

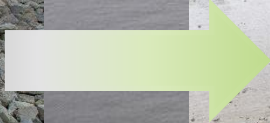


Isabel Schreiber

Ways to Successful Implementation of Nature-Friendly Bank Protections in Tidal Waterways

PIANC Virtual Workshop: Working with Nature for Climate - Resilient Ports and Waterways
Session: Scaling Up and Changing Entrenched Current Practice

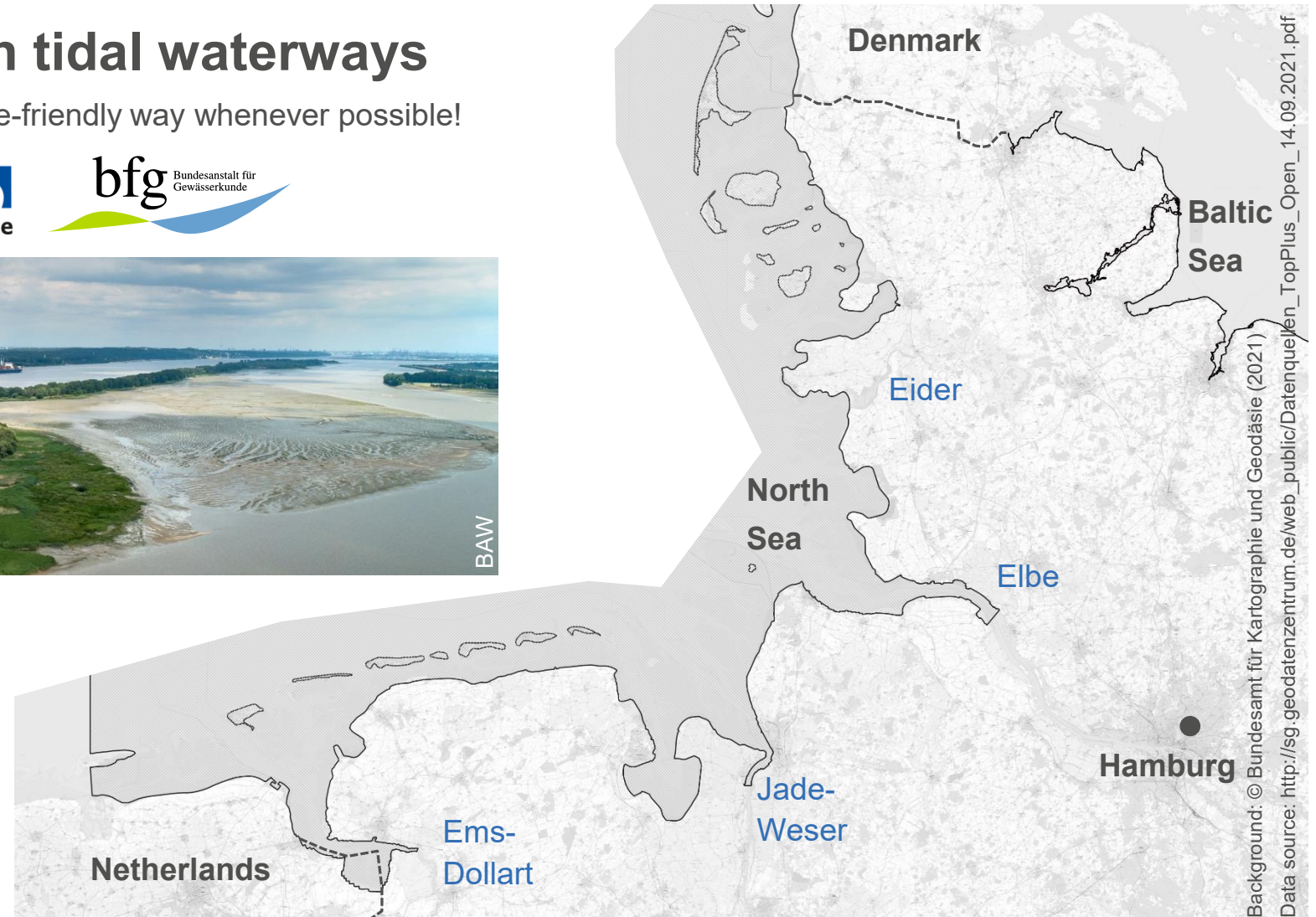
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The goal for tidal waterways...

Near-natural banks in tidal waterways

By maintaining the river banks in a nature-friendly way whenever possible!



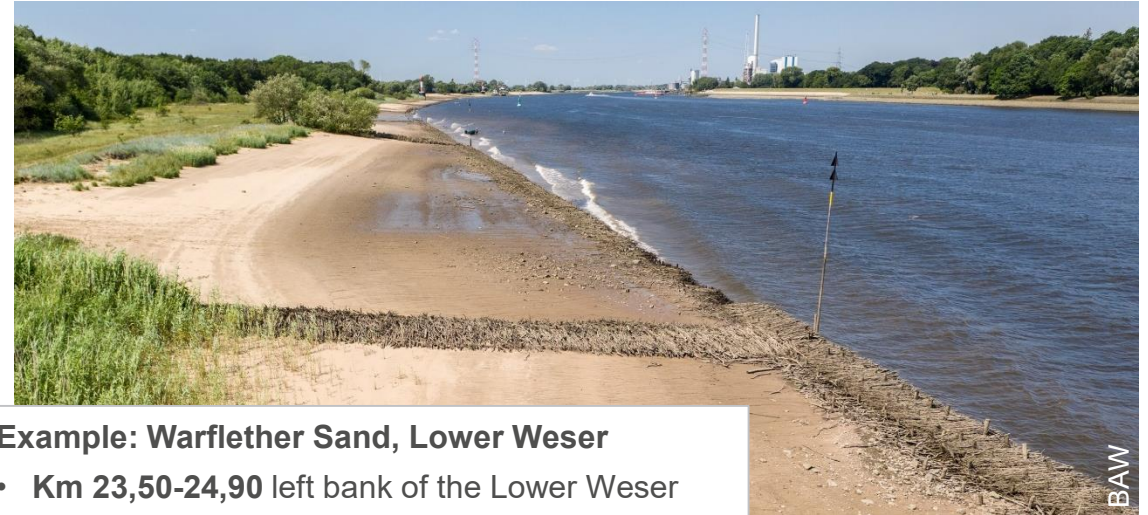
The spectrum of alternative measures in German estuaries



