

ARE NON-CONVENTIONAL DREDGING ANY BENEFICIAL USE OF BOTTOM SEDIMENTS FEASIBLE IN THE REAL WORLD?

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Abstract

Nowadays several water recipients have been suffering of contamination due to sources such as urban and industrial stormwater runoff, port and harbour activities, and leakage from old contaminated masses. Many of these recipients are located in coastal areas and discharge their waters to the sea/oceans such as the Baltic Sea. Besides contamination, our planet has been overexploited and our natural resources, such as phosphate-rocks and metals are being depleted in a tremendous high speed which has been raising serious concerns. There is an urgent need for remediation, preventive actions and also the development of technologies that can transform any type of waste, such as dredged sediments as raw material for different end-users to phase out the pressure over our planet. However how is this done in the real world? Is this feasible? If feasible what are the main barriers to be overcome? Can we use bottom sediments for civil engineering purposes, agriculture and forestry activities and energy production? This is a concept that goes beyond the circular economy and these questions are being currently taken at a large-scale project implemented in Kalmar, Sweden called LIFE SURE. The project has the main objectives of: 1) demonstrating an innovative dredging technology that does not cause any resuspension, release and pose risks to environmental and human health and 2) developing treatment techniques that make it possible the beneficial use of dredged sediments and 3) developing cost-effective techniques for recovery of valuables such as nitrogen, phosphorus and different metals such as copper, zinc and lead. It is expected that by the end the project 70% of the total amount of dredged sediments (approx. 30,000 m³) are recovered and used as secondary material for end-users. Furthermore, the project has the mission to spread and disseminate the possibilities of implementing a cost-effective dredging technique and treatment system to recover the environmental and ecological status of coastal waters that suffer from eutrophication and metal contamination within the EU.