



SEDNET – SEDIMENTS ON THE MOVE

Relevance of moving recent and historic upstream contaminants for Hamburgs dredging strategy and the North Sea

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Relevance of moving recent and historic upstream contaminants for Hamburgs dredging strategy and the North Sea

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Relevance for the Estuary and the Sea?

05

Outlook

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Dredging for Navigation

03

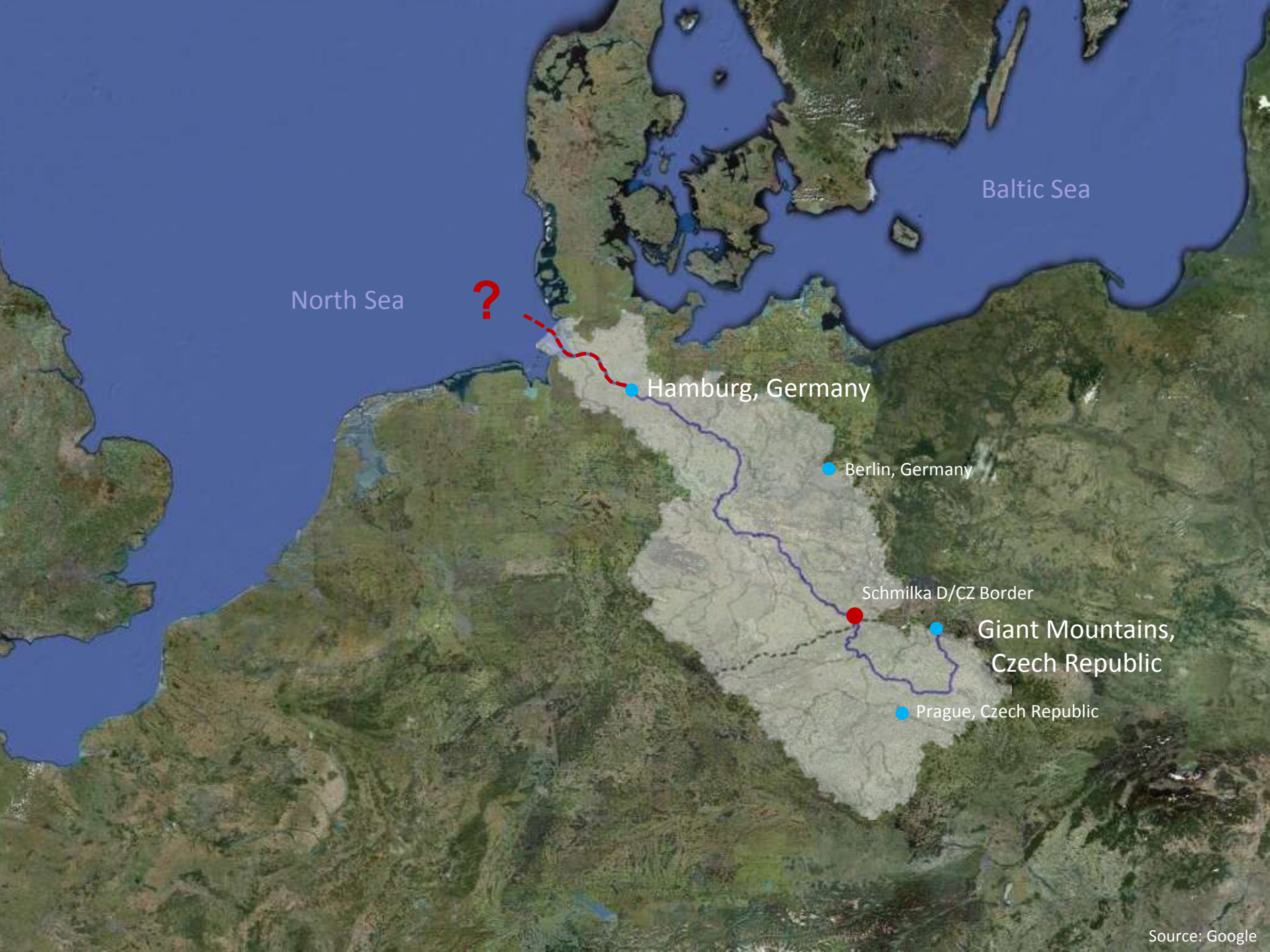
Impact of the PCB incident on dredged sediments

04

Influence for dredged material management - North Sea disposal

01

Relevance for the Estuary?



