

SEDIMENT TREATMENT IN HAMBURG

AS PART OF A CIRCULAR ECONOMY



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Le devenir des sédiments de dragage maritimes et fluviaux mis à terre à partir de 2025, 22. September 2022
Dr. Henrich Röper, HPA

01

A strategic framework for
sediment management

02

A circular economy for sediments?

03

The „Big Five“

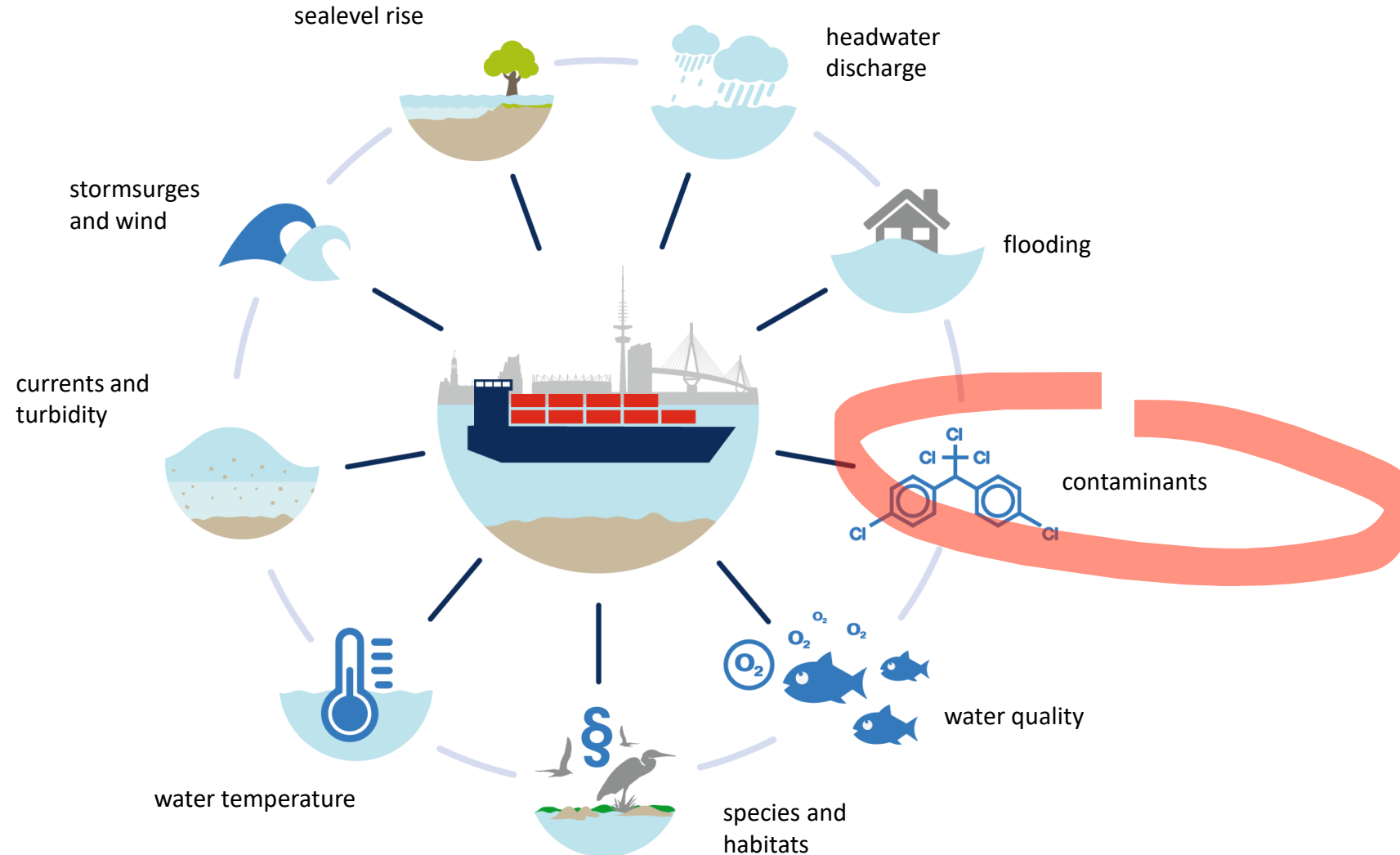
01

A strategic framework for
