

Morphological management, a concept for an holistic management of estuaries

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Over the past decades, several projects have been executed in estuaries without taking into account the possible effects on other estuarine functions. In recent years, due to the implementation European Bird and Habitat Directives, procedures have forced managers to search for a multi-functional approach. Where estuaries serve different functions, the morphological evolution of the estuary is crucial with regard to the evolution of several estuarine services. The importance of morphology should be recognized by managers, as it can be seen as the foundation for different functions.

In 2001, a long term vision (LTV) for the Schelde-estuary was published by the Dutch and Flemish governments. Within this vision, several goals were defined, focussing on safety against flooding, port accessibility and nature. Parallel with this LTV, an independent expert team appointed by the Antwerp Port Authority, investigated the possibility of a navigation channel enlargement. They concluded that it was possible, although a new approach was necessary: they proposed a new strategy for the disposal of dredged sediment where dredged sediment could be “used” to create benefits for other functions. Since 2010, dredged sediments have been disposed along different sandbars in the Westerschelde, changing the flow patterns and creating low dynamic habitats.

In finding the optimal management strategy for an estuary, policy makers have to deal with different functions, some having contrasting goals. Morphology should be seen as the key for other functions, and morphological management the concept to realise win-win-situations for different estuarine functions (“holistic approach”). Although this concept may seem to be simple, several challenges remain: understanding of the morphological evolution is one of the more difficult scientific aspects; both numerical and physical scale models result in important uncertainties, and experience is and will stay crucial in understanding the morphological functioning of estuaries.