North Sea

Baltic Sea



Hamburg, Germany

Berlin, Germany

Schmilka D/CZ Border

Giant Mountains,
Czech Republic

Prague, Czech Republic

- Germany's biggest port
- influenced by tide
- 100 km distance to North Sea



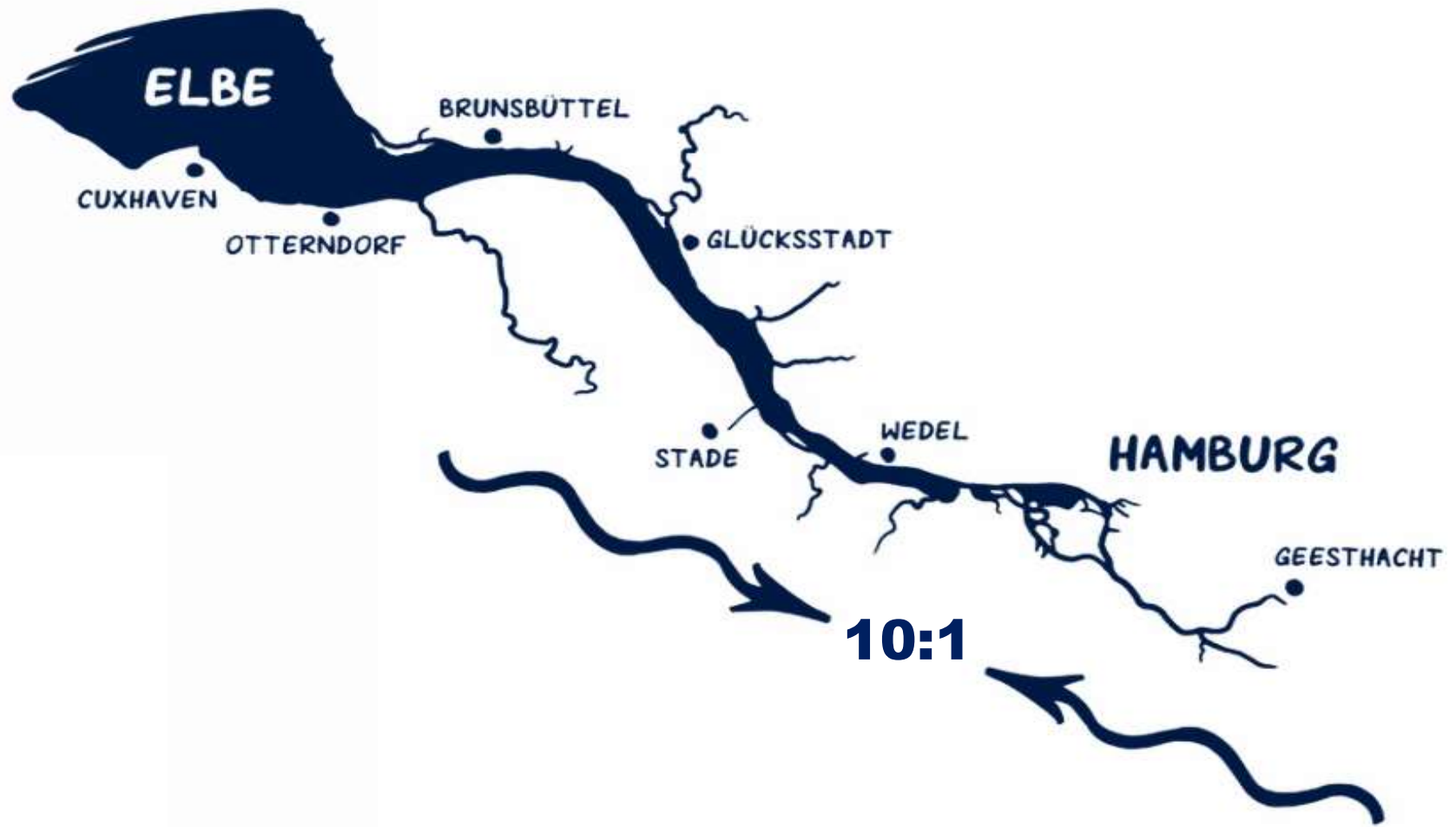


Wadden Sea

Birds / Habitats (Natura 2000)