A national database of existing alternative bank protections

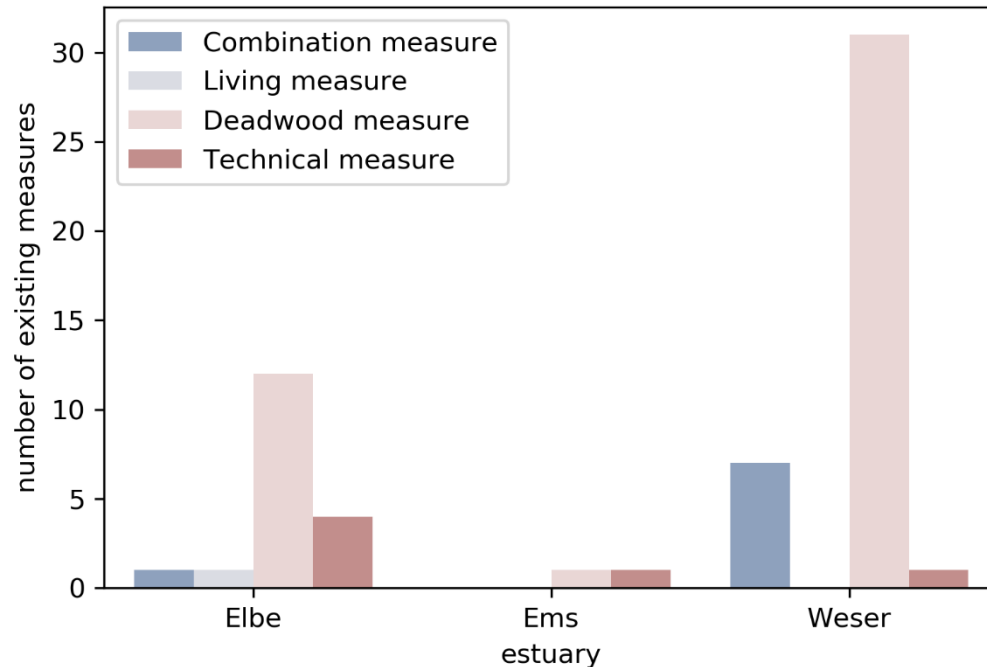
- National database of up to **60 existing alternative bank protections in the German North Sea estuaries** as well as a corresponding collection of measures along the inland waterways

Website: <https://ufersicherung-baw-bfg.baw.de>



Example: Warflether Sand, Lower Weser

- **Km 23,50-24,90** left bank of the Lower Weser
- **Description:** Parallel and transversal brushwood structures for beach protection



The majority are bank protections consisting of dead wood

Tidal conditions are challenging for living measures

What can we learn from existing measures?

- Alternative bank protections - especially consisting out of deadwood - find diverse application in German estuarine waterways
 - Often local materials can be used providing an ecologically friendly and sustainable alternative to rip rap
- However, currently successful and frequent implementation is based on:

Local knowledge, experience and creativity of the local engineering staff



What information is needed to assist planning and implementation?



More information on existing measures:

- Performance
- Durability
- Materials
- Costs
- ...



Boundary conditions of existing measures:

- Local conditions
- Hydrodynamic loads
- Status of the bank
- ...

Compile, provide and preserve existing knowledge and information

Fact sheets for each measure

• Location and Description

• Construction

- Year of construction, reconstruction intervall
→ durability
- Time and personell maintenance effort

• Materials

- Origin and amount of used materials

• Costs

• Habitat

- Present vegetation
- Protected flora and fauna

• Boundary conditions

- River course
- Slope angle
- Tidal range, mean high and low water level
- Salinity
- Sediment type
- Shipping traffic (qualitative and quantitative)
- Hydrodynamic loads (so far only qualitative)



Fact sheets and collection of existing best-practice examples compile experience and research

- Preserve existing knowledge
- Provide inspiration and planning aid
- Convince sceptic practitioners by providing examples

General and specific **monitoring** of existing and upcoming measures

- Investigate performance
- Develop application boundaries
- Understand failure mechanisms
- Optimization potential
- ...

→ Provide guidelines for implementation in tidal waterways in Germany

The bigger picture for resilient estuaries...



Ships are getting larger, sea level is rising, extreme events will be more frequent
... while the banks have to remain at the same location?

The bigger picture for resilient estuaries...



We are in need for space and foreland areas to allow the natural dynamic of the river for a real improvement of ecological value!

Solution & Challenge: Include everyone in the discussion about acquiring land for the ecological transformation of larger areas

BAW



Thank you for your attention!

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Project in cooperation with the
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