. This strategy can also bring benefits to other goals, like bringing the port in a more natural balance (less disturbance of the natural disposition of river sediment into the sea) and enhancing ecological restoration projects like supplying sediment for wetland developments which can also help to protect the harbor against storm surges. Sediment becomes a resource in a green port strategy.

Methods: The INTERREG VB NWE project "Sediment Uses as Resources In Circular And Territorial EconomieS" (SURICATES) looks into upscaling of sediments use. The reallocation of sediment within the port of Rotterdam is one of the pilot applications, reallocating 500.000 m^3 sediment within the port. Figure 1 illustrates the principle of the reallocation for a similar project (The Mud motor, Ecoshape), using sediment as source for the nourishment of a nearby salt marsh.

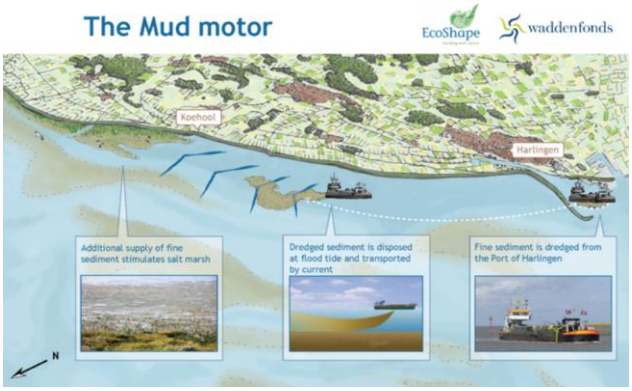

Figure 1 The mud motor

Results: The pilot will be carried out during the spring peak discharge of the river Rhine in 2019.
Discussion: The impact survey will make use of the continuous surveying of the port for bathymetry changes, combined with new monitoring techniques (optical cables for sediment transport, rare earth elements for fingerprinting the sediment composition and (green) LIDAR to monitor topography and shallow water bathymetry changes).

References: SURICATES (2017 – 2021), INTERREG VB NWE program (http://www.nweurope.eu/projects/project-search/suricates-sediment-uses-as-resources-in-circular-and-territorial-economies/