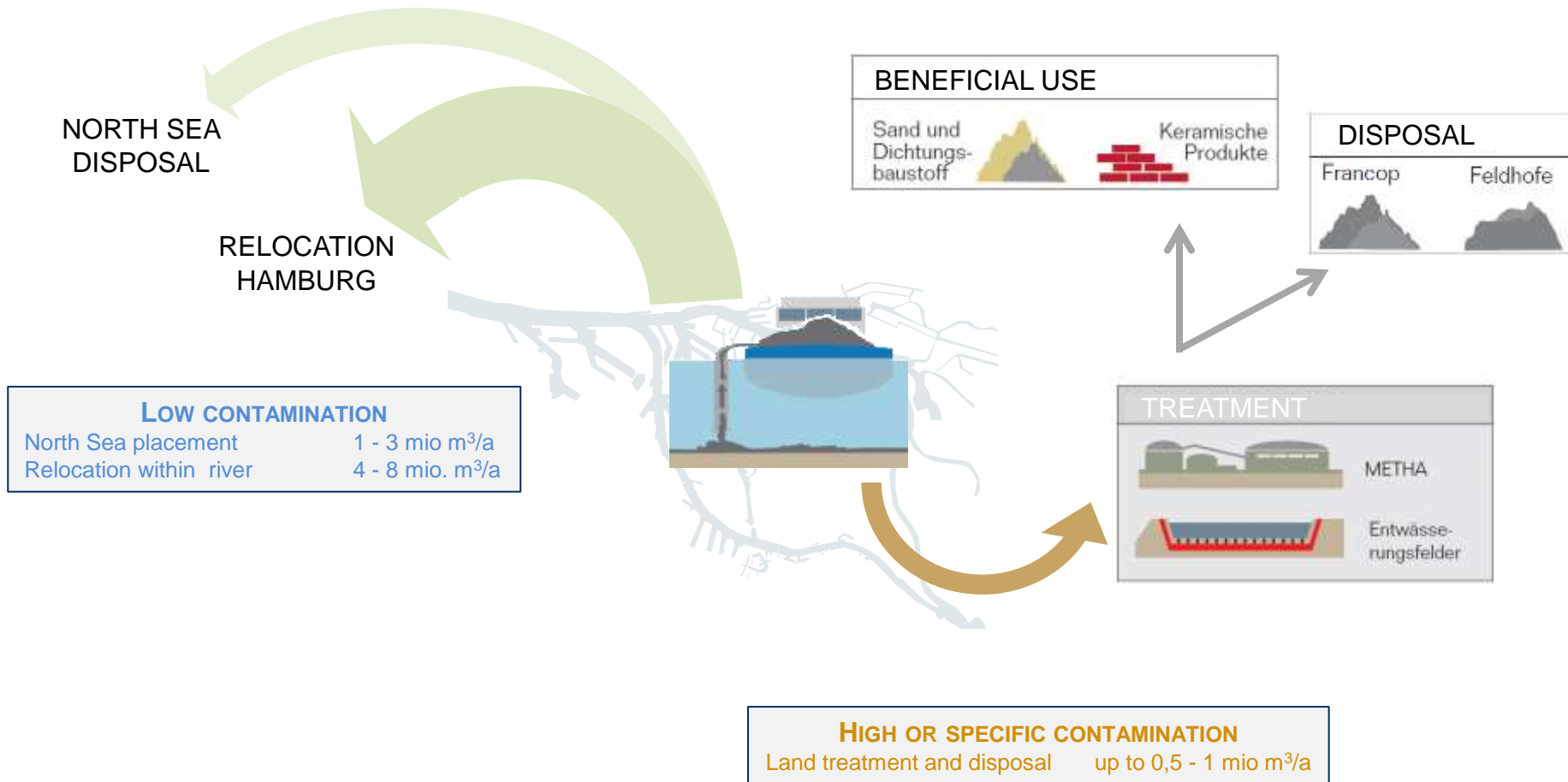


Sediments from upstream and the North Sea



02

Dredging for Navigation

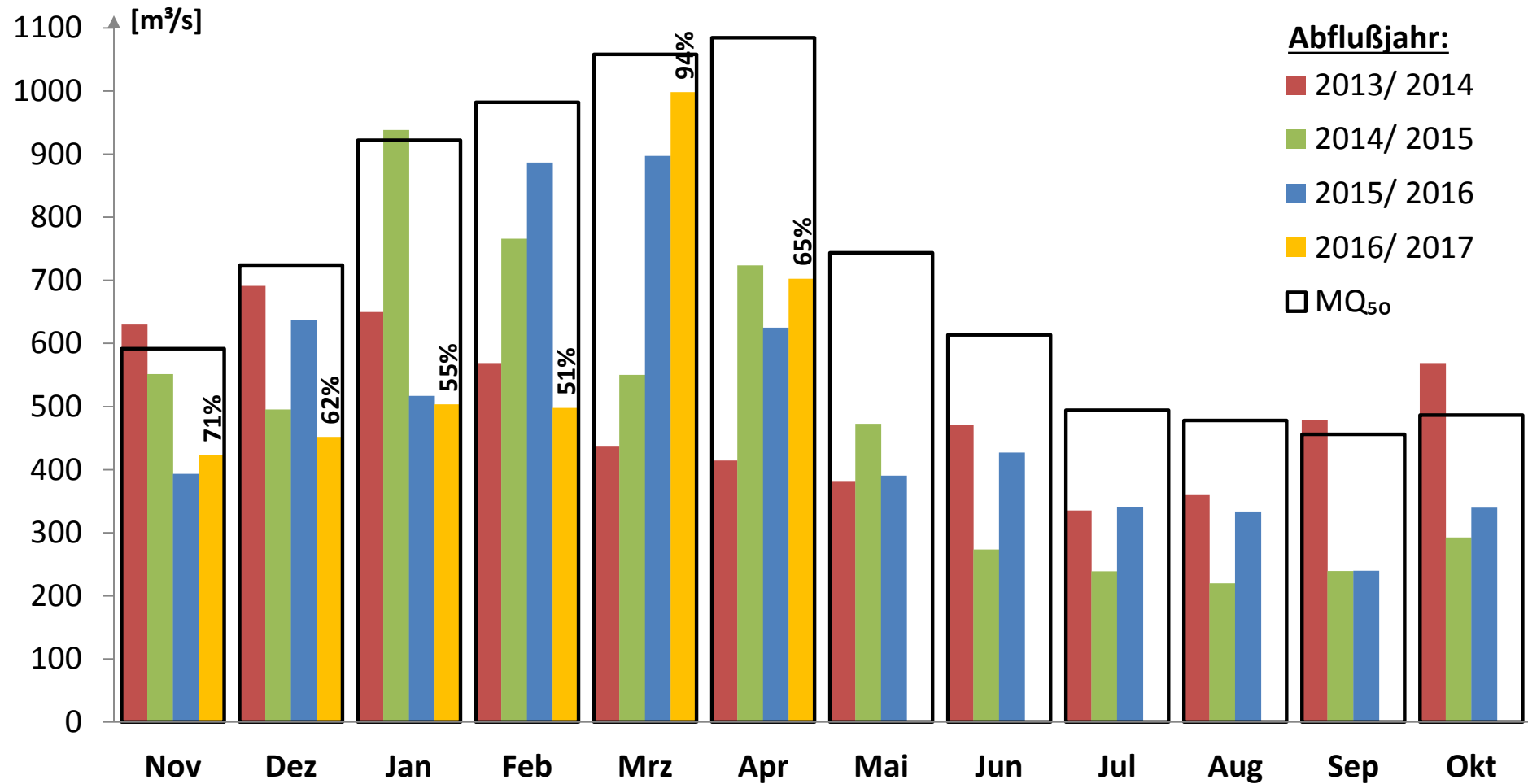




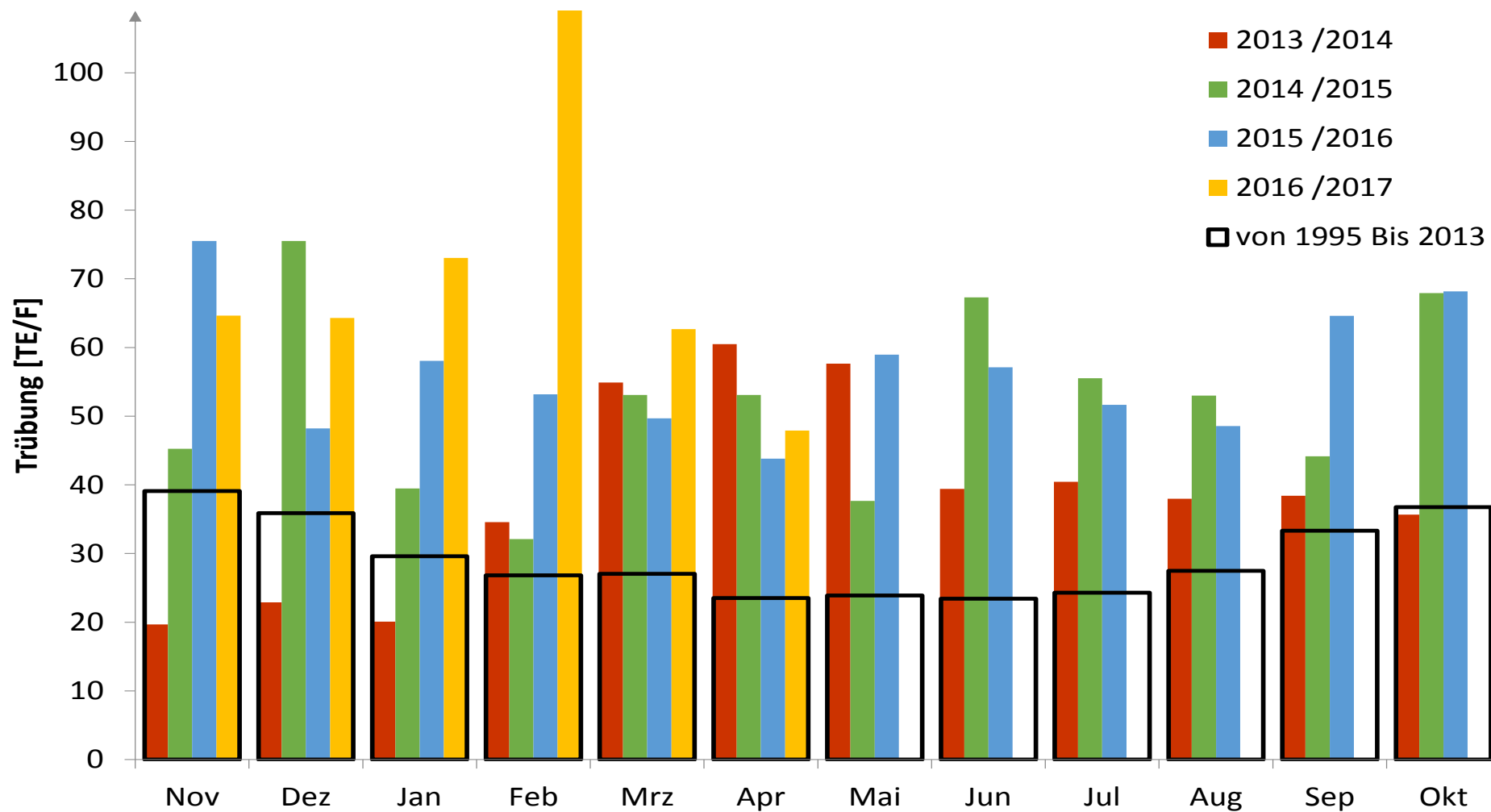
