The Benefits of the Use of Dredged Material in Aquatic Systems

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Introduction: Sediments, both in suspension and at the bed, form an essential and integral part of riverine and estuarial systems. The hydro-morphological regime of tidal rivers and estuaries is dependent on sediments and erosion, transport and sedimentation are continual processes. Sediments are essential to support the plant and animal life of these water bodies.

Discussion: But what if sediments are in the 'wrong place' for economic or environmental development? For example, if a channel to a port needs to be maintained or improved, sediment may need to be dredged to provide the necessary access. The consequence of removal of sediment from the aquatic system is that the dynamic equilibrium is disturbed and the environment reacts by seeking to re-establish that equilibrium. In estuaries, marine sediments may be transported in from the sea, or from rivers, or if there is insufficient sediment supply, draw down may occur as sediments are removed from tidal flats, salt-marshes or banks.

One way to help maintain that dynamic balance is to deposit dredged sediments back into aquatic systems. A PIANC working group (PIANC-Envicom – Working Group 14 – Dredged Material: Beneficial Uses, Options and Constraints) is currently considering the options and constraints for use of dredged material and drawing together the experience of many countries worldwide in using dredged materially beneficially. This means recognising the value of sediments and treating dredged material as a resource rather than a waste.

A variety of uses exist whereby dredged material is placed back in the aquatic system. These include 'sustainable relocation' where the material is placed in a deposit site on the bed from which sediment is subsequently transported by natural processes, the deliberate overflow of sediment into the water column and the creation or enhancement of wetland areas for flood protection and/or nature conservation purposes.

River Basin Management Planning, under the Water Framework Directive (WFD), must take account of the importance of sediments within aquatic systems. There are opportunities to meet both economic and environmental requirements by the careful re-use of dredged sediments. Failure to recognise these opportunities would be damaging not only to the economy but to the environment which is central to the aims of the WFD.

References: Murray, L. A. (2006). From Waste to Resource – The Beneficial Use of Dredged Material: Options and Constraints Report of PIANC WG 14. *Proc. PIANC Conference May 2006, Estoril, Portugal.*