sediment management

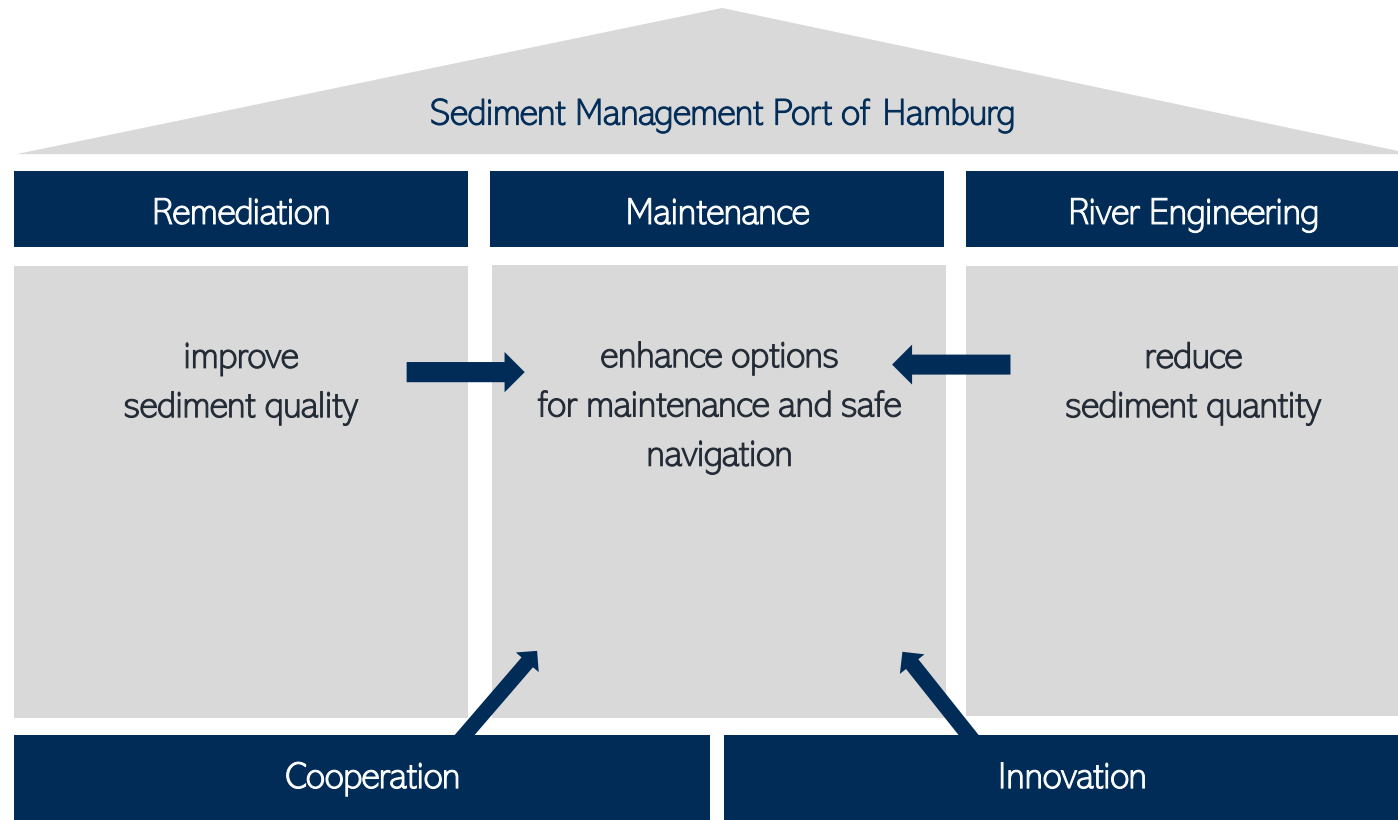
Accessibility to the port



Influencing factors



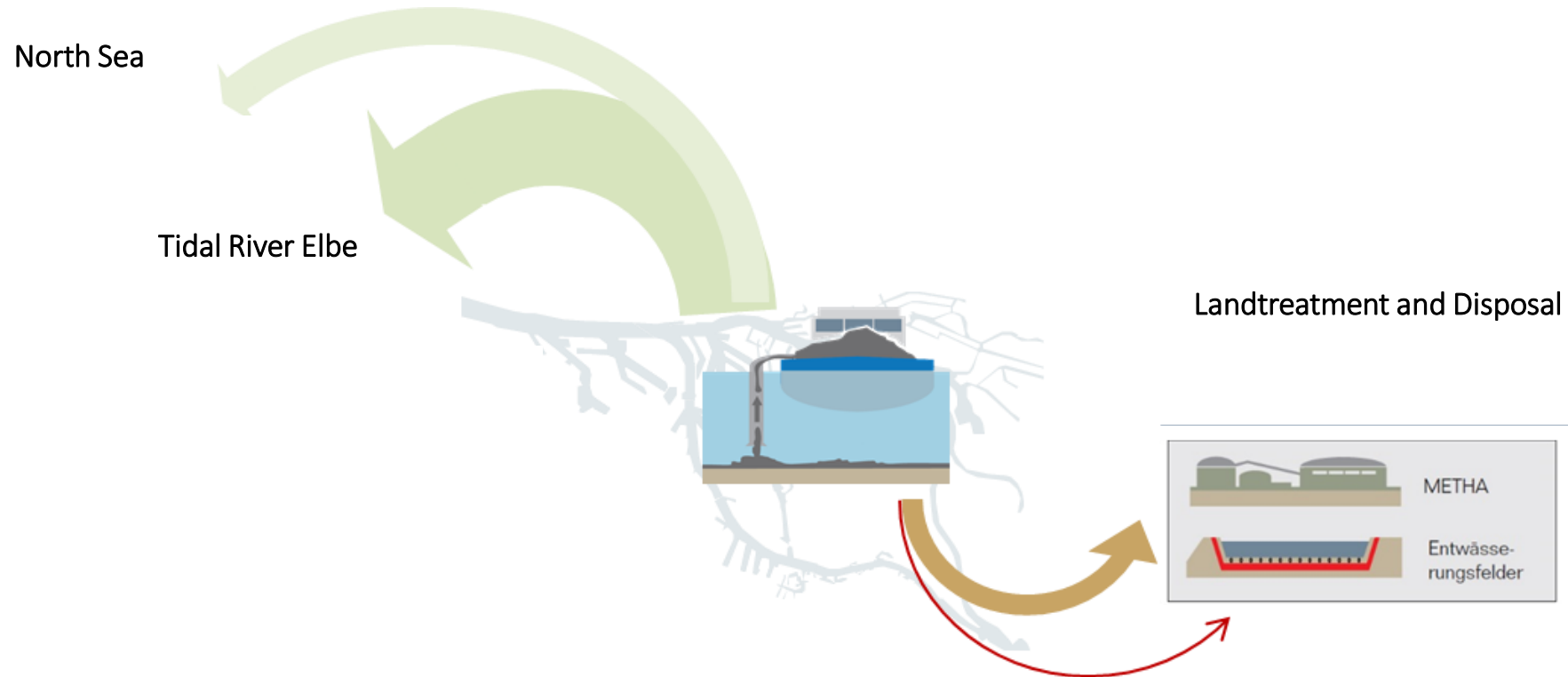
A strategic framework for sediment management