- ▶ Regular river maintenance
total cost: ~ **75 Mio. € per year!**
- ▶ Land treatment:
1/5 of volume, but 3/4 of cost!



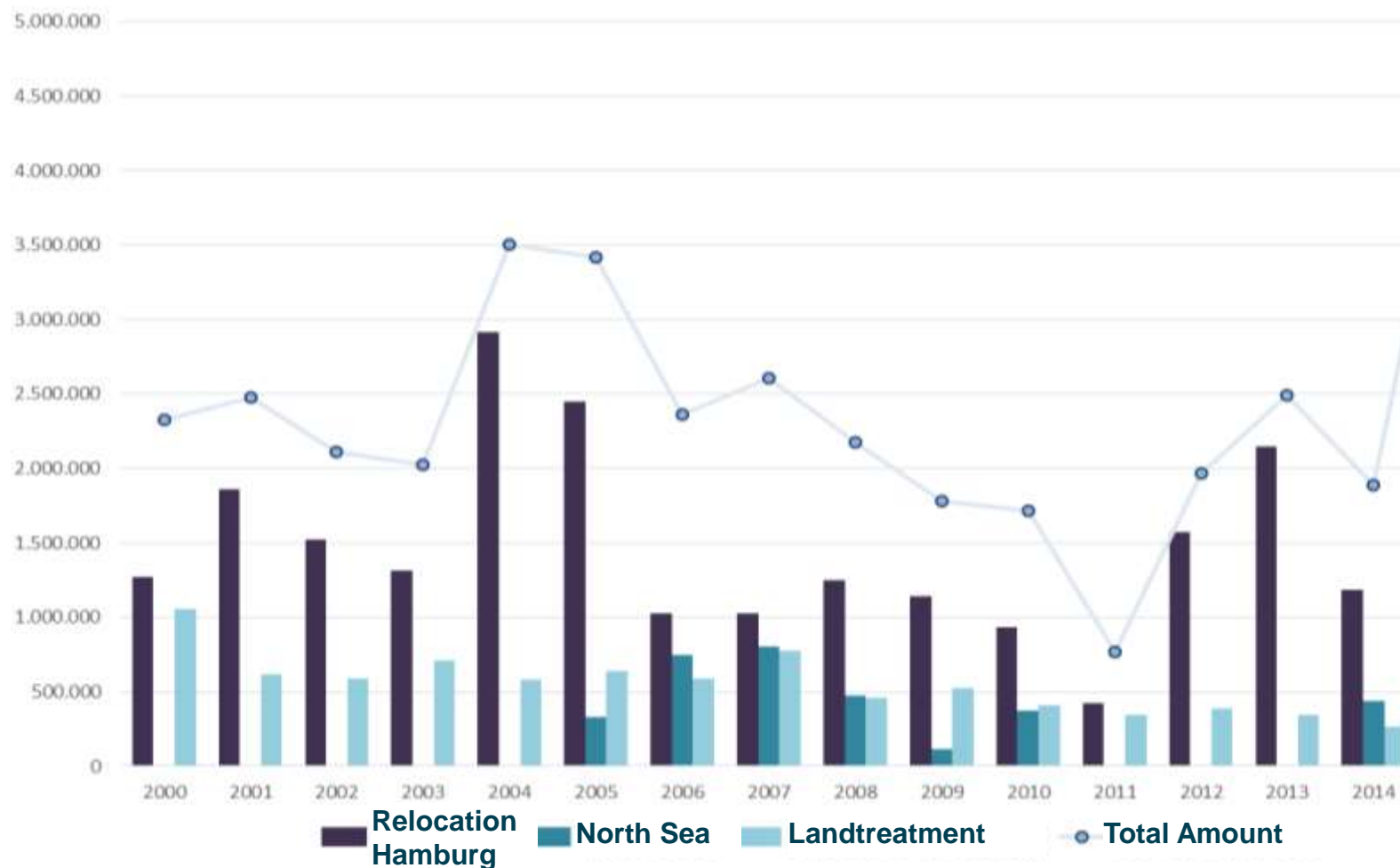
Hydrological conditions – Headwater discharge



