INUNDATION AREAS WITH A CONTROLLED REDUCED TIDE: SYMBIOSIS BETWEEN ECOLOGY AND SAFETY

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Estuaries are well recognized as very productive ecosystems with important functions regarding biodiversity, biogeochemical nutrient cycling or protection against storm surges. In the Schelde estuary, embankments, dredging and dike works have strongly reduced the intertidal areas, both in quantity and quality (Meire *et al.*, in press). The Schelde suffers from loss and degradation of habitat, the latter mainly due to anthropogenic pollution (Van Damme et al, in press.). The ecological functioning of the estuary is under pressure, causing a deterioration of the food web and increasing the risk for flooding.

Restoration of the estuarine habitat becomes more and more essential. Most estuaries however are situated in very densely populated areas with major economic activities. Hence land is scarce and expensive. A new philosophy is needed, combining safety, economy and nature. Controlled inundation areas (CIA) with a reduced tide (CRT) are one way of doing this.

CRT's will differ in many ways from fully tidal areas (Maris et al, submitted). Simulations with a numerical computer model show that these areas can have a significant impact on the ecological functions of the estuary, with effects on oxygen concentrations, nitrification, denitrification and primary production. The ecology within a CRT showed to be very case specific, depending on e.g. the sluice design, morphology of the area and water quality (Maris et al, submitted). Choosing the right sluice design, water quality can be improved and sedimentation in the CRT can be influenced.

References

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