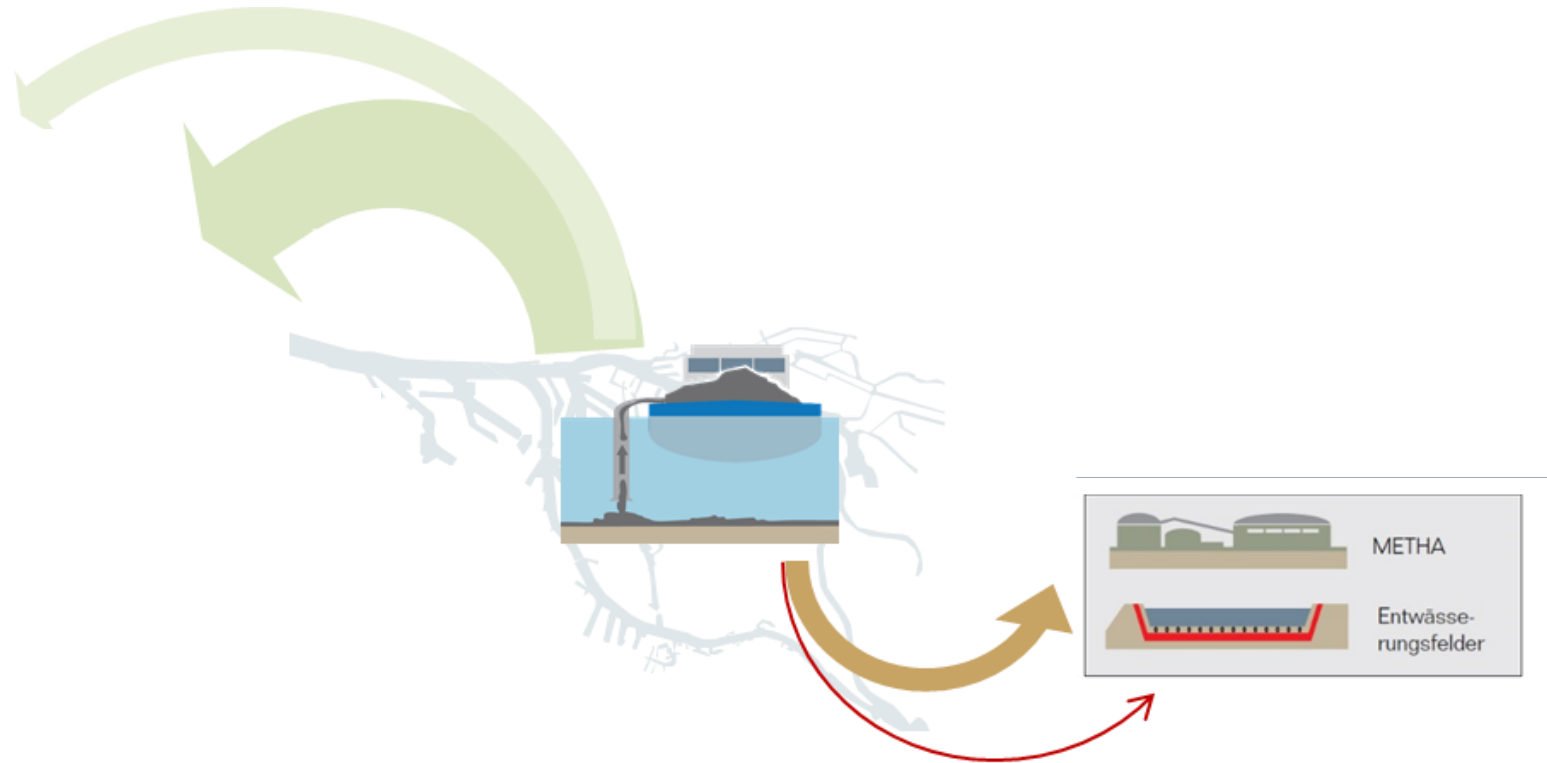
02

A circular economy for
sediments?

Sediment fluxes – Port of Hamburg (today)



Sediment fluxes – Port of Hamburg (today)



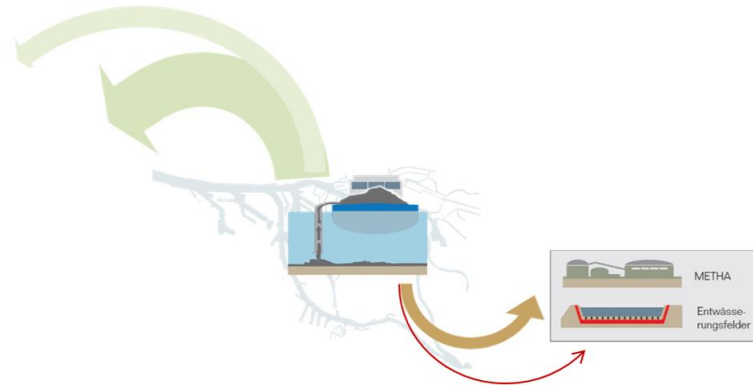
Possible options?