Hydrological conditions – Turbidity



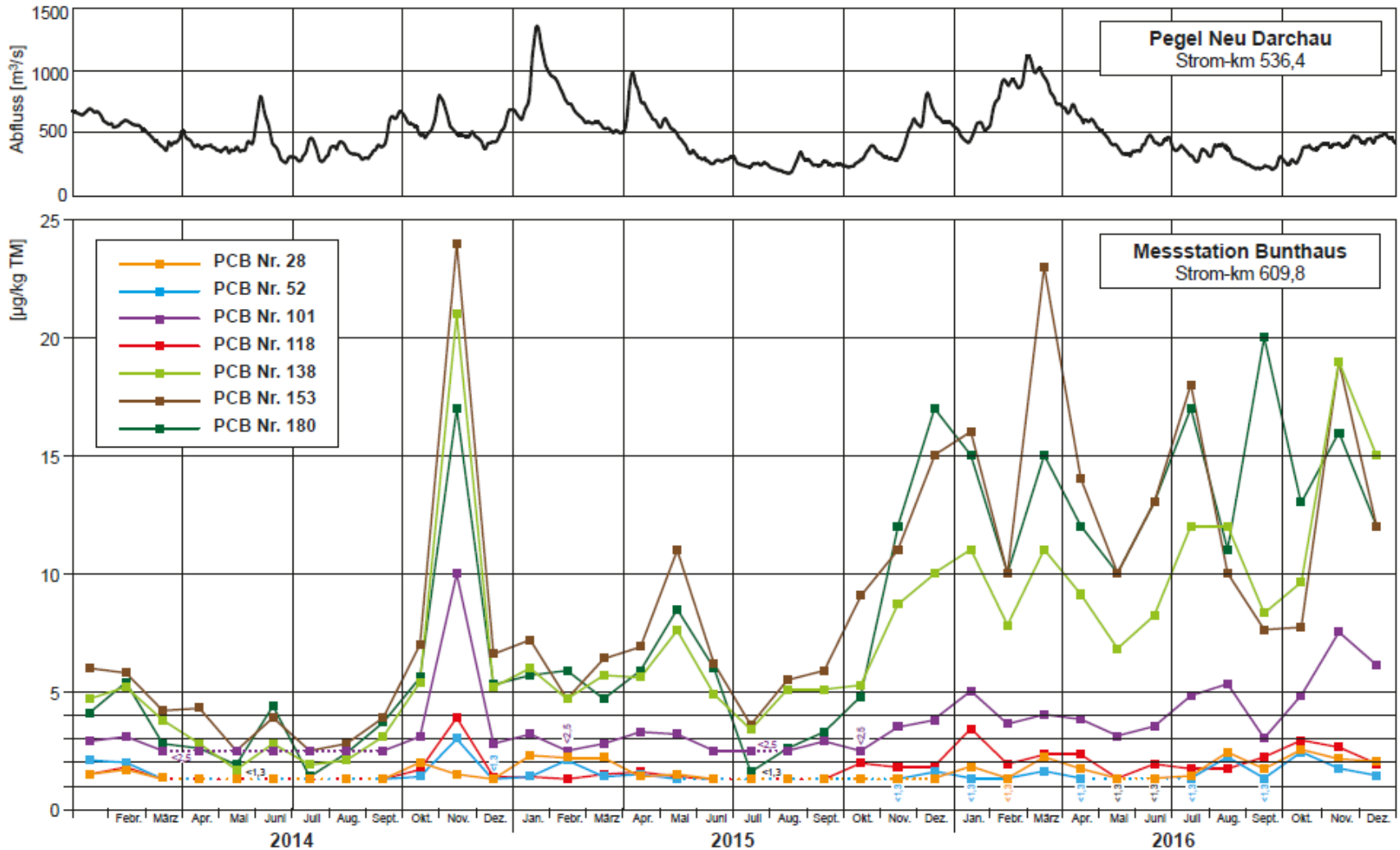
Development of Dredged material amounts (Hamburg only)



