



Lift up of lowlands

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Objective

Make the connection between a more sustainable use of dredged material and the need to reverse the process of land subsidence.

Motivation

In the Netherlands, large amounts of non-contaminated sediments must be dredged every year to assure the safe discharge of water and for nautical reasons. Using dredged material as a resource can contribute more to a global sustainability, with more environmental and financial benefits, than disposal at sea or at upland disposal facilities.

In addition, the clay and peat lands on the western part of the Netherlands suffer from land subsidence which is mainly induced by the lowering of the (ground)water table to support agriculture. This can result in the upward seepage of brackish water and may enhance greenhouse gas (GHG) emissions. The project “Lift up of lowlands” focus on adding value to dredged materials, providing the final users with the knowledge on how to apply the technology and the upgraded materials in different areas.

Technological Challenge

Understand the key parameters affecting ripening of dredged materials and develop technologies to manipulate the process of ripening. This will allow the development of upgraded materials fit for different applications.

The three main scenarios considered for the application of the upgraded material are:

- Reverse the process of (agricultural) land subsidence;
- Wetlands;
- Civil engineering.

Research goals

- Identify the key parameters affecting the ripening process;
- Determine the rate of oxygen consumption and carbon dioxide formation;
- Determine the priming effect induced by the addition of digested cattle manure and stabilized compost;
- Identify the sulphur compounds behavior;
- Manipulate the hydraulic properties and the bearing capacity of the upgraded material;
- Minimize the rate of organic matter degradation and leachability of nutrients;
- Identify parameters affecting the up-scaling;
- Develop a model for future application of the obtained results.

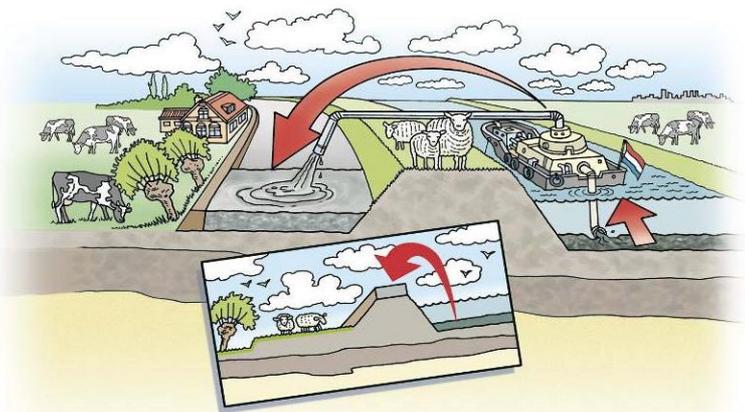


Figure 1: Application of dredged material for the lift up of lowlands



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