Engineering measures in the Elbe estuary

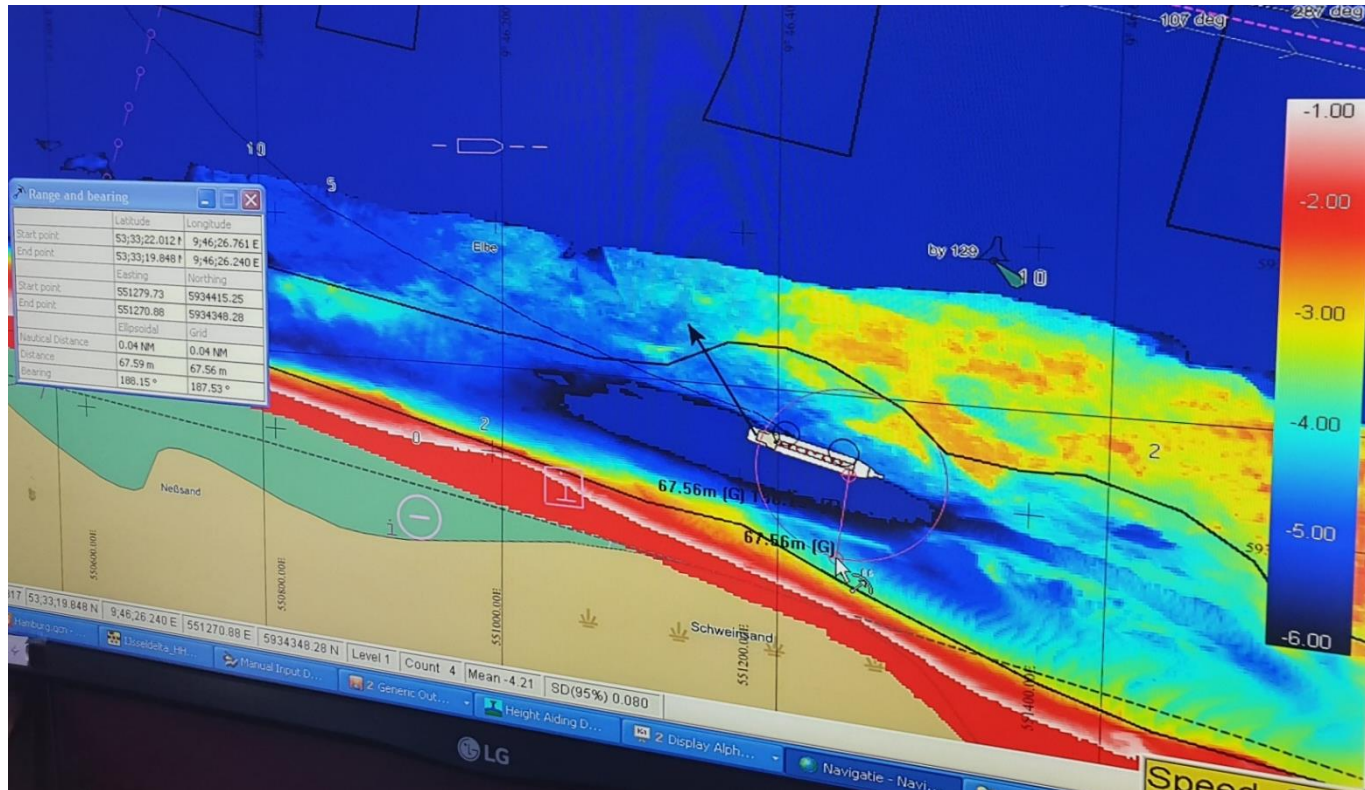
- influencing sedimentation dynamic
- habitat restoration
- coastal protection

acceptance
↓

Sediment quality



Habitat restoration in shallow waters with sediments from maintenance



Coastal protection (with sediments from maintenance?)



- growing demand
- sediments need to be(-come) “fit-for-purpose”

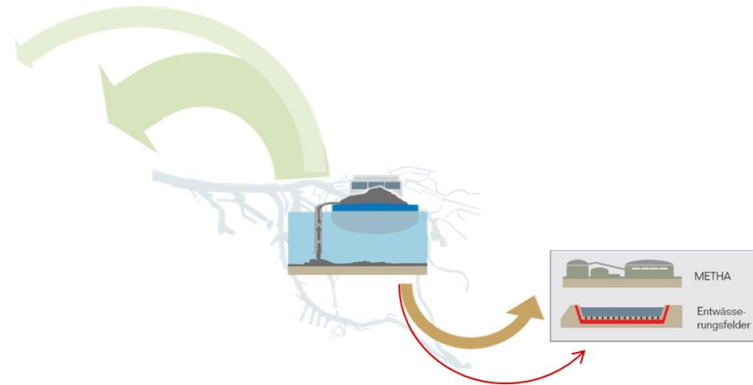
Possible options?