03

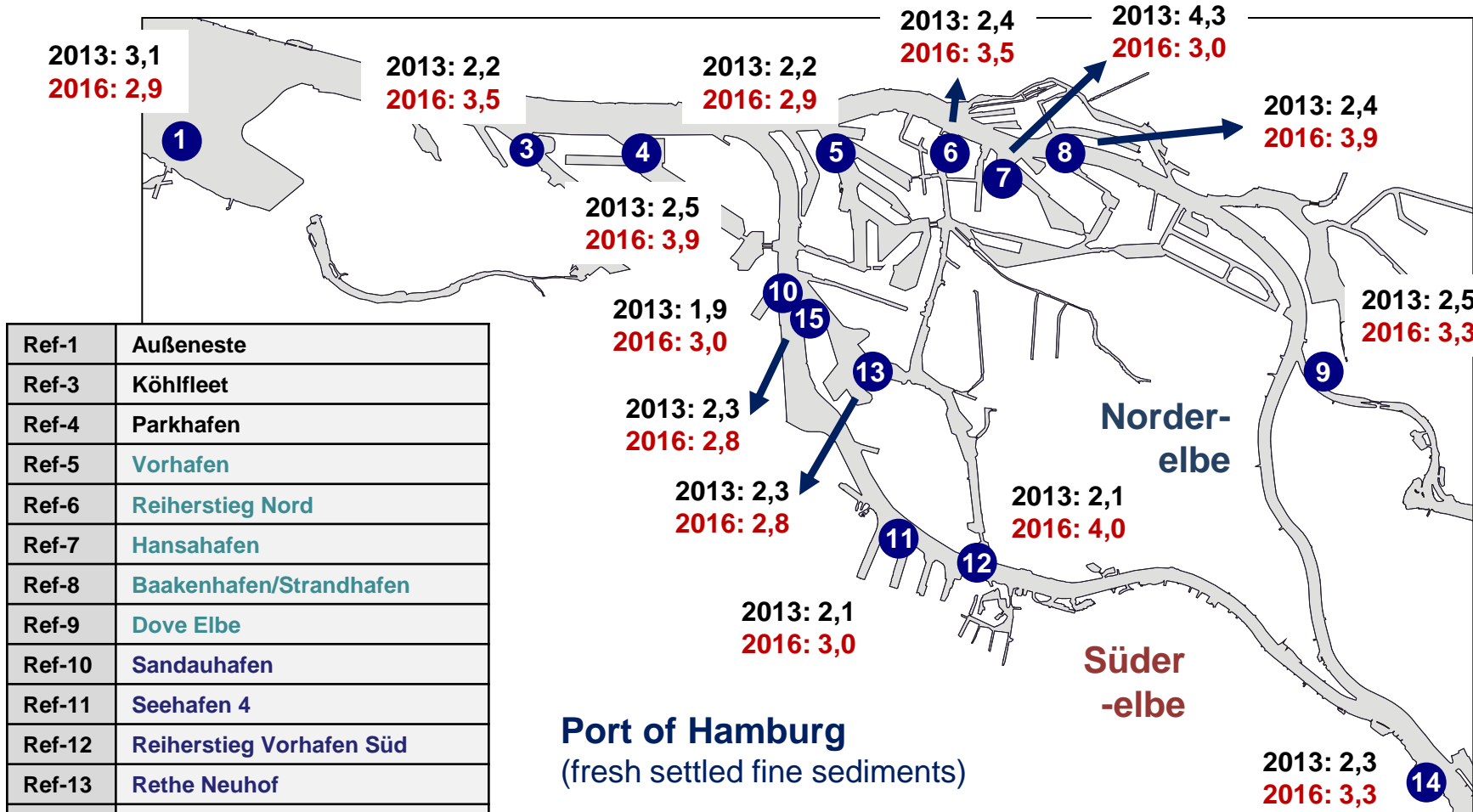
Impact of the PCB incident on dredged sediments

Possible impact on the sediments in the estuary / Port of Hamburg



Possible impact on the sediments in the estuary / Port of Hamburg

SF Wedel (S-Fang) = 2013: 2,7 - 2,8 // 2016: 2,8 - 3,2



Ref-1	Außeneste
Ref-3	Köhlfleet
Ref-4	Parkhafen
Ref-5	Vorhafen
Ref-6	Reiherstieg Nord
Ref-7	Hansahafen
Ref-8	Baakenhafen/Strandhafen
Ref-9	Dove Elbe
Ref-10	Sandauhafen
Ref-11	Seehafen 4
Ref-12	Reiherstieg Vorhafen Süd
Ref-13	Rethe Neuhof
Ref-14	Bullenhausen
Ref-15	Rethe Einfahrt

Ortkaten (Ref-20) = 2013: 2,3 // 2016: 3,9
 Stover Strand (Ref-22) = 2013: 2,2 // 2016: 4,4

04

Influence for dredged material
management – North Sea disposal

Why North Sea?

Stakeholder involvement

- Common economic and ecologically handling of sediments in the Elbe
- Involvement of stakeholders to bring in all relevant aspects not covered by the concept (yet)
- “Consultation” of environmental NGOs, business representatives, Ministries, communities, fishery and tourism organizations etc.



Develop **recommendation** for the political-administrative level – consisting of a well **documented report** determining consensus and dissensus areas.

