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How beneficial sediment reuse contributes to improve flood defense in Flanders, Belgium

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ABSTRACT

Following the severe North Sea floods in 1953 and 1976, Flanders has decided to implement a flood protection program and the ecosystem management plan along the river Scheldt. This program is called the "Sigma" plan. To reduce the flood risk, the program includes strengthening of existing flood banks as well as managed retreats to allow flooding of a presently defended areas, which also promotes the renaturation of the Scheldt estuary. The implementation of the Sigma plan took place over a period of 40 years. Because of climate change and rising sea levels, the Sigma program was updated in 2005 and new measures were added to the original plan. The final tranche of projects is currently scheduled to be launched in 2035.

The implementation of the Sigma program has facilitated the introduction of new engineering techniques, including the beneficial reuse of dredged sediments as backfill and baselayer material. By using sediment to improve floodbanks Waterwegen en Zeekanaal manages to reduce the costs and minimize the nuisance of both dredging and embankment works and contributes to a circular economy. The development of innovative technologies and practices to improve the compaction characteristics and engineering properties of dredged materials is supported by the European Commission. Waterwegen en Zeekanaal participates in the Interreg project USAR (Using Sediment As a Resource) aiming at developing an ICT tool to facilitate the beneficial reuse of sediments and will implement a pilot project to reuse polluted sediments in the construction of new embankment.