Engineering measures in the Elbe estuary

- influencing the sedimentaion dynamic
- habitat restoration
- coastal protection

acceptance ↓

Sediment quality



Treatment and processing to meet product requirements

- substitute of raw materials
- industrial uses
- costumized production

acceptance ↓

Economic potential

03

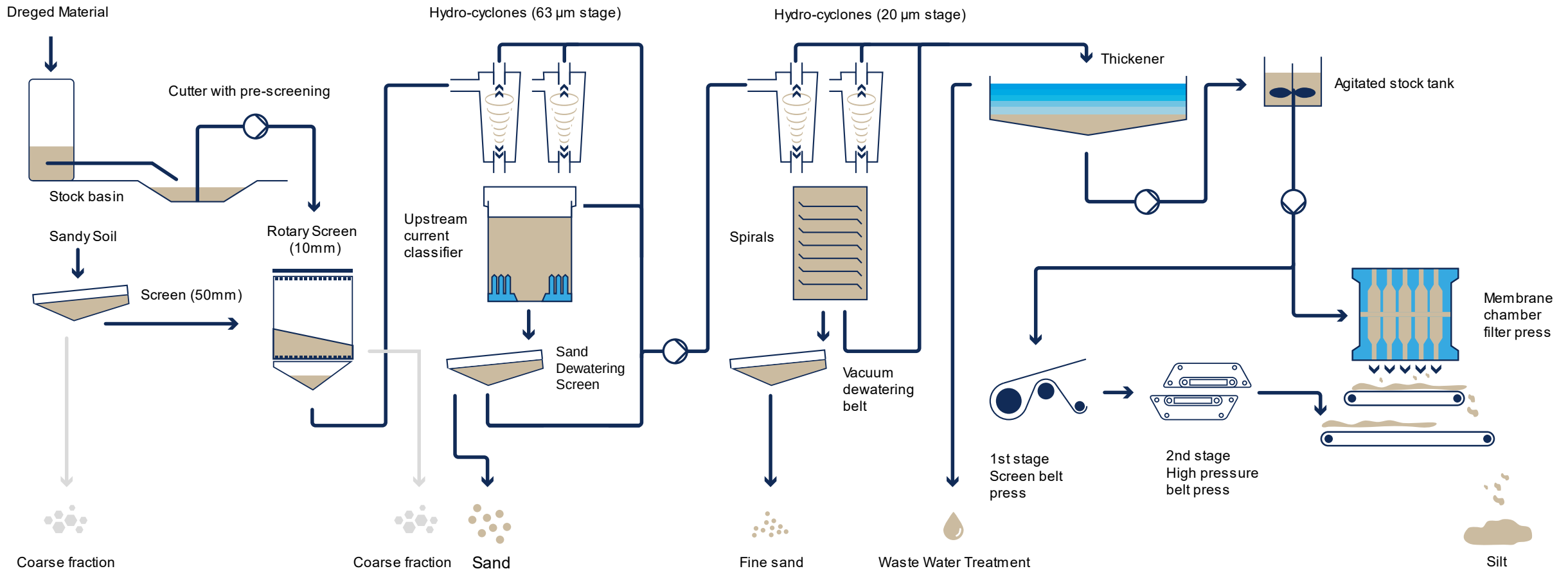
The „Big Five“ Beneficial Use Options

I Dredged Material Treatment Plant - METHA



- Operation phase since 1993
- Annual throughput up to 550,000 m³/a

Operation Principle of the METHA

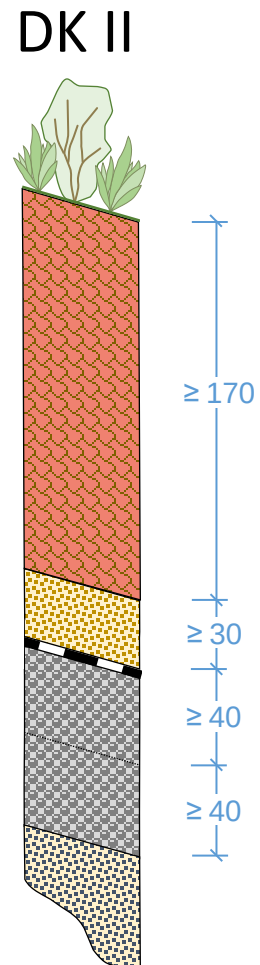
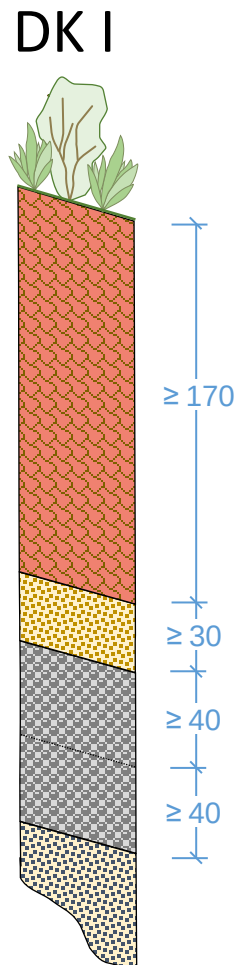