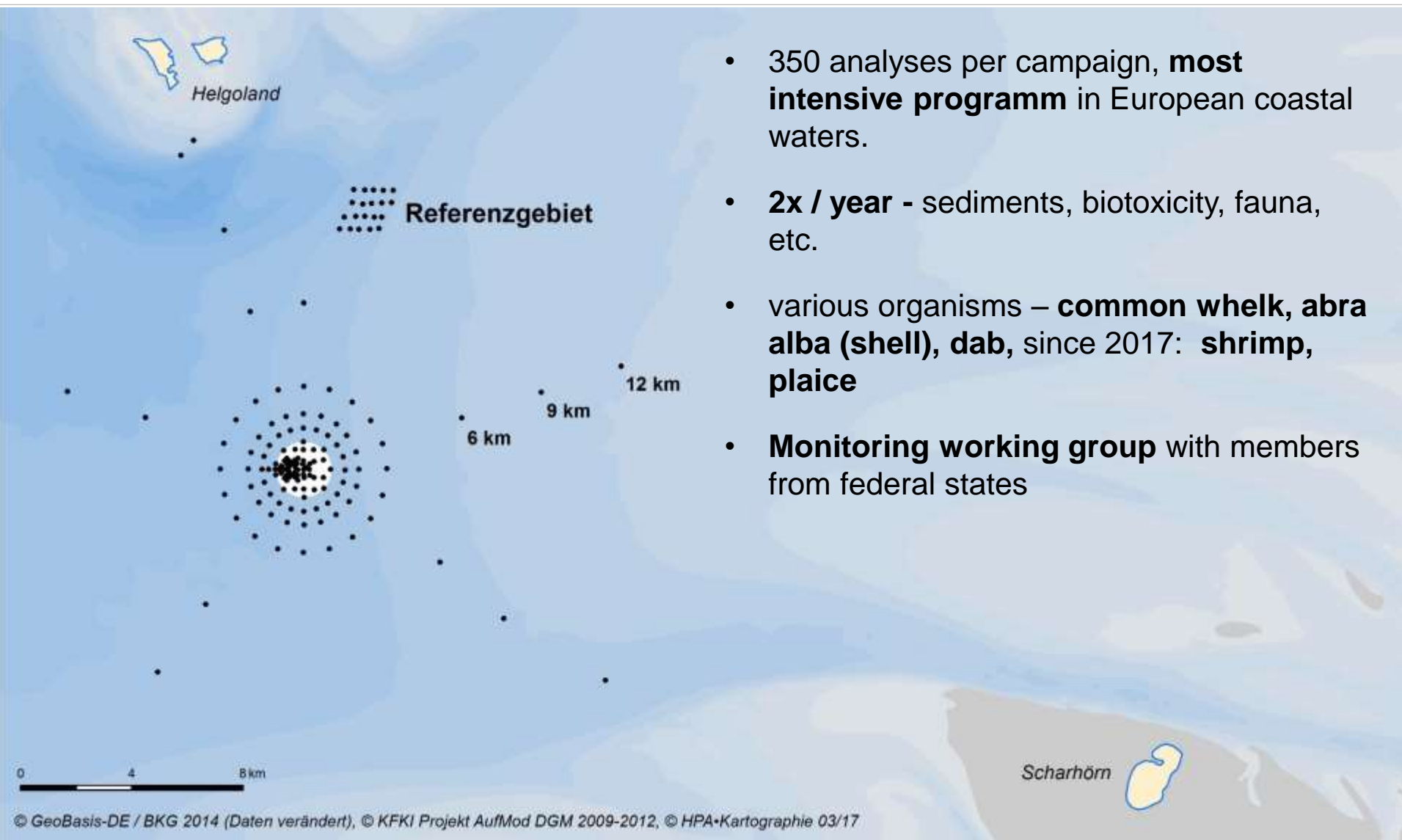


Assessment criteria for North Sea Disposal

Parameter	Unit
Arsenic < 20 µm	mg/kg TS
Lead < 20 µm	mg/kg TS
Cadmium < 20 µm	mg/kg TS
Chrome < 20 µm	mg/kg TS
Copper < 20 µm	mg/kg TS
Nickel < 20 µm	mg/kg TS
Mercury < 20 µm	mg/kg TS
Zinc < 20 µm	mg/kg TS
TBT (Gesamtfraktion)	µg/kg TS
KWST < 63 µm	mg/kg TS
PAK16 < 63 µm	mg/kg TS
PCB7 < 63 µm	µg/kg TS
a-HCH < 63 µm	µg/kg TS
g-HCH < 63 µm	µg/kg TS
p,p'-DDE < 63 µm	µg/kg TS
p,p'-DDD < 63 µm	µg/kg TS
p,p'-DDT < 63 µm	µg/kg TS
PeCB < 63 µm	µg/kg TS
HCB < 63 µm	µg/kg TS

GÜBAK	
Action level 1	Action level 2
40	120
90	270
1,5	4,5
120	360
30	90
70	210
0,7	2,1
300	900
20	300
200	600
1,8	5,5
13	40
0,5	1,5
0,5	1,5
1	3
2	6
1	3
1	3
1,8	5,5

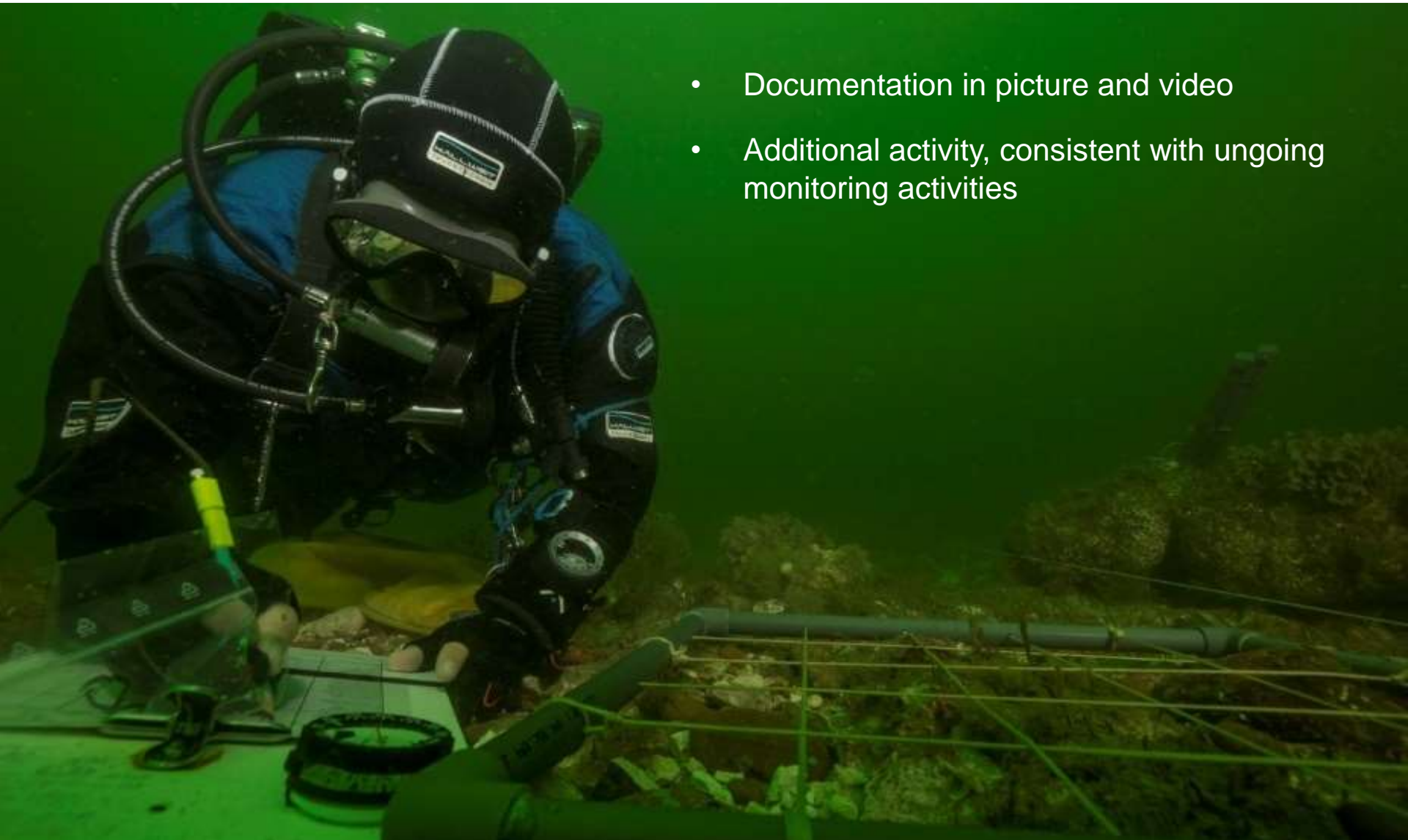
Köhlbrand	
Average 2005 - 2015	
x	SD
35	2,5
90	5,1
2,8	0,4
81	13
72	7
43	3
1,8	0,2
613	69
84	46
178,6	69,0
2,5	0,9
20,9	5,2
1,0	0,4
0,4	0,4
4,8	1,7
14,4	4,3
5,2	2,7
1,7	0,6
9,3	3,9



