30 years Dredged Material Management in the Port of Hamburg
Natural Suspended Matter Transport in the North Sea

Source: Kappenberg (2007) from ICONA, 1992; Eisma and Irion, 1988

North Sea

Hamburg
Need for Water Depth Maintenance

Sedimentation rates up to several meters / year
Disposal in the 1960’s
METHA – Treatment since 1993

Throughput 1,000,000 m³ per year

Mechanical treatment …

Hydrocyclones……

…. Band filter press
… and Land Disposal
Beneficial use of treated sediments

Dyke construction

... have shown:
These options are very limited!

Large scale tests...

Harbour Basin Backfilling
Open Water Placement

Buoy E3

Nesssand
Today’s Dredged Material Management Concept

Relocation

- ~ 3 Million m³
- cost effective
- dependancy

Land Treatment

- max. 1 Million m³
- costly
- limited
Mercury in fresh Sediments (mg/kg TS)

Research started METHA into operation
River Basin Sediment Management

The Elbe:
- Length: 1,100 km
- Population: 25 Million
Elbe Watershed Contamination Sources

Source: "Hintergrundpapier zur Ableitung der überregionalen Bewirtschaftungsziele für die Oberflächengewässer im deutschen Teil der Flussgebietseinheit Elbe für den Belastungsschwerpunkt Schadstoffe," FGG Elbe 2009
Remediation of most significant contaminated sites

Sources = Burdens of the past.
River Basin Sediment Management = Task for the International Elbe River Community.
Pillars of Tidal Elbe Management

River Engineering- and Sediment Management Concept

**RIVER ENGINEERING**
- Construction of shallow areas for tidal volume
- Win-win with flood protection and climate change adaptation

**OPTIMIZATION of RELOCATION**
- Relocation of fresh sediments
- Flexible, adaptive approach
- Sediment traps to concentrate sedimentation

**ELBE REMEDIATION**
- International Elbe Sediment Management Concept
- Hamburg supports upstream measures

**LAND DISPOSAL UNTIL 2025**
- Third disposal site in Hamburg
Thank you for your attention!