II DM as sealing material on disposal sites



- disposal site
Feldhofe
- capacity (today)
7,000,000 m³ DM

DM as sealing material on disposal sites



Legend



planting



recultivation layer



drainage layer



HDPE sealing membrane



dredged Material sealing layer



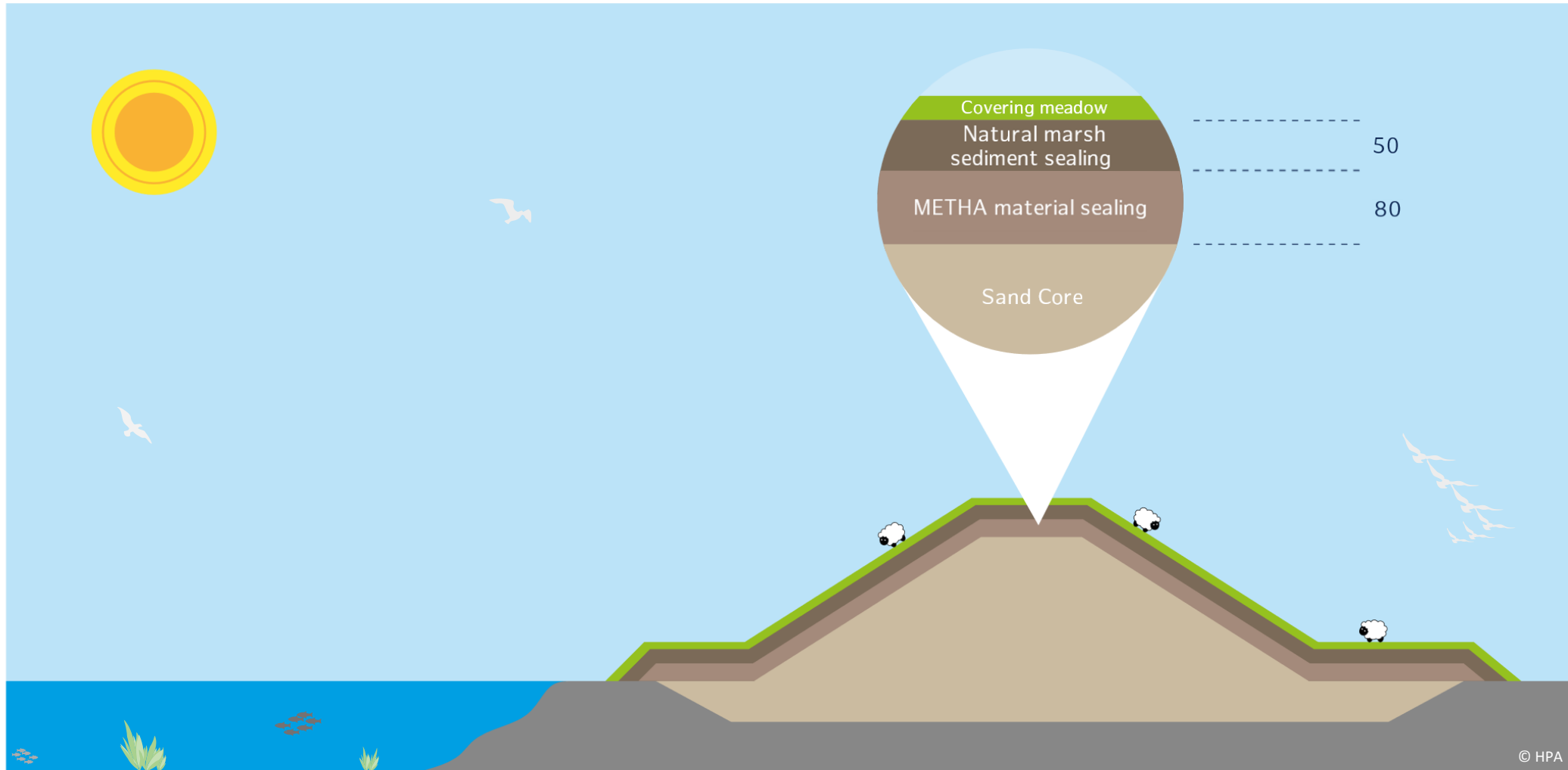
gas drainage layer

III DM as clay substitute in dike construction



- pilot dike construction using METHA material below a layer of natural marsh sediment at Ellerholzkanal, Hamburg
- built in 2004