- 350 analyses per campaign, **most intensive programm** in European coastal waters.
- **2x / year** - sediments, biotoxicity, fauna, etc.
- various organisms – **common whelk, abra alba (shell), dab**, since 2017: **shrimp, plaice**
- **Monitoring working group** with members from federal states



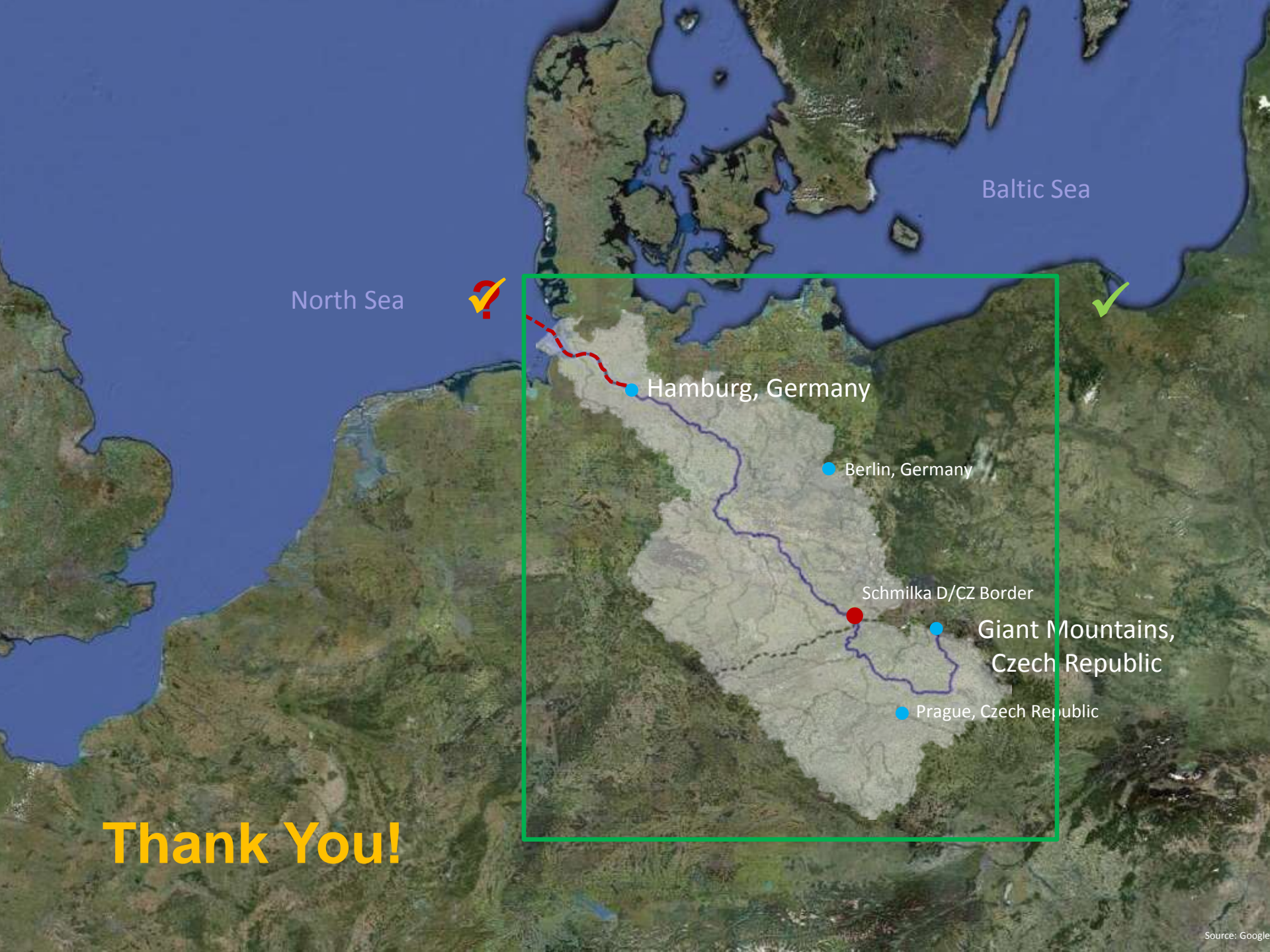
Since 2017: Investigation of Makrophytes (Helgoland)



- Documentation in picture and video
- Additional activity, consistent with ungoing monitoring activities

05

Outlook



North Sea

Baltic Sea

Hamburg, Germany

Berlin, Germany

Schmilka D/CZ Border

Giant Mountains,
Czech Republic

Prague, Czech Republic

Thank You!