III DM as clay substitute in dike construction (CC adaptation)

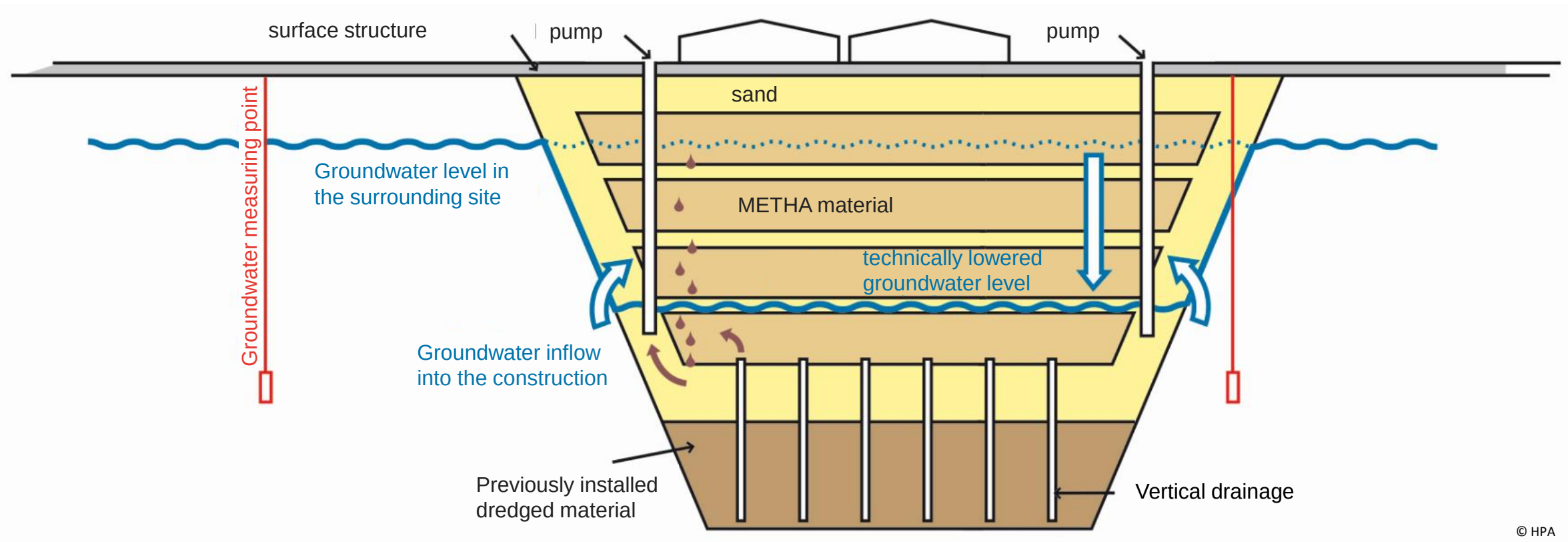


IV Silty and sandy DM in backfilling measures



- area: 8 ha
- 290,000 m³ METHA-Material
- 420,000 m³ sand
- target height: + 8.00 m
- built in 2013 - 2016

IV Silty and sandy DM in backfilling measures



V Silty DM material in the ceramic industry



pilot
brickyard
Hamburg



leightweight
aggregat production





⇒ Sediments are eligible to circular economy thinking



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